2018
#GGSD Forum & #GGKP6 Annual Conference
OECD, Paris
27-29 November

Inclusive solutions for the green transition

Issue Paper

SMEs:
Key Drivers of Green and Inclusive Growth

Shashwat Koirala
Environment Directorate, OECD

GREEN GROWTH Knowledge Platform

OECD
BETTER POLICIES FOR BETTER LIVES

OECD Green Growth and Sustainable Development Forum

The GGSD Forum is an OECD initiative aimed at providing a dedicated space for multi-disciplinary dialogue on green growth and sustainable development. It brings together experts from different policy fields and disciplines and provides them with an interactive platform to encourage discussion, facilitate the exchange of knowledge and ease the exploitation of potential synergies. By specifically addressing the horizontal, multi-disciplinary aspects of green growth and sustainable development, the GGSD Forum constitutes a valuable supplement to the work undertaken in individual government ministries. The GGSD Forum also enables knowledge gaps to be identified and facilitates the design of new works streams to address them.

Authorship & Acknowledgements

This paper was developed by the Environment Directorate in close cooperation with the Centre for Entrepreneurship, SMEs, Regions and Cities at the OECD. It was authored by Shashwat Koirala under the guidance provided by Jaco Tavenier and Lucia Cusmano. It benefited from OECD staff contributions including comments from Krzysztof Michalak, Lora Pissareva, Guy Halpern, and Eugene Mazur. The paper was produced under the supervision of Kumi Kitamori, and serves as an Issues Note for the 2018 Green Growth and Sustainable Development Forum on “Inclusive Solutions for the Green Transition”, held in conjunction with the Green Growth Knowledge Platform (GGKP), a joint initiative of the Global Green Growth Institute, the OECD, the UN Environment and the World Bank. Lupita Johanson designed the cover page. Financial contribution by the German Federal Ministry for Economic Cooperation and Development (BMZ) through the GIZ Sector Project “Sustainable Economic Policy and Private Sector Development” is gratefully acknowledged. The opinions expressed herein do not necessarily reflect the official views of the OECD member countries.

Table of Contents

1. Introduction

Context and relevance

"Inclusive solutions for the green transition" implies two entangled policy objectives: inclusive growth and green growth. Put it differently, it begs the question: how can we achieve environmental objectives and simultaneously deliver economic growth that is inclusive and widely-shared? Small and Medium-sized Enterprises (SMEs) are important stakeholders in this question given their contribution to global economic activity, social well-being, and environmental footprint.

In 2013, SMEs in the OECD area[1] represented 99.7% of all enterprises and 60% of total employment (OECD, 2017[1]). They are also major engines of value creation, accounting for between 50% and 60% of value-added in OECD economies. SMEs are similarly significant in emerging economies. There, they contribute to, on average, 45% of total employment and 33% of GDP (OECD, 2017[2]). Similarly, in low-income countries, SMEs account for 78% of all employment. However, they only contribute 16% to GDP (Dalberg Global Development Advisors, 2011[3]). When informal businesses are included, the contribution of SMEs jumps up to over 50% of employment and GDP, regardless of the country's income level. SMEs also play a considerable role in innovation. Although not all SMEs are innovative, new and small firms can work outside of established paradigms and exploit neglected opportunities to innovate. In fact, in Europe, SMEs account for 20% of patents, one metric for innovation (OECD, 2017[2]). Relatedly, SMEs might be more likely to innovate and challenge incumbent firms when sociotechnical transitions[2] create a relevant space ("niche") for innovation (Gibbs and O'Neill, 2014[4]).

SMEs operate and create opportunities across a wide array of geographic areas and sectors; they employ different labour force segments, including low-skilled workers, and provide skill development opportunities. As such, job and value creation in the SME arena is a vehicle for inclusive growth. More explicitly, certain SMEs, such as social enterprises, are driven by social impact goals and the triple bottom line, and thus, contribute directly to inclusive growth (OECD, 2017[2]).

However, SMEs, on aggregate, have a high environmental footprint. In fact, literature estimates that SMEs contribute 60-70% of industrial pollution in Europe (OECD, 2018[5]). In particular, SMEs in the manufacturing sector - which accounts for a large share of global resource consumption, pollution, and waste generation – are critical for the green transformation (OECD, 2013[6]). That being said, SMEs also have the potential to engender substantial environmental improvements. Eco-innovators, for example, can pioneer or lead new green industries, especially in local and emerging markets contexts that may be unappealing or unfeasible for large corporations. For example, in the United Kingdom and Finland, SMEs represent more than 90% and 70% of clean tech enterprises respectively (OECD, 2017[2]).

Thus, given the economic and environmental significance of SMEs, they are important drivers of inclusive and green growth.

[1] This includes SMEs in the non-financial business sector.

[2] Sociotechnical transitions refer to broad-based shifts in not just technology, but also in consumer practices, policies, culture, infrastructure, and business models. In the context of innovation among SMEs, sociotechnical transitions include a change in government policy that challenge status-quo practices and create an opening for innovation. For more details on sociotechnical transitions and greening, see (Gibbs and O'Neill, 2014[4]) and (Geels, 2018[78]).

2. Defining SMEs

SMEs represent a broad and heterogeneous class of enterprises, and their legal and technical definitions vary by country, even among OECD member states.[3] For example, the EU defines SMEs as businesses with less than 250 employees, turnover of less than €50 million euros or a balance sheet not exceeding €43 million (OECD, 2018[5]). Whereas, the United States government broadly defines SMEs as having fewer than 500 employees, but the criterion vary by type of enterprise and the defining governmental body (United States International Trade Commission, 2010[7]). In emerging and developing countries, the definitions vary as well. Tanzania, for example, defines firms with less than 20 employees as SMEs; however, in Vietnam, SMEs are capped at 300 employees. This not only suggests that SMEs are heterogeneously defined, but also that they are not necessarily proportional to the size of a country's economy. For example, the largest SME in Vietnam (300 employees) is three times the largest SME in Norway (100 employees) despite the former's per capita GNI being drastically less than that of the latter (Gibson, 2008[8]).

The varying definitions of SMEs represent the different policy and structural contexts in which they operate as well as their vast heterogeneity. SMEs exhibit firm-level, sector-level, and national-level heterogeneity. At a firm-level, SMEs vary by age, size, business model, performance, and the characteristics and goals of entrepreneurs, among others (OECD, 2017[2]). Sector-wise, SMEs face varying degrees of barriers to entry and start-up costs. For example, in ICT sectors, SMEs face noticeable barriers to entry caused by capital and knowledge constraints. Thus, they only contribute to less than half of value added despite accounting for more than 60% of total employment. Similarly, certain sectors like manufacturing are more capital-intensive and feature increasing returns to scale, which favour large corporations instead of SMEs (OECD, 2017[1]). At a national-level, SMEs vary by levels of formalization, productivity gaps with large corporations, policy and regulatory contexts, and relative importance in the economy. For example, in many emerging and developing countries, the productivity gap between large firms and SMEs is more substantial than their developed counterparts (OECD, 2017[2]).

Simply, SMEs are not a group of uniform stakeholders, but rather an eclectic mix of firms, each of whom exhibit different opportunities and challenges in achieving the green transition.

Defining the scope

Based on a review of existing literature, this paper discusses to what extent and how SMEs can deliver green *and* inclusive growth. The OECD defines green growth as aligning economic growth and environmental objectives. Specifically, it involves transitioning to a resource-efficient, low-carbon economy and preserving environmental resources while seizing the economic opportunities that this transition generates (OECD, 2015[9]). Similarly, the World Bank defines green growth as "economic growth that is environmental sustainable." Put it more concretely, it means "enabling developing countries to achieve robust growth without locking themselves into unsustainable patterns" (World Bank, 2012[10]). Meanwhile, inclusive growth involves raising "societies' welfare or living standards broadly defined." It is a multidimensional measure of growth and includes both income-related measures of well-being and non-income elements such as health and education. Inclusive growth also emphasizes the question of distribution; that is, how are aggregate changes in measures of growth distributed across households and individuals (Boarini, Murtin and Schreyer, 2015[11])? Simply, green *and* inclusive growth involves a transition to an eco-friendly, low-carbon economy and simultaneously, broad improvements in societal welfare.

[3] The definition of SMEs also vary depending on the literature (e.g. some studies include microenterprises while others exclude them). Thus, instead of choosing a specific definition of SMEs, this paper relies on the different definitions of the cited source.

Thus, the paper is concerned with discussing to what extent greening SMEs delivers widespread societal welfare gains. Admittedly, an important and related question is: given the vast diversity of SMEs, how can the green transition be inclusive for all SMEs? Specifically, what are the distributional impacts for SMEs of greening and how can policymakers deal with the "losers" of greening measures? While these questions receive some tangential treatment in this paper, they mostly fall outside of its scope.

Another important specification here is defining what we mean by the green transition. For the purpose of this paper, this involves actions undertaken by SMEs to *reduce environmental impact*. Thus, this paper does not focus on the question of building SMEs' resiliency to climate change (i.e. adaptation to climate change). It is important to acknowledge, however, that this is an important question worth studying, particularly because building SMEs' resiliency to climate change can impact their competitiveness as well as their ability to enable inclusive growth.[4]

The scope of this paper is not limited to OECD countries; rather, it considers countries across all income and development levels.[5] Concretely, the paper tackles three fundamental questions:

1. *What is the role of SMEs in enabling green and inclusive growth?*

2. *To what extent and in what ways does SME greening align (or conflict) with fostering inclusive growth?*

3. *What SME-related policy frameworks best deliver green and inclusive growth?*

Chapter 2 tackles the first question by identifying how SMEs contribute to inclusive growth and what the green transition entails for SMEs. Chapter 3 identifies the relationship between the channels through which SMEs contribute to inclusive growth and the roles that they occupy in the green transition. In particular, it addresses the trade-offs and synergies between greening SMEs and their ability to deliver inclusive growth. These trade-offs and synergies are framed in terms of business performance of SMEs and linked subsequently to the policy objectives of inclusive and green growth. Chapter 4 analyses policy frameworks that enable SMEs to successfully reconcile (and reinforce) the trade-offs (and synergies) between green and inclusive growth. To do so, it draws upon the conceptual framework developed in the OECD SME and Entrepreneurship Outlook, which defines six pillars that drive SME performance.[6] Finally, Chapter 5 synthesizes the conclusions and highlights areas of future work.

[4] For example, adapting to climate change allows SMEs to safeguard the quality and availability of their goods and services and thus ensure their bottom-line and long-term viability. For more details on the barriers and drivers of climate change adaptation for SMEs, see (Schaer and Kuruppu, 2018[84]).

[5] It is important to note that there are various ways to classify countries based on their development and income levels. Instead of defining and using a particular classification scheme, this paper relies on the typology of the cited source.

[6] This is a forthcoming framework on SME business conditions and policies. An earlier version of this framework is found in (OECD, 2017[1])

3. The role of SMEs in enabling green and inclusive growth

SMEs and inclusive growth

Inclusive growth through employment

The World Bank estimates that 200 million people, most of whom youth, are unemployed and actively seeking jobs. Moreover, it estimates that just to maintain current employment rates, 600 million jobs are needed over 15 years (World Bank, 2013[13]). In this context, employment opportunities are critical for inclusive growth, and literature is clear that SMEs contribute to both employment level and employment growth.[7] On the former point, as shown in Table 1, the median contribution of the SME250[8] size class to employment is higher than larger enterprises across all country income groups.[9]

Table 1. Median Contribution of SME250 to Employment By Country Income Group

Country Income Group	Contribution of SME250 Firms
Low income	78%
Lower middle income	67%
Upper middle income	59%
High income	65%

Note: Data based on a sample of 98 countries
Source: (Kok, Deijl and Veldhuis-Van Essen, 2013[12])

Similarly, literature demonstrates that SMEs have a considerable impact on employment growth. In fact, in a majority of countries, enterprises between 5 and 99 employees account for more than 50% of total net employment creation. However, there is variation by country income groups as well as by region. This is reflected in Table 2 below.

Table 2. Median Contribution of Different SME Size Classes to Employment Creation By Country Type[a]

Country Group	5 to 19 employees	20 to 99 employees	100 or more employees
Income group			
Low income	36%	30%	23%
Lower middle income	22%	32%	48%
Upper middle income	23%	25%	43%
High income	22%	37%	33%
Geographical Group[b]			
Eastern Europe and Central Asia	19%	33%	45%
East Asia and the Pacific	20%	52%	35%
Latin America and the Caribbean	26%	31%	43%
Africa Region	31%	29%	26%
South Asia Region	41%	56%	4%

Notes: **a.** Within each country group, median employment creation shares of different size class may refer to different countries, and so, the employment creation share may not add up to 100%; **b.** Middle East and North Africa region excluded because lack of data;
Source: (Kok, Deijl and Veldhuis-Van Essen, 2013[12])

[7] Employment growth is the measure of *changes* in employment levels. It is typically defined as a changes in permanent full-time employees; temporary jobs are excluded.
[8] SME250 size class is defined as all enterprises with 5 to 250 employees.
[9] This takes into account employment in the formal, non-agricultural private economy. Micro-enterprises are excluded.

In addition to job quantity, job quality is an important consideration in inclusive growth. In this regard, the literature is limited. But, the available studies do posit similar conclusions in developed and developing countries: small enterprises pay lower wages than larger enterprises and the level of job stability and security is lower amongst SMEs (Kok, Deijl and Veldhuis-Van Essen, 2013[12]). This is echoed by the mixed literature on the ability of small firms as employers to contribute to social inclusion. Specifically, smaller firms are constrained in their ability to provide benefits (such as insurance packages and childcare services) and operate with inconsistent employment practices. Simply, small businesses "are the crucible of an economic system which both generates inequalities as well as provides a source of employment and economic well-being" (Blackburn and Ram, 2006[14]).

SMEs and inclusive business models

SMEs – or any other enterprise class – can also contribute to inclusive growth by adopting explicitly inclusive business models (sometimes equivalent to social enterprise). These firms focus on integrating the different population segments into their business practices. For example, SMEs operating in the development space focus on integrating the four billion poor people living at the economic base of the pyramid ("BoP") – a market that is valued at roughly $5 trillion globally. They can integrate the BoP on the demand-side as well as the supply side, as summarized below: (GIZ, 2017[15])

- Demand side: *Integrate the BoP as customers by providing them access to essential goods and services (access to health, finance, water, etc.) and addressing unmet needs*.
- Supply side: *Integrate the BoP as suppliers, distributors, or employees and in doing so, generate income and job opportunities, through targeted measures.*

This applies to other underserved and neglected demographic groups as well. For example, whereas some inclusive business models are geared towards integrating women, others can be focused on tackling the urban-rural disparity. In general, SME-specific literature focusing on this arena is quite limited, but there are some case studies that demonstrate the central idea. For example, Africa Felix Juice LLP, a fruit juice manufacturing SME in Sierra Leone, integrates local fruit farmers into its production process and thus, includes them in the formal labour force (Ngoasong, 2016[16]). Additional examples are provided in Table 3.

Table 3. Examples of Demand-side and Supply-side Inclusive Business Models

Company Name	Country	Channel	Description
Take Caire	Egypt	Supply-side	A design-focused company that aims to connect communities in Cairo to international markets. To do so, they provide training services to traditional designers to develop a contemporary edge.
CEMAR	Brazil	Demand-side	A power distribution company serving Maranhão, one of the poorest states in Brazil. It aims to connect low-income population segments to power.

Note: CEMAR stands for "Companhia Energética do Maranhão".
Sources: (Jenkins et al., 2010[17]) and (GIZ, 2015[18])

Given the limited research on this front and since a relatively small share of SMEs are socially oriented (22% of U.K. small businesses are socially oriented SMEs), we focus only marginally on

these business models as a way for SMEs to enable inclusive growth (UK Department for Business, Energy, and Industrial Energy, 2017[19]). Rather, our main focus is on SMEs' role as engines of employment. That being said, it is worth noting that SMEs can contribute to inclusive growth through other channels. For example, regardless of their business models, since SMEs operate in more local markets and areas often neglected by larger companies, they are well-suited to tackle unmet needs. Since these other dimensions of inclusive growth are under-researched – especially, in relation to greening SMEs – they fall outside the scope of this paper, and thus, represent an area of future work.

SMEs and the green economy

Overview

Having explained how and to what extent SMEs can enable inclusive growth, it is important to define what the green transition entails for SMEs. Broadly, green SMEs contribute to the protection of the climate, environment, and biodiversity through their products, services, and business practices. But, they do so in different way; some SMEs focus on reducing the environmental footprint of their production process (e.g. resource-efficient processes) while others focus on green outputs and offer green products and services (e.g. renewable energy products) (GIZ, 2017[15]). Framed differently, green SMEs can either be green performers - conventional SMEs for whom greening entails incorporating green practices and improving their sustainability performance – or green innovators – SMEs whose core business model focuses on the sale of sustainability-related goods and services: (McDaniels and Robins, 2017[20])

While the terminology may vary across literature, the core ideas are consistent. For this paper, we adopt the OECD typology that distinguishes between three types of green SMEs: eco-innovators, eco-entrepreneurs, and adopters of ecologically-friendly practices ("eco-adopters") (OECD, 2013[6]). We do so because in addition to identifying different functions of green SMEs (i.e. innovation vs. adoption), this typology differentiates green SMEs based on their age (i.e. entrepreneurs and young SMEs vs. more mature SMEs). The latter distinction is significant because of the potential policy implications. For example, on the issue of access to finance, young start-ups, who seek early-stage capital, face different challenges than more mature SMEs (McDaniels and Robins, 2017[20]). It is also important to note that these roles are not mutually exclusive; in fact, eco-entrepreneurs can be, and often are, eco-innovators. Similarly, eco-adoption itself may require certain level of innovation in business practices.

Eco-innovators

These SMEs engage in eco-innovation, defined as "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations" that reduce environmental impact, with or without intent. Eco-innovation, distinctly, can also include changes in social and institutional structures (i.e. value patterns, behavioural models, social structures and interactions). This means that the environmental benefits of eco-innovation are not restricted to firms; instead, eco-innovation has the potential to deliver society-wide environmental benefits by changing social norms, cultural values, and institutional structures. (OECD, 2009[21]).

Concretely, eco-innovation, whether technological or non-technological, can be incremental (modifying the existing paradigm without changing the underlying core), disruptive (altering how specific technological functions are fulfilled without changing the underlying regime), and radical (creating entirely new solutions and full-scale shifts). Eco-innovating SMEs have a clear role in leading incremental as well as disruptive and radical innovations. In particular, smaller firms, being new entrants to the market, are more likely to pioneer radical and disruptive innovations by exploiting the market opportunities neglected by larger firms (OECD, 2013[6]).

Eco-entrepreneurs

Eco-entrepreneurs share similarities with traditional entrepreneurs in that they seek new opportunities – caused by a shift in values or preferences, regulations, or problems – and subsequently develop and commercialize a solution to the identified opportunity. But, they are different in their strategic objectives and motivations and tend to see greater sustainability as one of the goals of their entrepreneurship (OECD, 2013[6]).

That being said, eco-entrepreneurs are not a uniform group of actors; in fact, literature has identified assorted levels of financial and environmental motives of eco-entrepreneurs.[10] Eco-entrepreneurs are also not a static group; that is, there is some evidence that they move between "green" business models and "conventional" business models. This may be because some entrepreneurs find it difficult to maintain "green-ness" and thus, may compromise by pursuing conventional projects. (Gibbs and O'Neill, 2014[4])

Eco-adopters

This group - likely to represent a vast majority of SMEs - resemble the aforementioned "green performers". For them, greening entails the uptake of environmental technologies and sustainable business practices. Unlike eco-innovators and eco-entrepreneurs, sustainability is unlikely to be a part of the core business model (OECD, 2013[6]). Greening for many eco-adopters consists of being compliant with environmental regulations, thus a major consideration for this group of SMEs is how to incentivize them to go beyond compliance in their sustainability practices and illustrate the business case for being more efficient with inputs and energy (OECD, 2018[5]). Moreover, for eco-adopters, the benefits of greening are sector-specific and the different sector-level and firm-level barriers explain the varying levels of diffusion of green practices (OECD, 2013[6]).

An important point about eco-adoption is that SMEs rarely implement holistic approaches and integrated management practices to reduce environmental impact. Instead, they adopt green practices in a piecemeal manner as a response to immediate cost pressures. Put it differently, SMEs are more likely to adopt "end-of-pipe technologies" - which allow them to reduce their environmental impact *ex post* without changing the processes that generate the impact (e.g. energy-efficient light bulbs) – rather than "clean technologies" – which eliminate the environmental impact of the production process itself (OECD, 2013[6]).

Takeaways: what is the role of SMEs in enabling green and inclusive growth?

Two takeaways emerge from this section:

1. Literature provides evidence that SMEs contribute to inclusive growth by generating job opportunities, but literature on job quality is both less rich and less optimistic. There is also evidence that SMEs can contribute to inclusive growth by adopting inclusive business models, but it is generally circumstantial.
2. SMEs can contribute to green growth through eco-innovation, eco-adoption, and eco-entrepreneurship ("the three types of green SMEs"). Though anecdotal evidence suggests that for a vast majority of SMEs, greening entails adoption of green practices, there is a lack of data on the share of SMEs that fall into each of the three categories and how that varies by country-groups.

So, to understand how SMEs can promote both green and inclusive growth, we must probe the relationship between the two takeaways. *Firstly, if a thriving SME sector is an engine for inclusive*

[10] For example, whereas *accidental green entrepreneurs* are driven by financial gains and their "green" contributions are unintended, *visionary champions* are motivated by a combination of their "green" values as well as financial return. They set out to change the world and pursue hard structural changes to attain a sustainable future. For more details on this typology of eco-entrepreneurs, see (Walley and Taylor, 2002[85]).

growth, what impact does eco-innovation, eco-entrepreneurship, and eco-adoption have on the business performance of SMEs? In other words, what are the business benefits and costs of greening on SMEs? *Secondly, to what extent do business benefits and costs of greening spill-over into the labour market?* Put differently, do the business implications of greening contribute positively to both the quantity and quality of jobs? Finally, even though SMEs' role in delivering inclusive growth through inclusive business models (besides employment) is under-researched, *is there any evidence of SMEs that have successfully combined green and inclusive business models?* These questions will inform the discussion in the next chapter on opportunities and challenges.

4. Opportunities and Challenges

Synergies between greening and business performance of SMEs.

Overview

The synergies between greening and improved business performance of SMEs present themselves in two primary ways. Firstly, SMEs can tap into growing market demand for green products and thus increase market share or capture new markets. Secondly, SMEs can generate efficiency gains from greening and reduce costs.

Increased market share and new markets

The commercial benefits of greening stem from the potential to increase market share and capture new markets from eco-innovation, eco-entrepreneurship, and eco-adoption among SMEs. The rationale here is that "green" products, niches, and practices represent previously untapped business opportunities that SMEs are uniquely suited to tackle, especially because of their small size and flexibility (UNEP, 2014[22]). This business potential is highlighted by a 2015 consumer survey, which revealed that 66% of global respondents are willing to pay more for sustainable goods, up from 50% in 2013 (Neilsen, 2015[23]). However, the survey results showed that consumers in developed countries were less likely to pay more for sustainable products; consumers in Latin America, Asia, Middle East, and Africa are 23-29% more likely to pay a premium (Neilsen, 2015[23]). Thus, commercial benefits could be more pronounced for SMEs in emerging economies.

Literature has also revealed that capturing green markets is an important motive for eco-innovation and eco-entrepreneurship. For example, in a 2012 survey on eco-innovation, 48% of EU SMEs cited market demand as a main motive to offer green products (OECD, 2013[6]). This motive translates wells to commercial growth, as research suggests that eco-innovative companies of all sizes are growing, on average, at a rate of 15% annually, while their respective markets have remained stagnant (UNEP, 2014[22]). Similarly, eco-entrepreneurs are enticed by the opportunity to offer green goods and services and differentiate themselves from their competitors. Tapping into these "green niches" can start a virtuous cycle, whereby firms can invest their initial profits from selling to environmentally-conscious consumers into further innovations, which could reduce the cost of green goods for consumers or increase the availability of green product offerings. If greening is administered through regulatory changes that reduce the barriers of entry to eco-entrepreneurs (e.g. introduction of fuel efficiency requirements), eco-entrepreneurs are able to capture market share in previously monopolistic markets (OECD, 2013[6]).

Both eco-entrepreneurs and eco-innovators also stand to reap commercial benefits by securing intellectual property rights on green products and consequently, a competitive advantage in the green marketplace. An example of this is the clean tech sector, where exclusive ownership of technology allows commercialization across multiple organizational channels (OECD, 2013[6]). This perhaps explains why patenting rates for clean energy technologies have increased at roughly 20% per year since 1997, ahead of traditional energy sectors. However, there is evidence that developed countries benefit considerably more from clean-tech IP rights, as patenting in that arena is dominated by Japan, the U.S., Germany, Korea, France, and the U.K, who account for over 80% of all clean energy patent applications (Ahmed Abdel Latif, 2013[24]). That being said, there is little data available on what share of these patents are held by SMEs.

Eco-adopters also reap the commercial benefits from greening. For example, among European SMEs that have adopted environmental management systems,[11] satisfying market demand is a key driver (OECD, 2013[6]). However, these commercial benefits are not

[11] Environmental Management Systems (EMS) is defined "as a set of processes and practices that enable an organization to reduce its impacts and increase its operating efficiency." These systems require a systematic, comprehensive, and well-documented approach to greening (United States Environmental Protection Agency, 2018[76]).

distributed uniformly across sectors and firms. For example, firms producing final demand goods are more likely to benefit from increased green consciousness of consumers, compared to producers of intermediate goods (del Río González, 2005[25]). Moreover, if there is greening pressure from firms higher up the supply chain, adoption of green practices aligns well with the commercial interests of SMEs (OECD, 2013[6]). Though not extensive, there is some literature that has quantitatively measured the commercial benefits of eco-adoption. For example, a study of fresh produce exporters from 10 Sub-Saharan African countries showed that GlobalGAP-certified businesses – who are required to keep pollution to a minimum – had revenue roughly 2.6 higher than non GlobalGAP-certified businesses. Similarly, a study of Chinese firms revealed that firms with ISO environmental certification had higher profit margins and market shares (World Bank, 2017[26]).

Cost reduction

Greening-related cost reductions for SMEs generally arise from efficiency gains since less inputs are required to produce the same output. These cost reductions are realized through the following channels. These channels are applicable to SMEs in both developing and developed contexts (OECD, 2018[5]).

- Process efficiency: *By optimizing current processes or introducing new more efficient ones, SMEs minimize the required inputs and waste production.*
- Product design: *SMEs can re-design their products to reduce the required inputs without sacrificing the product's utility.*
- Waste disposal: *In addition to reducing waste by improving process efficiency, SMEs can reuse already-generate waste or pass it along to other companies. This reduces cost of waste disposal.*
- Source of raw material: *SMEs can reduce cost of raw materials by switching to re-cycled materials.*
- Infrastructure efficiency: *SMEs can generate savings associated with energy-efficiency lighting, building insulation, and heating systems efficiency.*
- Packaging and transport: *By reducing the volume of packaging and switching to local suppliers to decreasing shipping distances, SMEs can further reduce costs*

Literature also suggests that SMEs are aware of and motivated by these potential cost reductions. With regards to eco-innovators and entrepreneurs, a 2011 survey on the attitudes of EU entrepreneurs towards eco-innovation revealed that 52% of SMEs identify high energy prices as a very important driver of eco-innovation; 50% of SMEs identify expected future increases in energy prices as a very important driver. The relative importance of this driver varies by sector. For example, input cost reduction is strong motive in the ICT sector, where SMEs are developing innovating solutions to extend life cycle of ICT equipment, saving energy through cloud-computing, and reducing costs of e-waste disposal (OECD, 2013[6]). This finding is echoed by the eco-adopters class of SMEs in Europe; 63% of whom report becoming resource-efficient to reduce costs. Furthermore, more than two-thirds of SMEs indicate being satisfied with their return on investments in resource efficiency (OECD, 2018[5]). Similar survey data is limited for SMEs in developing and emerging contexts, but a study of eco-innovation in Brazil also cites "economic need for business continuity" as one of the incentives for eco-innovation. The leading driver, however, is shown to be the desire to preserve Amazonian biodiversity, since it is relied on so heavily by firms in the region and a requisite of long term business sustainability is the long term sustainability of the requisite resources (Aloise and Macke, 2017[27]). This suggests that business incentives to "go green" may be very country-specific.

There is some literature that have quantified the cost savings arising from greening SMEs, as summarized below.

Table 4. Examples of estimates of cost reductions from greening SMEs

Greening Model	Sample	Estimate of Cost Reduction
Implementation of circular business models	SMEs in a subset of EU manufacturing sectors	Annual net material cost savings ranging from €265 to €490 billion, roughly 23% of these sectors' total input costs
Potential implementation of an ENWORKS-type resource efficiency program[a]	EU-28 SMEs in four sectors ("food and beverages", "energy, power, and utilities", "environmental technologies", and "construction")	Potentially reduce aggregate resource costs in the EU-28 by approximately €54.6 billion[b]
Use of additives for concrete to decrease time of heating and reduce natural gas consumption by 192,500m	Concrete products industry in Ukraine	Cost savings of €48,100 per year
Resource efficiency measures	Companies[c] in the manufacturing sector in India	Cost savings of 60.8 billion rupees

Notes: **a.** ENWORKS is a business advisory/consultancy type program that provides practical and strategic advice to help businesses improve resource efficiency; **b.** Estimate of the total resource cost savings that could be realised if all SMEs across the EU-28 benefitted from an ENWORKS-type programme and made the subsequent cost savings; **c.** It is unclear whether these companies are exclusively SMEs or all firms.
Sources: (Rizos et al., 2015[28]); (Fleet, Palladino and Da Costa, 2015[29]); (OECD, 2016[30]); (Watal, 2017[31])

Trade-offs between greening and business performance of SMEs

Overview

Essentially, the trade-offs between greening and SME business performance arises because of firstly, the uncertainty of greening measures and secondly, the burden on the SMEs' limited resources that greening may pose.

Uncertainty

For eco-innovators, uncertainty - stemming from either technology uncertainty, demand uncertainty, or policy uncertainty[12] - represents a key trade-off between ensuring good business performance and eco-innovation. Technical uncertainty often arise from questions about the innovation's technical feasibility, usefulness, functionality, or quality; this uncertainty is often highest when eco-innovations requires a paradigm shift (Jalonen, 2011[32]). Literature suggests that this uncertainty can lead to under-investment during the initial phase of innovation, basic and applied R&D (Polzin, von Flotow and Klerkx, 2016[33]). Literature has also identified demand uncertainty as hindering larger investments in eco-innovation because owners and managers are often uncertain about the link between technological development and commercialization. Thus, while potential commercial gains may exist, SMEs are uncertain about whether that potential will be realised. Survey results from the EU from SMEs confirm that demand uncertainty is one of the top three barriers to eco-innovation. But, this uncertainty is a greater concern for small enterprises than medium enterprises (OECD, 2013[6]). Another factor that can increase demand uncertainty of SMEs is that unlike large corporations, they find it difficult to benefit from global markets and internationalize.[13] To that end, in developed

[12] Demand uncertainty concerns whether consumers will buy a given product; policy uncertainty concerns changes in the policy environment (e.g. regulation) that may alter the appeal of investing in a certain product; technological uncertainty concerns the risks that are inherent in R&D processes and new technologies.
[13] While highly innovative SMEs are fully integrated into global markets, export relationships can be short-lived for many SMEs. In fact, new SME exporters cease export after one or two years in many country (OECD, 2017[2]).

countries, SMEs only account for 34% of exports, despite accounting for 78% of exporters. Similarly, in developing countries, SMEs' direct exports represent only 7.6% of the total manufacturing sales, compared to 14.1% for large manufacturing firms (World Trade Organization, 2016[34]).

For green entrepreneurs, as well, demand uncertainty is a major hurdle. This stems from the fact that these entrepreneurs are often building market demand for a product that doesn't exist yet (i.e. market creation barrier). This lack of demand risks innovations from entrepreneurs resting in the "valley of death" between invention and commercialisation. This lack of demand and market uptake often arise from lack of information and scepticism about the quality and value of environmentally-friendly goods. A business case of Italian recycled products is illustrative of this; firms had trouble selling recycled products because consumers did not attribute positive value to these goods (OECD, 2013[6]).

Policy uncertainty also contribute to the market uncertainty that limit eco-innovation and eco-entrepreneurship. For example, a panel regression examining the relationship between policy uncertainty and eco-innovation in the wind-energy industry in Europe revealed that while environmental policy has a positive effect on wind innovation, policy volatility has a negative impact. Preliminarily, the results show that if policy uncertainty increases by one standard deviation, an average country's innovation level would decrease by 5% (Verdolini, Bosetti and Jockers, 2015[35]). Literature also suggests that emerging and developing countries demonstrate high levels of uncertainty regarding future policy (Rodrik et al., 1989[36]), but it is unclear on whether this applies to environmental policy and how this affects eco-innovation among SMEs.

For SMEs that are eco-adopters, market uncertainty presents itself in scepticism surrounding the business case of "greening". SMEs view environmental measures as draining profits while presenting uncertain market benefits. To that end, a review of over 33 studies have shown that neither supply chain pressure nor consumer demand have incentivized SMEs to adopt greener measures (OECD, 2013[6]). This perhaps, at least partly, explains why a 2016 survey of SMEs in Scotland and Northern Ireland discovered that only 36% reported that they were likely to invest in improving environmental performance over the next 12 months; smallest firms were least likely to forecast future investment in greening (NetRegs, 2016[37]).

Financial and human resource burden

The dual effect of the high resource burden (both financial and human) of greening and the limited resources of SMEs poses a challenge for SMEs in balancing business performance with environmental objectives.

Greening often entails investment in infrastructure and technology, compliance activities, and innovation, which poses a financial burden for SMEs that generally face financial constraints. This is reflected in a study by Reid and Miedzinski, which revealed that the top two barriers to eco-innovators were the high cost of innovation activity (identified by 30% of innovative companies) and lack of appropriate finance (identified by 23% of innovative companies) (Reid and Miedzinski, 2008[38]). This parallels the challenges of eco-entrepreneurs, who have trouble finding investors that share both their environmental values and are aware of green markets. Since eco-entrepreneurs are often creating products for which a market doesn't exist (i.e. market creation barrier), they are especially hindered by financial constraints. In fact, when market creation barrier coincides with high capital investment requirement, SMEs face barriers in procuring sufficient finance (OECD, 2013[6]).

In addition to the cost of acquiring green technologies and changing organizational practices, SMEs (notably, eco-adopters) find the switching costs to new technology, especially if they have invested a lot in the status quo, to be particular high. (OECD, 2013[6]) The following two case studies are illustrative of the cost burden for eco-adopters:

- **Study of fish exporters in Bangladesh:** Upgrading fish processing facilities to meet U.S. and EU environmental standards resulted in costs equivalent to 2.3% of the total

value of the country's shrimp exports. The cost of maintaining these new facilities was equivalent to 1.1% of exports (World Bank, 2017[26]).

- **Study of environmental regulation compliance in the U.K.:** A survey of the members of the Federation of Small Businesses in the U.K. revealed that the annual cost of complying with environmental regulation could be as high as £10,000 per small business. However, the cost was likely to vary by firm, with a majority of small businesses reporting an annual cost of £1,000 (Federation of Small Businesses, 2012[39]).

This cost burden is problematic for SMEs because they face a notable financing gap. Estimates of this financing gap vary and the methodology for calculating this gap are often disputed. Table 5 presents one such estimates, by country-income group and geographical region.[14] Taken at face value, this table suggests that compared to the demand, SMEs face a substantial finance gap. This gap is the highest in low income and lower-middle income countries.

Table 5. Estimates of Financing Gap of SMEs[a] by Country-Income Group

Country Group	Finance Gap (% of Potential Demand[b])
Low income	78%
Lower middle income	76%
Upper middle income	52%
High income	64%
Total	56%

Notes: **a.** SMEs, here, exlude micro-enterprises; **b.** Potential demand expresses the amount of financing that MSMEs would need, and financial institutions would be able to supply if they operated in an improved institutional, regulatory and macroeconomic environment
Source: (International Finance Corporation, 2017[40])

In addition to the financial burden of greening, greening initiatives impose a drain on the constrained human capital resources of SMEs. For example, eco-innovation and eco-adoption in SMEs requires a certain degree of managerial skills, technological understanding, learning ability and absorptive capability to make use of external technology. In this regard, SMEs may be limited because top talent is usually diverted to large firms (OECD, 2013[6]). This is often linked to the relatively higher wages and better career opportunities at large firms; in OECD countries, average compensation per worker is 20% lower in SMEs than in large firms (OECD, 2018[41]). The lack of suitable human capital for greening SMEs was reflected in a four-year longitudinal study of over a thousand social and environmental SMEs in Africa, Latin America, and Asia; 50% of studied SMEs said that there was insufficient or no skilled people – especially with regards to technical skills - in their community[15] (Creech et al., 2014[42]). For eco-adopters, the resource constraints are compounded with an informational barrier. That is, they may be unaware of their environmental impact, the relevant environmental legislation, support organisations, and the potential cost savings and market benefits of going green. (OECD, 2018[5])

Moreover, eco-entrepreneurs operate in highly specialised and technical industries, and thus, they are in need of equally specialized and technical skills, which tend to be in short supply. Simultaneously, the eco-entrepreneurs themselves may be limited in their skills. This "skill gap" has been verified by start-up firms operating in green niches in Canada, France, and Italy, who highlight difficulties in maintaining relationships with suppliers, customers, and partners due to staff and skill shortage. These constraints are especially challenging for eco-

[14] Admittedly, there are methodological shortcomings with these estimates. But, they are useful for illustrative purposes. For more details on methodology, see (International Finance Corporation, 2017[40]).
[15] This data was collected in year 3 of the longitudinal study.

entrepreneurs because they are often attempting to change the status quo and face "lock-in"[16] effects of existing technologies and "maintenance patterns"[17] that seek to stabilise past practices (OECD, 2013[6]). However, there is some evidence that eco-entrepreneurs are well-suited to overcome these lock-in failures and maintenance patterns because they often transform institutions by changing or creating social norms, property rights, and government legislation. An example of this is the U.S. organic food industry's lobbying for the Organic Food Production Act, which established a set of government-enforced standards for organic food production (Pacheco, Dean and Payne, 2010[43]). Eco-innovation and eco-entrepreneurship among SMEs is also limited by access to knowledge networks (external sources of human capital) such as research institutes and universities, who can provide both scientific and entrepreneurial support (Creech et al., 2014[42]).

It's important to note that both financial and human capital constraints do not operate in isolation. In fact, they re-inforce one another. For example, part of the reason that eco-entrepreneurs have trouble accessing finance is that investors have difficulty finding eco-entrepreneurs that possess the skills to understand the financial market (OECD, 2013[6]). Collectively, these burdens prevent SMEs from implementing measures that generate the greatest improvements in sustainability. Environmental management systems, which often require systemic changes in SMEs, are extremely cumbersome for SMEs because of their high financial and human resource requirements[18] (OECD, 2018[5]). So, SMEs' business conditions favour piecemeal approaches to greening, which generate less "green" benefits than systemic changes. This explains why relative to large companies, a much smaller share of SMEs adopt EMS practices. In fact, in Canada, only 12%-28% of SMEs are engaged in EMS practices, compared to 70%-78% of large companies (OECD, 2013[6]).

From SME business performance to inclusive growth

Overview of labour market implications

One question that emerges from our discussion of the impact of greening on SMEs' business outlook is how these impacts affect SMEs' contribution to inclusive growth via the creation of job opportunities. Regardless of enterprise size, UNEP expects four (potentially five) ways in which labour markets will adjust to the green transition (in particular, environmental regulation), as summarized below: (Martinez-Fernandez, Hinojosa and Miranda, 2010[44])

- Additional job creation: *For example, the manufacturing of pollution-control devices would generate new jobs in that field.*
- Substitution of employment: *Jobs would shift from environmental damaging industries (fossil fuels) to cleaner industries (renewable energy).*
- Elimination of certain jobs: *Banning certain products (e.g. packaging material) would discontinue their production and thus, eliminate some jobs without direct replacement.*
- Transformation of jobs: *Existing jobs (e.g. electricians, construction workers, etc.) would be transformed to incorporate green skill sets and work methods.*
- Job migration: *Labour migrating (in conjunction with firms) from a country with strict environmental policies to one with more relaxed policies.*[19]

[16] Maintenance patterns are characterized by "a strict adherence to the usual way of doing things" and is reflected in every-day behaviour of individuals and processes of institutions (OECD, 2013[6]).

[17] Lock-in failures "prevent new markets from developing when dominant designs make the entry barriers for new technologies too high" (OECD, 2013[6]).

[18] This is especially true for traditional environmental management systems like ISO 14001. As a response, governments have begun experimenting with introducing less burdensome frameworks for SMEs. See (OECD, 2018[5]) for more details on simplified EMS schemes.

[19] Literature is inconclusive to what extent this effect actually holds. Recent studies have shown that the impact of carbon leakage (i.e. polluting industries moving to countries with relaxed regulation) on employment is rather limited (Martinez-Fernandez, Hinojosa and Miranda, 2010[44]).

Although existing research is more limited on the specific labour market implications on SMEs, it can broadly be bucketed into the impact of greening SMEs on quantity of jobs (job creation and destruction) and quality of jobs (job transformations and work satisfaction).

Job creation and destruction[20]

One sector-level study on the impact of greening SMEs on job creation concerns the implementation of an ENWORKS-type[21] program across the EU28. These estimates (as shown in Table 6) represent the maximum potential jobs that would be created at a sector level if this type of program was implemented in these EU28 countries (because of the associated resource cost savings that SMEs would accrue). It is important to make two points about these estimates. Firstly, the jobs created and secured are not distributed evenly across the EU28. Whereas in Italy, it is estimated that there would be a maximum of 117,124 potential jobs created and 327,493 potential jobs secured, in Slovenia, the numbers are 3,747 and 10,559 respectively. One explanation for this is that the SME sector in Slovenia is smaller than that in Italy (Fleet, Palladino and Da Costa, 2015[29]). Secondly, the estimates don't necessarily reveal that greening SMEs creates jobs; rather, it suggests that greening support programs like ENWORKs generate the necessary cost savings to create and secure jobs.

Table 6. Labour Implications[a] of the Implementation of ENWORKS-type program across EU28

Sector	Jobs Created	Jobs Secured
Food and Beverage	45,742	96,606
Energy Power and Utilities	0	0
Environmental Technologies	16,145	65,988
Construction	658,648	1,863,096
Total	*720,535*	*2,025,690*

Note: **a.** The estimates are an ex-ante estimate of the jobs created and secured, based on the cost savings from the ENWORKS-type program and assuming that all SMEs realize the cost savings (i.e. maximum jobs created and secured).
Source: (Fleet, Palladino and Da Costa, 2015[29])

This job creation potential is echoed in studies of other greening models. For example, it is estimated that a circular economy in the U.K. would create up to 50,000 new jobs in dismantling, recycling, organic treatment and in energy from waste facilities. Similarly, in the Netherlands, improved circular business models in certain industries (base metals and metal product, electronics and electrical appliances, biotic waste management) would create approximately 54,000 jobs[22] (Rizos et al., 2015[28]).

Moreover, a recent ILO study has examined the impact of firms' decoupling sales growth and GHG emissions on sales and employment. Firms that have decoupled sales growth from GHG emissions are those that increase sales while reducing GHG emissions; coupling sales growth GHG emissions implies increasing sales while increasing GHG emissions.[23] The results are summarized in Table 7. The takeaway here is that decoupling sales growth from GHG emissions doesn't inhibit sales or employment growth, though growth does occur at a slower pace than coupling the two. However, the in the long run, coupled firms are likely to experience slower growth due to more volatile energy prices and as shown by the fact that coupled firms that experienced a sales decline had a much steeper decline than those that were decoupled. Thus, decoupling growth from GHG emissions (i.e. greening) is expected to

[20] Job creation and elimination estimates are generally quite contested and vary by the assumptions made in the methodology. So, they rarely provide definite conclusions.
[21] ENWORKS is a U.K. based program that supports SMEs on resource efficiency issues.
[22] It is unclear if this figures concern exclusively SMEs.
[23] It is unclear whether these figures exclusively focus on SMEs.

at least not hinder SMEs' job creation potential; at best, in the long run, it can do so at a faster rate than without greening (ILO, 2018[45]).

Table 7. Impact on Sales and Employment of Decoupling Sales from GHG Emissions[a,b] (2010-15)

Sector	Sales Change (%)	Employment Change (%)
Coupled sales growth	6.9%	6.8%
Decoupled sales growth	4.1%	2.7%
Coupled sales decline	-5.4%	-3.3%
Decoupled sales decline	-4.4%	0.3%

*Notes:***a.** Firms that have coupled sales growth are those which increased sales and GHG emissions. Firms that had decoupled sales growth are those that increased sales while reducing GHG emissions. Firms that had coupled sales decline experienced a decline in sales and GHG emissions. Firms that had a decoupled sales decline experienced a decline in sales with an increase in GHG emissions; **b.** Results are based on 760 enterprises with information in FactSet reporting to CDP in 2010 and 2015.
Source: (ILO, 2018[45])

Evidently, the literature specific to the SME size-class is pretty limited in its scope. Firstly, it is primarily focused on developed markets – mostly European ones. The labour market implications of greening in developing countries – regardless of enterprise size-class – is under-researched. In fact, a survey of 15 existing studies on this topic found only one that explicitly mentioned a developing country (Brazil). Similarly, the World Bank's review of energy and employment tabulates encompasses 33 studies; only five focused on some aspect of energy in developing countries. The rough conclusion from the available – albeit patchy - data is that green jobs are a bigger part of the workforce in developed countries than in developing ones (Bowen and Kuralbayeva, 2015[46]). Moreover, the literature on labour market implications of greening SMEs rarely focuses on the potential job destruction in polluting industries. The ILO estimates that by 2030, the low-carbon transition will result in about 6 million jobs lost, with the petroleum refinery and extraction of crude petroleum sectors being hit the hardest. The *net* employment effect, however, is thought to be positive, since about 24 million jobs are expected to be created (ILO, 2018[45]). The question that this raises is: how does this apply specifically to SMEs? To date, that is a knowledge gap.

Job transformation and workforce satisfaction

Greening SMEs is also likely to have qualitative impacts on jobs, an important consideration in inclusive growth. There is some, albeit anecdotal, evidence, that greening SMEs can improve job quality and satisfaction, which would address our earlier point that compared to larger firms, the quality of jobs offered by SMEs is inferior. Firstly, there is some evidence that going green – and involving the employees in the process - improves their commitment to and pride in the firm, yielding benefits of increased labour-productivity (Winston, 2009[47]). For example, a study by the Ateneo Center for Research and Development of firms in Philippines showed that employees of firms that were engaged in greening demonstrated more pride in their company and greater willingness to act positively in its behalf (Abella and Yap, 2012[48]). This result was replicated by a study of medium and large enterprises in Lithuania, which showed that increasing corporate social responsibility (CSR)[24] practices concerning suppliers, businesses, and local communities increased internal employee motivation (Skudiene and Auruskeviciene, 2014[49]). Secondly, certain environmental standards and regulations are often directly linked with other requirements that improve the quality of jobs offered by firms. For example, some ISO standards have components that promote employee training and development (World Bank, 2017[26]). Adoption of green practices also yield process efficiency gains and thus improved organizational functioning. For example, a study of the Iranian pharmaceutical industry showed that increased adoption of CSR helped increased adoption of better management practices (Mehralian et al., 2016[50]).

[24] Greening measures are sometimes carried out under the umbrella of corporate social responsibility, a set of internal organisational policies that aim to improve a given company's social and environmental impact.

Another important consideration here is the transformation of the types of jobs in demand (i.e. jobs in green industries). Thus, as the OECD acknowledges, "one of the key determinants of the ease of the transition for the labour force will be the transferability of skills across sectors." In other words, labour flexibility will be a key consideration in driving inclusive growth. For employees of SMEs, this means upgrading skills to meet the new skill requirements of green industries. In particular, this would include sectors like energy-efficient construction and retrofitting, renewable energy, recycling, and environmental services. On one hand, this represents an opportunity for green SMEs to deliver inclusive growth by contributing to the skill development of their employees. On the other hand, given their resource constraints and lack of skill-building opportunities, the green transition may disadvantage employees of SMEs and thus increase the skill-gap between small and large firms (OECD, 2017[51]).

Distributional impacts

The distributional impacts of greening SMEs is difficult to generalize in broad terms because of SMEs' intrinsic heterogeneity. Since the impact of the green transition is quite sector specific, one way to hypothesize the distributional impact of greening on SMEs is to understand the share of SMEs in each sector and identify which of these sectors is most relevant for the green transition. The sectoral diversity of SMEs by country is reflected in Table 8. The data reveals that there are noticeable – although not immense – variation in the distribution.

Table 8. SME[a] Share by Sector and Country-Income Group

Country Group[b]	Manufacturing	Trade	Services	Agriculture/Other
Developed	22.0%	25.0%	52.0%	1.0%
Developing	19.9%	30.6%	41.0%	8.5%
G20 Developing	21.0%	31.0%	44.0%	3.0%
Other Developing	18.0%	32.0%	41.0%	8.0%
LDC	24.0%	23.0%	37.0%	16.0%
All Countries	20.0%	30.0%	42.0%	8.0%

Notes: **a.** Excludes micro-enterprises; **b.** The definition of each country group is explained in the source document.
Source: (World Trade Organization, 2016[34])

Moreover, most relevant sectors for the green transition vary quite a lot by country. For example, in China, these sectors are agriculture, manufacturing, energy, building and construction, transport, environmental protection and pollution, treatment, services whereas in Barbados, the most relevant sector is renewable energy. In Spain, it is forestry, waste, services, and energy, but in Kyrgzstan, it's agriculture, construction, mining, metalworking, and eco-tourism. The point here is that the distributional impacts are likely to vary at a country-level and so far, little literature on SMEs has focused on this. This represents an area for future work (ILO, 2018[45]).

Combining inclusive business models and green business models

Another way that SMEs can contribute to both green and inclusive growth is by adopting green, inclusive business models (GIB). These models – an extension of the inclusive business models described in chapter 2 - entail following a triple bottom line approach where businesses deliver ecological and social value while operating with a financially viable business model. We outline two examples below (Krämer and Herrndorf, 2012[52]).

- Grameen Shakti (Bangladesh): *A rural power company that sells Solar Home Systems (which rely on solar energy) to un-electrified villages in Bangladesh. In doing so, it improves energy access in an environmentally-friendly way.*
- Ecotact (Kenya): *A public sanitation company that builds and operates toilet and shower facilities in disadvantaged areas. This business model improves access to essential services while reducing the urban pollution from human waste.*

That being said, these SMEs do face several challenges including, among others: (GIZ, 2017[15])

- Informational barriers: *These include lack of market research on the low-income segment, market creation challenge for products that do not have a perceived need, lack of information on production processes for green products, and low levels of education among BoP to standardize these products.*
- Financial barriers: *These include limited access to credit for entrepreneurs, unproven business models and a corresponding lack of credibility with bankers, limited purchasing power of BoP, low levels of financial inclusion among BoP.*
- Market access barriers: *These include lack of access to the BoP market, limited green and inclusive public procurement by governments, low awareness and sway for sustainable products among low-income segment.*

Takeaways: to what extent can SMEs enable both green and inclusive growth?

The takeaways of this section can be boiled down to the following points:

- To the extent that SMEs' business performance and competiveness directly drives inclusive growth, there is evidence that through cost reductions and increased sales and market share, greening SMEs enables inclusive growth. Conversely, the market uncertainty and resource burden of greening can hinder SMEs' ability to deliver inclusive growth. SMEs may not also be fully informed about the relevant greening measures and their costs and benefits, thus making it difficult for them to deliver both green and inclusive growth.
- Literature also shows some quantitative evidence that the business benefits of greening SMEs leads to job creation, but estimates of job destruction are missing. Impacts in developing countries is also under-researched, which is problematic because their labour markets and factor prices are often different from developed countries, so results from one don't necessarily translate to the other. Similarly, there is some evidence that greening SMEs can improve job quality through improved morale and management, but data on wage impacts is scarce. In addition to creating and destroying jobs, greening can transform jobs. In this regard, SMEs need to provide upskilling opportunities for their employees. If done effectively, this is a major opportunity to deliver inclusive growth; if not, it could exacerbate the differences in career development opportunities between large firms and SMEs.
- Research is limited on the distributional and net impacts of greening SMEs, which is partly understandable given their vast heterogeneity. Since each country has a different sectoral composition of SMEs and greening can be specific to sectors, distributional effects at country-sector level would be an ideal area of future work.
- Hypothetically, SMEs can integrate green and inclusive business models and pursue a "triple bottom line." However, they do face a host of external and internal barriers.

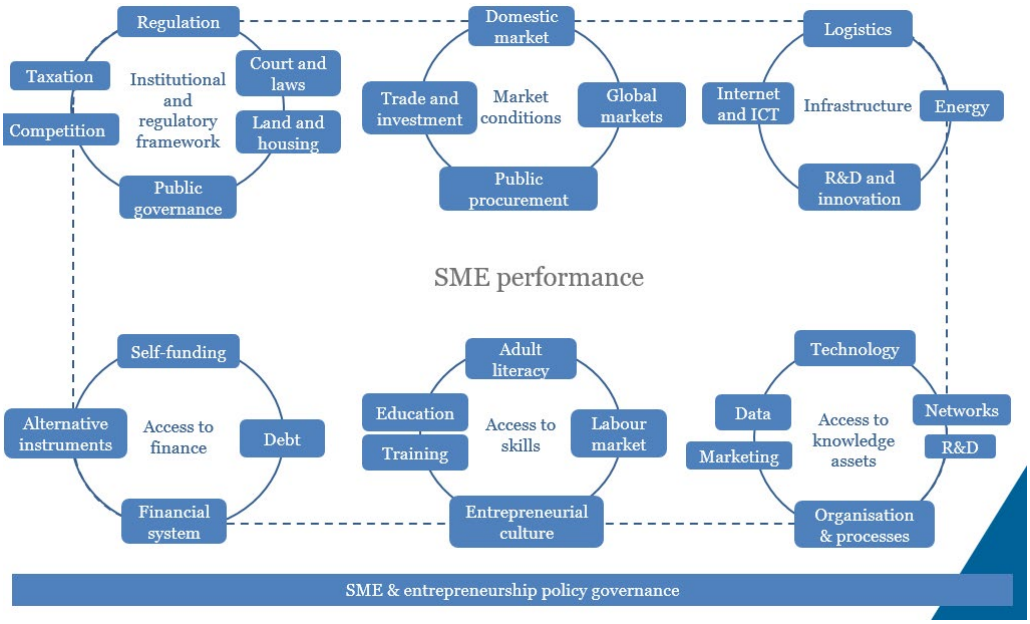
Going forward, to understand the best policy frameworks suited to reconcile inclusive and green growth, this paper will consider two factors: policies geared towards greening that address the business needs of SMEs and policies that explicitly integrate both inclusive and green growth goals.

5. Policy Frameworks

Introducing the framework

Figure 1 shows the framework on SME performance proposed by the OECD SME and Entrepreneurship Outlook (forthcoming). It includes six pillars that affect SME performance; three of them concern SMEs' business environment (institutional and regulatory framework, market conditions, and infrastructure) and the remaining three concern SMEs' access to strategic resources (finance, skills, and knowledge assets). This framework is a useful guide for our assessment of existing policy frameworks that reconcile green and inclusive growth, especially since – as acknowledged earlier – SMEs are an engine for job creation and their business health is important for inclusive growth. This section will examine existing policy frameworks and tools within each of these pillars – including a cross-cutting section on SME governance - and how each can enable green and inclusive growth.

Figure 1. Conceptual Framework on SME Performance



Source: OECD SME and Entrepreneurship Outlook (forthcoming)

Institutional and regulatory framework

Regulation

Environmental regulations have an important role in incentivizing and supporting eco-innovators, eco-entrepreneurs, and eco-adopters. For eco-innovators and eco-entrepreneurs, regulation is vital to tackle market failures, such as monopolies, to create room for eco-innovation. This includes eliminating barriers to entry as well as creating new markets for green products (OECD, 2013[6]). Relatedly, the Porter Hypothesis suggests that regulation can also incentivize innovation among polluting firms. While there is little empirical support in developed countries for this hypothesis, it is expected to hold in developing countries that rely on more outdated technologies, which are both less productive and more polluting (Tanaka et al., 2014[53]). For eco-adopters, regulation is concerned with compliance such that SMEs meet the required standards of environmental performance.

Literature suggests that there are several ways that environmental regulation can foster inclusiveness. Firstly, regulations ought be "smart"[25] and ensure appropriate regulatory burden for SMEs. This is important for SMEs because they often have limited regulatory capacity and OECD literature has shown that the proportion of resources that SMEs divert to administrative functions is larger than that for large firms. (OECD, 2018[5]) This is why many EU member states apply the "SME Test" when designing government legislation and regulation. This test seeks to identify the SMEs affected by the proposed regulation, consult them, measure the potential impact, and assess alternative mechanisms and mitigating measures. (European Comission, 2017[54]) This comprehensive approach to regulating SMEs is a useful reference in greening SMEs through regulation.

One way to reduce the burden of environmental regulation on SMEs is to shift to simplified regulatory regimes. This simplification can entail shifting from the now-dominant permitting system of regulation to the use of a standardised, rules-based approach. Regulation is also much more effective when the imposed requirements are tiered by environmental risk of the regulated installations. The rules-based approach also provides certainty for SMEs in achieving compliance while reducing bureaucracy and costs to regulatory agencies. The simplification can also entail removing non-essential and redundant aspects of environmental regulation. In fact, regulation redundancies can pose a significant burden on SMEs. For example, a recent survey in the UK shows that micro-businesses spend more time demonstrating compliance – preparing for inspections, completing paperwork, and record keeping – than actual activities that comply with regulations. This is due to duplicate regulations and redundant information gathering (OECD, 2018[5]). Regulatory simplification can be especially relevant to developing countries, who by reducing bureaucratic and administrative inefficiencies and complexities can spur competiveness and transparency (OECD, 2011[55]). Table 9 summarizes three examples and types of environmental regulation simplification.

Table 9. Examples of Environmental Regulation Simplification

Country	Type of Simplification	Case Study
Netherlands	Tiering regulation by risk	Tiering installations by risk (Type A, B, and C); Type A facilities (minimal environmental impact) are regulated by general, not-activity specific rules whereas Type C facilities (important environmental impact) require an environmental license and compliance with activity-specific rules.
Ukraine	Eliminating regulatory redundancies	Elimination of procedures for prospecting and processing mineral at central and provincial level and revision of environmental protection comittment at district level so as to include to apply only to appropriate areas.
Vietnam	Simplifying permitting process	Simplification of water permitting procedure by adopting a single window concept, where the permitting authority directly communicates with relevant state institutions.

Sources: (OECD, 2018[5]); (OECD, 2011[55])

[25] Smart regulation, broadly defined, delivers its policy goal in an efficient manner and does so at least cost (to both the regulating body and the regulated actor). Sometimes, other criteria like equity and political acceptability are also considered (Gunningham and Sinclair, 1999[79]).

Secondly, regulatory regimes can also be used to incentivize SMEs to implement better environmental management systems. For example, the adoption of ISO 14 001 EMS may entitle operators to certain privileges in the permitting process (OECD, 2018[5]). The U.S. EPA's Small Business Compliance Policy reduces monetary penalties for SMEs that discover violations voluntarily (U.S. EPA, 2018[56]). Similarly, the frequency of inspections may be linked to the quality and presence of a firm's EMS. In France, for example, installations registered with EMAS[26] are exempted from routine inspections (OECD, 2018[5]). These regulatory incentives not only encourage greening, but also provide benefits that improve SME performance and thus, any contribution to inclusive growth.

Fiscal policy

The use of taxation, or more broadly fiscal policy (subsidies and taxation), can be useful to modify price signals so that firms take into account externalities and properly value environmental resources (OECD, 2013[6]). In doing so, these policy tools contribute to growth. These policy tools can be grouped into two buckets: revenue collection and government spending.

As for subsidies, on principle, governments should not provide subsidies to incentivise compliance with environmental regulation from SMEs. Governments can, however, use direct subsidies and free technical assistance to encourage SMEs to go beyond compliance. This can be done through subsidies encouraging investments in green technology[27] or subsidies for consultancy services, as shown in Table 10 (OECD, 2018[5]). These policy tools are important for inclusive growth as well since they reduce the financial and skill burden for SMEs and in doing so, make it greening more accessible. It is important to note, here, that while the literature is only anecdotal, evidence suggests that governmental technical assistance is limited in some developing and emerging countries. For example, in Moldova, only about 7% of SMEs receive any technical assistance for greening from government authorities (OECD, 2015[58]).

Table 10. Case Studies of Direct Subsides and Technical Assistance

Name of Program	Country	Explanation
Ecology Premium Programme	Belgium	This program subsidizes enterprises that invest in environmental technologies. The size of the subsidy depends on the environmental performance of the investment, measured by an environmental performance factor (a qualitative indicator ranging from 0.6 to 1).
Uttar Pradesh Mini-Grid Policy	India	Capital grants for mini-grid developers to speed up electrification in rural and un-electrified areas through renewable energy. This direct subsidy fuels both greening (via renewable energy uptake) and inclusive growth (by increasing energy access).
Enterprise Ireland	Ireland	This public industrial development agency provides grants to SMEs as a percentage of consultancy costs - up to 50% - to identify and implement green measures.

Sources: (OECD, 2018[5]); (IEA, 2016[57])

[26] EMAS (Eco-Management and Audit Scheme) is a "management instrument developed by the European Commission to evaluate, report, and improve their environmental performance" (European Comission, 2018[77]).

[27] In the case of renewable energy, governments can also use feed-in-tariffs to incentivize investment. Feed-in-tariffs (FiT) offer long-term contracts and guaranteed (and favourable) pricing to renewable energy producers, thus making renewable energy viable in the long-term for companies and individuals. For an overview of the FiT system in Malaysia, see (Government of Malaysia, 2018[82])

Furthermore, governments can also promote greening by reducing subsidies for resource-intensive and high-pollution sectors and create opportunities for eco-innovation[28] (OECD, 2013[6]). This is especially true for energy subsidies that are sizeable in all countries, advanced or developing; in 2011, these subsidies amounted to US$ 4.2 trillion. Whereas China and the United States are top energy subsidizers in gross terms, countries that lead the way in terms of energy subsidies as a percent of GDP are Ukraine, Bosnia and Herzegovina, and Serbia. The cost savings from eliminating these subsidies could be used to fuel inclusive growth. For example, in advanced countries, these savings could cover one quarter of public health spending; in emerging countries, these savings could be double the public health spending; and in low-income countries, it could be one and half times the public health spending (IMF, 2015[59]).

Taxation is another outlet for government to incentivize eco-entrepreneurship, eco-innovation, and eco-adoption. Alteration in the government's taxation schemes can incentivize greening among SMEs and subsequently ease their burden. Notably, there are two tax-related channels, through which governments can do this: tax exemption and tax incentives. Tax exemptions allow entrepreneurs to make deductions for environmentally friendly investments and encourage enterprise to go beyond compliance. Tax incentives include privileges like accelerated depreciation and reduced corporate or corporate taxes (OECD, 2018[5]). Table 11 illustrates some examples.

Table 11. Case Studies of Tax Incentives

Program Type	Country	Explanation
Tax Exemption	Netherlands	The Environmental Investment Allowance (MIA) allows companies to deduct environmental investments up to 36% of the investment cost.
Tax Incentives	India	As of 2004, the accelerated depreciation policy for renewable energy investors allowed 100 percent depreciation in the first year of operation. This helped to create the largest wind power industry among developing countries

Sources: (OECD, 2018[5]); (Institute for Fiscal Studies, 2015[60])

Complementarily, by taxing negative environmental externalities, the government can encourage greening. To that end, as acknowledged by the Vietnamese Prime Minister, Nguyễn Tấn Dũng, "[a] price on carbon would catalyse green investment and give companies the certainty they need to green their industries and supply chains" (Cottrell et al., 2016[61]). In OECD countries, excise taxes on harmful environmental products represent the majority of environmental taxes. These taxes are shown to be of importance for SMEs. In fact, 21% of small firms, 29% of medium firms and 42% of large firms cite pollution taxes as their motivation for eco-innovation (OECD, 2013[6]).

Having discussed both subsidies and taxes, the question that follows is: which of these tools is better suited to deliver inclusive, green growth in SMEs. To that end, recent OECD research

[28] An important question here is how reducing these subsidies will impact SMEs. This question falls within the broader literature of the role of subsidies in SME-development. Whereas some adopt a pro-SME view and advocate directly subsidizing SME development, others are more sceptical of the role of subsidies in developing SMEs. See, for example, (Levine, 2005[80]) and (Beck et al., 2004[81]) for more details.

suggests that present and expected future environmental regulations or taxes are stronger motivation for eco-innovation (i.e. “sticks”) than “availability of government grants, subsidies, or other financial incentives” (i.e. “carrots) among SMEs (OECD, 2013[6]).

Access to finance

As discussed previously, SMEs – in both developing and developed countries - face a financing gap, whereby a significant number of SMEs cannot access requisite or beneficial capital. This financing gap is much more pronounced for implementing green measures (e.g. energy and resource saving and pollution abatement) at SMEs. Literature on green and sustainable finance identifies the following specific barriers in SMEs accessing green finance (McDaniels and Robins, 2017[20]).

- Banks and financial institutions lack robust data on green and sustainable financing needs of SMEs.
- Environmental performance is not considered in the assessments of SME funding decisions.
- There is a lack of green and sustainable financing products for SMEs, especially across the enterprise life cycle (e.g. seed funding) and targeted for specific environmental goals (e.g. energy efficiency).
- Limited diversity of financial institutions that offer long term and patient sustainable financing for SMEs.
- SMEs are unaware of the range of sustainability-related investments as tools to foster competitiveness.

Prior to delving into policy tools, it is important to make a slight distinction between green and sustainable finance. Whereas green finance is capital intended to generate environmental benefits, sustainable finance is more comprehensive and concerns all three facets of sustainable development: economic, social, and environmental (McDaniels and Robins, 2017[20]). Thus, sustainable finance represents an opportunity to directly link inclusive and green growth goals. That being said, the two are undeniably linked as green finance fits squarely within the bounds of sustainable finance.

Approaches to address the aforementioned barriers to finance distinguish between developing and developed countries. For developed countries, Table 12 summarizes the relevant policy tools for mobilizing green and sustainable finance for SMEs.[29]

Table 12. Summary of Relevant Policy Tools to Improve Access to Sustainable Finance from G7 Experience

[29]These tools are based on the experience of G7 countries. However, It is not implied that these channels do not apply to developing countries; these are just the policy channels that are most relevant to developed countries.

Policy Channel	Explanation	Example
Public Finance Institutions	These institutions are designed to correct market failures and provide financial services – that are not currently provided by the market – to achieve public policy objectives. They include promotional banks, and are core providers of finance for SMEs and are important channels to rectify the SMEs' lack of access to green and sustainable finance	KfW (Germany), which provides low-interest loans to SMEs for investments in energy efficiency
Bank Lending	This is the primary source of external capital for SMEs. They can provide support for greening either within broader sustainable banking priorities such as energy efficiency or green property finance or by applying triple bottom line philosophy in all financing decisions	Commercial banks, like Credit Agricole and ING, which have established sustainable banking teams; banks like UniCredit employ, which proxy data to evaluate each portfolio's impact on terrestrial resources and water.
Debt Markets	Proceeds from debt finance can be ear-marked for investment in green activities either through bank-issued green bonds or green bonds issued by unlisted companies.	Lloyds Banking Group ESG Bond in the U.K., which are based on loans to SMEs with positive environmental and social impacts; SMEs in Italy, which use the green bond market to raise capital.
Impact Investing	Impact investment funds aim to explicitly create social and environmental benefit in addition to financial return.	Specialized clean-tech funds, which focus on start-ups and early stage companies; environmental funds, which invest in arrange of companies, including conventional corporations
Fintech	Financial technology can be used by SMEs to increase their access to finance in innovative ways	Crowdfunding applications; smart technologies to reduce transaction cost for SMEs

Sources: (McDaniels and Robins, 2017[20]); (Cochran et al., 2014[62])

The case of developing countries in accessing green and sustainable finance is different because they face two very particular challenges (UNEP, 2016[63]).

- Reliance on external capital flows: *Due to their lower GDPs and weaker fiscal positions, developing countries rely on international financial flows, such as foreign direct investment, remittances, foreign aid, and so on. This means investment in greening energy, waste, transport, water, and agricultural sector often relies on external capital flows.*
- Underdeveloped financial systems: *This is especially true in areas vital for green investment such as structuring major products, credit and insurance provision, and risk management. This underdevelopment is often accompanied by a noticeable informal finance sector, which operates outside the eye of official channels.*

That being said, there is evidence of certain financial innovations in these countries to improve access to green and sustainable finance (UNEP, 2016[63]).

- Green banks: *The Bangladesh Bank (central bank) uses incentives and moral persuasion to encourage the country's financial sector to increase financing, in particular, to SMEs and green businesses and industries. It also offered US$25.5 million in liquidity support to lenders for green financing.*
- Sustainable stock markets: *The Egyptian Stock Market became the first stock market in the MENA region and the second world wide to launch a ESG index, which allows investors to benchmark the environmental, social, and governance impact of their portfolio.*[30]
- Technology enabled innovation: *Through crowdfunding alone, it is estimated that developing countries could attract US$95 billion (in green investment and otherwise) by 2025.*

Market conditions

Here, the key goal is to increase market demand. This not only incentivizes eco-innovation, eco-entrepreneurship, and eco-adoption by limiting uncertainty, but also allows SMEs to reap commercial benefits of greening and consequently, contribute to job creation.

Green and sustainable public procurement

Green public procurement aims to create demand for green product and services when private demand is insufficient. Theoretically, by creating demand for environmentally friendly goods and service, governments can help drive down costs for these products, and thus make them more affordable for the general public. In other words, green procurement can kick-start a virtuous cycle for green product demand. Green procurement may be especially important to SMEs because government contracts could represent a significant share of their sales (OECD, 2018[5]). In the U.S. alone, it is estimated that spending power of public procurement across all levels of government is $1.5 trillion annually (Conway, 2012[64]). Similarly, estimates suggest that green public procurement co-ordinated at all levels of government may affect 20% of purchase in a targeted market (OECD, 2018[5]).

Green procurement policies can either add a condition of meeting specific environmental standards to tender for government contracts or exclude firms not certified by certain environmental standards. For example, certain green public procurement guidelines require that a firm's products contain a minimum amount of recycled content or achieve specified levels of energy efficiency. For example, the U.S. Federal Government mandates that 95% of all government contracts meet sustainability requirements (OECD, 2018[5]). A case study of green public procurement in an emerging economy is that of Malaysia. The 11th Malaysia Plan, a national planning document, mandates that 20% of the country's public procurement must abide by certain environmental standards by 2020. Initially, the public procurement plan was limited to a handful of ministries; this program has since expanded and is now adopted by all government bodies. In fact, in 2016, Malaysia's public procurement program, cumulated across all government bodies, had a value of RM482 million and reduced CO_2 emissions by approximately 100 kilotons (Malaysian Green Technology Corporation, 2017[65]).

It is important to note here that there is also a more direct way of linking inclusive and green growth vis-à-vis public procurement. That is, government agencies and institutions can implement green and inclusive public procurement (or, "sustainable procurement") that seeks to achieve an appropriate balance between the three tenets of sustainable development: economic, social, and environmental (European Comission, 2016[66]). An example of this is Natural England, a public sector organization responsible for environmental conservation, whose public procurement policy aims to "encourage [its] suppliers to adopt practices that

[30] As acknowledged by the European Commission, listing on stock exchanges is beneficial for SMEs. It reduces their dependency on bank finance, allows them to diversify investors, and improves their public profile. Thus, "green" stock exchanges can play a role in delivering environmental benefits while ensuring financial inclusion for SMEs (European Comission, 2018[83]).

minimise their environmental impact and deliver community benefits"[31] (Natural England, 2007[67]).

Supply chain and participation in global value chains

Another mechanism for greening SMEs by tackling their market demand constraints is through pressure and guidance from larger corporations along their supply chain. Relative to large corporations, SMEs are exposed less to environmental scrutiny and regulation. But, these environmental pressures are increasingly passed along to SMEs that are suppliers to big corporations (Lee, 2008[68]). Simultaneously, supply chains can ease the financial, commercial, and organizational burden of greening SMEs because they can offer SME's access to environmentally conscious large firms, knowledge, and global markets (OECD, 2018[5]).

Larger firms also have strong motivations to encourage "greening" among SMEs. These greening practices can deliver efficiency gains and risk reductions that can be passed along to the larger firms (OECD, 2018[5]). Moreover, large corporations are increasingly realizing that given the fragmentation of the production process, their environmental objectives requires the greening of their entire supply chain. Thus, they are increasingly investing resources in developing the environmental capabilities of their suppliers – including SMEs (Lee, 2008[68]).

Simply, the greening of supply chains encourages greening among SMEs through two channels: increasing demand for green products and reducing barriers to greening, both of which can also improve SMEs' job creating potential by improving their business performance. An example of green supply chains increasing demand is Zero Waste Scotland, a voluntary agreement in which retailers pass down resource efficiency requirements down their supply chain (OECD, 2018[5]). An instructive case study of encouraging greening via supply chain pressure is that of Korea. Prior to the 1990s, the focus of Korean policymaking was economic growth. But, following external pressure from environmental regulation in the EU and since the Korean economy depended heavily on exports (more than 65% of the total cars made in Korea were exported), the Korean government instituted richer environmental management throughout the supply chain, especially for SME suppliers. This program allowed SMEs to access the environmental know-how of the buying companies and in the process, facilitated greening among SMEs while allowing them to maintain their competitiveness (Lee, 2008[68]).

There are also examples of large firms that not only incorporate environmental criteria in their supplier decision, but also social welfare criteria. This is an example of how supply chain pressure can be used to deliver both green and inclusive growth. For example, Natura, a Brazilian-based cosmetics and personal firm, selects its supplier based on their environmental and social costs. Simultaneously, it provides them guidance on how to use their circular business model (UNEP, 2014[22]).

Certification schemes and eco-labels

Certification schemes and eco-labels allow SMEs to reap the benefits of meeting environmentally regulation by differentiating their products and accessing "green niche" markets. These certification schemes and eco-labels are often sector specific and ought to be a product of joint-work between trade bodies and environmental regulatory agencies. A key caveat to green certification schemes is that they should be designed in ways that the commercial benefits to SMEs outweigh the costs, which include certification costs and indirect costs of compliance (OECD, 2018[5]). A good case study of this is the Forest Stewardship Council Certification employed by the Anderson-Tully Lumber Company. For them, estimates suggest that the gross financial benefit from the certification scheme was roughly $1.3 million. After subtracting direct and indirect costs, the net financial benefit was $771,000 (Schreiber and Vincent, 2012[69]).

For SMEs in developing countries, certification schemes can be tools for product differentiation in international markets. But, they often require support to overcome the costs of certification. For example, in Nepal, the rampant use of pesticides and chemicals among tea exporters

[31] For a global review of sustainable public procurement practices, see (UNEP, 2017[86])

created not only an environmental concern, but also a concern from importers in international markets. So, to support tea-exporters in getting an organic certification, the Nepalese government not only provided cash reimbursements to the producers, but also instituted tax exemptions for five years for enterprise specialising in packaging and export of organic teas (UNEP, 2013[70]).

Eco-labels operate on the same premise as certification schemes; but, whereas the former is for firms, the latter is for products. These labels, similar to certification schemes, allow businesses to tap into consumer demand for environmentally friendly goods by displaying a legally protected symbol or logo. They are often administered by third party agencies and some examples include the EU Ecolabel, the Scandinavian "Nordic Swan" and the German "Blue Angel" (OECD, 2018[5]).

Access to skills

The role of skills as a driver of green and inclusive growth has two related elements. The first question is: how to enable SME access to sufficient technical and managerial skills for them to implement greening measures or pursue eco-innovation?

One approach is to build SMEs' internal capacity through technical assistance and capacity building programs. A recent survey on SME support initiatives in the EU identified about 230 technical assistance programs. Over half of these programs were geared towards providing access to information, self-assessment tools, case studies linked to resource efficiency measures. The others offered tailored, face-to-face services to firms. Whereas the former group of programs focus on general access to information, the latter were geared towards helping businesses apply general knowledge to their specific business cases. To ensure that resource efficiency and greening are sustainable for SMEs, education and direct capacity building should be directed towards managers. These measures include a combination of long-term on-the-job training and train-the-trainer programs. These messages reflect the OECD's recommendations for greening SMEs in Moldova. There, direct capacity building will be focused on the following elements: (OECD, 2018[5])

- "Train-the-trainer" workshops directed at company managers and expert members of business associations, supported by the Ministry of Environment and Ministries of Economy and Agriculture
- Regional and national level workshops and trainings on efficient management of business co-ordinated by ODIMM.
- Seminars on the needs and capacities of SMEs to promote energy efficiency measures and renewable energy sources.

The second question concerns how to facilitate different transitions for the labour force employed by the SME sector. In particular, access to skills need to focus on the following three criteria: (Hye Mondal Md Zabid Iqbal, 2009[71])

1. Retraining workers for whom the green transition has rendered their occupations obsolete
2. Training green collar occupations which emerge along the green transition
3. New types of skills that need to be incorporated into existing jobs

For each of the aforementioned criteria, Table 13 provides relevant case studies based on a study in Bangladesh.

Table 13. Three Case Studies from Bangladesh to Highlight the Skill Transitions Needed For an Inclusive Green Transition

Criteria	Industry	Policy Problem	Policy Solution
Retraining obsolete jobs	Waste Collection	Transition from traditional (highly-polluting) methods of waste collection to community based waste management has rendered the following jobs obsolete: waste collectors, waste dumpers, and drivers of waste carrier.	Training of worker in techniques solid waste management, recycling, composting, and other environmentally-friendly methods.
Training of green collar occupations	Solar Energy	The emergence of solar energy is seen as an opportunity to provide energy access to 60% of Bangladesh's total population that have no access to electricity. So, there has been a recent uptake in solar energy business in the country. This, in turn, necessitates appropriate training.	Training geared towards new occupations including solar engineers, solarteurs, bioenergy technicians, energy assessors, masons, sales persons, and maintenance and repair.
Greening existing occupations	Bricks manufacturing	There are approximately 4000 brickfields in Bangladesh, many of whom are very polluting. To limit pollution, environmental rule require the use of modern "zig zag" chimneys rather than traditional "drum" chimneys, which require different techniques of maintenance.	Training chimney-kiln operators to adapt to the new chimney technology.

Source: (Hye Mondal Md Zabid Iqbal, 2009[71])

The major takeaway here is that to reconcile greening SMEs with enabling inclusive growth, it is critical to ensure that skill development of the SME workforce aligns with the adjustments in the labour market. In particular, "future initiatives need to address the question of how to better match the supply of capacity development with market demand" (PAGE, 2015[72]).

Access to knowledge assets

Networks

The importance of networks in developing SMEs' capabilities is well documented by literature. For example, SMEs' ability to innovate is influenced by knowledge spill-overs and thus, the networks that they can access. In other words, SMEs and new firms innovate by collaborating with other stakeholders such as customers, suppliers, and research centres. Thus, for SMEs, the key challenge is to identify and connect with appropriate knowledge partners at local, national, and international levels (OECD, 2017[1]).

This is particularly true for "eco-adoption" and eco-innovation among SMEs. Thus, one of the OECD recommendations of supporting SMEs adoption of environmental technologies is the facilitation of SME access to research centres and universities, who are able to provide specialised services that can be imported from other countries. (OECD, 2013[6]) Of particular relevance would be local universities because SMEs are strongly embedded in local ecosystems (OECD, 2017[2]).

Organizational and Processes

SMEs are able to improve their sustainability practices through the implementation of Environmental Management Systems, which essentially provide a comprehensive and systematic organizational framework for greening. However, despite government incentives, data shows that only 0.4% of EU SMEs have formally certified EMS. Moreover, only 10% of SMEs thought an EMS would be "quite useful" or "useful"; the fewer employees that they had, the less they would be likely to note the benefits of environmental management systems. Thus, a major challenge in policy for greening SMEs is to encourage implementation of EMS among SMEs (OECD, 2018[5]).

In particular, polices should focus on tailoring EMS to SMEs by focusing on simple improvements in management rather than complex and burdensome changes. An example of such a system is the Econcertive program in Ireland. This program has launched a de-facto EMS scheme called EcoCert scheme, which has the same core requirements as any recognized EMS standard, but with minimal paperwork (OECD, 2018[5]). Programs like this would simplify the organizational aspects of greening.

Infrastructure

Physical infrastructure

OECD literature has highlighted the importance of physical infrastructure (roads, ports, etc.) for SME competitiveness and engagement with markets and GVCs (OECD, 2017[1]). Intuitively, there ought to be a link between enabling greening among SMEs and the quality and quantity of physical infrastructure. For example, SMEs that have access to better transportation infrastructure are likely to be better connected to global markets, thus allowing them to better tap into international demand for green products. However, explicit literature on this subject is missing. The key consideration here is how different infrastructure endowments can affect the extent to which SMEs can effectively and inclusively navigate the green transition.

Digital and soft infrastructure

Similar to physical infrastructure, effective ICT infrastructure is key to connect SMEs to global markets, information markets, and e-commerce platforms (OECD, 2017[1]). Access to these services can assure the demand in international markets and ease the green transition for SMEs. However, literature has not specifically looked at the impact of ICT infrastructure by country on SME greening tendencies.

One example of "soft infrastructure" that can facilitate the green transition for SMEs are Social Stock Exchanges ("SSE") that can increase SMEs access to finance. Social Stock Exchanges are trading platforms that aim to connect "businesses that deliver social and environmental value with investors seeking both a social and a financial return." SMEs seeking financing opportunities can list on SSEs and find investors with a combination of financial, social, and environmental goals. Examples of SSEs include the U.K. Social Stock Exchange, Canada's Social Venture Connection, and the Singapore-based Impact Exchange – a platform of the Stock Exchange of Mauritius (Dadush, 2015[73]).

SME policy governance

An important consideration in discussing what policy frameworks can combine greening SMEs with inclusive growth is the question of how these policies should be administered and by whom. The answer to this question is likely to vary based on the type of policy and the country. For example, with regards to regulation, regulatory bodies in different countries have different capacities and priorities and thus, are likely to approach regulating SMEs differently. To that end, in 2017, the United States Environmental Protection Agency's enacted budget was over US$8 billion (U.S. EPA, 2018[74]). This is more than South Africa's total spending on environmental protection in 2014/15 (Statistics South Africa, 2017[75]). Hence, given the different institutional and policy contexts in different countries, it is difficult to generalize approaches to SME greening governance.

That being said, a common element of governing SMEs in all countries – especially with regards to the greening SMEs– is the need for collaboration and co-ordination across different government bodies as well as non-government actors. A good example of this is the institutional network for SME environmental compliance assistance in the United States. This network, established by the EPA, includes federal and state regulators, state business ombudsmen, trade associations, universities, NGOs, and consulting firms. It is illustrative of the collaboration across different policy areas (business development and environmental protection), levels of government (state and federal), and types of actors (government and non-government) (OECD, 2018[5]).

Takeaways: what policy frameworks best reconcile greening SMEs with inclusive growth?

Our analysis here has revealed two things:

- Firstly, the heterogeneity of SMEs parallel the heterogeneous nature of the policy tools that can be applied to green SMEs without sacrificing inclusive growth. Put it differently, the different structural and policy context of each country combined with the firm-level and sector-level heterogeneity of SMEs in each country makes it difficult to generalize broad-based recommendations.
- That being said, policy frameworks can ensure that greening and inclusive growth are synergistic by finding ways to maximize the business benefits of greening for SMEs, addressing labour market implications of greening effectively, and by supporting the integration of green and inclusive business models. To do so, coordination across different government and non-government actors is crucial.

6. Conclusion and Areas of Future Work

Takeaways

- It is evident that greening SMEs is not mutually exclusive with their ability to deliver inclusive growth. In fact, greening does have the potential to improve SME business performance (via cost reductions and increased sales), which in turn can generate jobs and income opportunities. However, greening can also impose burdens and costs on SMEs, which could have the inverse effect. The critical role of policy frameworks – whether access to finance or skill development - is to foster these synergies and reduce the burdens.
- Governing SMEs requires a consideration of different policy areas ranging from business development to environmental protection. Thus, understand the trade-offs and synergies across these areas is vital. Consequently, effectively governing greening SMEs requires collaboration between different government bodies and non-government actors.
- SMEs (especially social enterprises) can also explicitly pursue a dual inclusive and green business model. These models follow a triple-bottom line approach and are intend to generate both societal benefits (whether on the demand-side by providing access to necessary goods or on the supply side by generating income opportunities) and environmental benefits. For these SMEs, policy frameworks that support both goals (sustainable public procurement or sustainable finance) are especially useful.
- Both the aforementioned conclusions are based on anecdotal evidence. Literature – especially empirical - is largely limited in assessing the impact of greening SMEs on inclusive growth. Thus, while they are illustrative, they are by no means conclusive. Robust analysis of greening SMEs, especially in developing countries, is still limited.

Questions for Future Research

- In addition to job creation and inclusive business models, in what other ways do SMEs contribute to inclusive growth and how are these channels affected by the green transition?
- Is the net effect of greening SMEs on business performance positive or negative? How does this vary depending on the sector, country, or even the definition of SMEs?
- What are the distributional impacts of greening SMEs? Are they consistent with large firms *ceteris paribus*?
- To what extent do the lessons learned from advanced economies translate to less developed economies? Put it differently, are there any structural and consistent differences across different country-income groups with regards to the challenges and opportunities to greening SMEs and doing so without sacrificing inclusive growth?
- How do non-income country differences like value systems, institutional characteristics, geographical peculiarities, etc. alter the relationship between greening SMEs and inclusive growth?
- Is the SME-size class an appropriate unit of analysis for examining the relationship between green and inclusive growth? In other words, is the SME-size class too vast and too heterogeneous to be able to generate practical and conclusive policy recommendations?

References

Abella, D. and D. Yap (2012), "The Organizational Benefits of Going Green", *Philippine Daily Inquirer*, http://business.inquirer.net/100449/the-organizational-benefits-of-going-green. [48]

Ahmed Abdel Latif (2013), *Intellectual Property Rights and Clean Energy Technologies*, International Centre for Trade and Sustainable Development, https://sustainabledevelopment.un.org/content/documents/3628latif.pdf. [24]

Aloise, P. and J. Macke (2017), "Eco-innovations in Developing Countries: The Case of Manaus Free Trade Zone (Brazil)", http://dx.doi.org/10.1016/j.jclepro.2017.08.212. [27]

Beck, T. et al. (2004), *SMEs, Growth, and Poverty: Cross-Country Evidence*. [81]

Blackburn, R. and M. Ram (2006), "Fix or fixation? The Contributions and Limitations of Entrepreneurship and Small Firms to Combating Social Exclusion", *Entrepreneurship and Regional Development*, http://dx.doi.org/10.1080/08985620500419566. [14]

Boarini, R., F. Murtin and P. Schreyer (2015), *Inclusive Growth: The OECD Measurement Framework*, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jrqppxjqhg4-en. [11]

Bowen, A. and K. Kuralbayeva (2015), *Looking for Green Jobs: The Impact of Green Growth on Employment*, http://www.lse.ac.uk/grantham/. [46]

Cochran, I. et al. (2014), *Public Financial Institutions and the Low-carbon Transition: Five Case Studies on Low-Carbon Infrastructure and Project Investment*, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jxt3rhpgn9t-en. [62]

Conway, D. (2012), "Sustainable Procurement Policies and Practices at the State and Local Government Level", in *Greening Local Government*. [64]

Cottrell, J. et al. (2016), *Environmental Tax Reform in Developing, Emerging and Transition Economies*. [61]

Creech, H. et al. (2014), "Small-scale Social-Environmental Enterprises in the Green economy: Supporting Grassroots Innovation", *Development in Practice*, http://dx.doi.org/10.1080/09614524.2014.899561. [42]

Dadush, S. (2015), "Regulating Social Finance - Can Social Stock Exchanges Meet the Challenge", *Penn Law: Legal Scholarship Repository*, https://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1906&context=jil. [73]

Dalberg Global Development Advisors (2011), *Report on Support to SMEs in Developing Countries Through Financial Intermediaries*, http://www.eib.org/attachments/dalberg_sme-briefing-paper.pdf. [3]

del Río González, P. (2005), "Analysing the Factors Influencing Clean Technology Adoption: A Study of the Spanish Pulp and Paper Industry", *Business Strategy and the Environment*. [25]

European Comission (2018), *SME Listing on Public Markets*, https://ec.europa.eu/info/business- [83]

economy-euro/banking-and-finance/financial-markets/securities-markets/sme-listing-public-markets_en.

European Comission (2018), *What is EMAS?*, http://ec.europa.eu/environment/emas/index_en.htm. [77]

European Comission (2017), *The SME Test*. [54]

European Comission (2016), *Green and Sustainable Public Procurement*, http://ec.europa.eu/environment/gpp/versus_en.htm. [66]

Federation of Small Businesses (2012), *Making Sense of Going Green*. [39]

Fleet, D., M. Palladino and S. Da Costa (2015), *Assessing the Potential Cost Savings and Resource Savings of Investments in 4 SME Sectors*. [29]

Geels, F. (2018), "Socio-Technical Transitions to Sustainability", *Oxford Research Encyclopedia of Environmental Science*, http://environmentalscience.oxfordre.com/view/10.1093/acrefore/9780199389414.001.0001/acrefore-9780199389414-e-587. [78]

Gibbs, D. and K. O'Neill (2014), "Rethinking Sociotechnical Transitions and Green Entrepreneurship: The Potential for Transformative Change in the Green Building Sector", *Environment and Planning A*, http://dx.doi.org/10.1068/a46259. [4]

Gibson, T. (2008), *Defining SMEs: A Less Imperfect Way of Defining Small and Medium Enterprises in Developing Countries*. [8]

GIZ (2017), *Green and Inclusive Business Toolbox - Promoting Green and Inclusive Business Models in Development Cooperation Programmes*, http://www.giz.dewww.giz.de. [15]

GIZ (2015), *Inclusive Business Toolbox: Promoting Inclusive Business Models in Development Cooperation Programmes*. [18]

Government of Malaysia (2018), *Overview of the FiT System in Malaysia*, http://seda.gov.my/overview_of_fit_concept_in_malaysia.html. [82]

Gunningham, N. and D. Sinclair (1999), *Designing Smart Regulation*. [79]

Hye Mondal Md Zabid Iqbal, A. (2009), *Skills for Green Jobs in Bangladesh*, http://www.ilo.org/publns. [71]

IEA (2016), *Uttar Pradesh Mini-Grid Policy 2016*, https://www.iea.org/policiesandmeasures/pams/india/name-165001-en.php?s=dHlwZT1yZSZzdGF0dXM9T2s,&return=PG5hdiBpZD0iYnJlYWRjcnVtYiI-PGEgaHJlZj0iLyI-SG9tZTwvYT4gJnJhcXVvOyA8YSBocmVmPSIvcG9saWNpZXNhbmRtZWFzdXJlcy8iPlBvbGljaWVzIGFuZCBNZWFzdXJlczwvYT4gJnJhcXV. [57]

ILO (2018), *World Employment Social Outlook 2018: Greening With Jobs*, http://www.ilo.org/publns.. [45]

IMF (2015), *IMF Survey : Counting the Cost of Energy Subsidies*, IMF, https://www.imf.org/en/News/Articles/2015/09/28/04/53/sonew070215a. [59]

Institute for Fiscal Studies (2015), *Fiscal Incentives to Eligible Companies: A Right Step in* [60]

Encouraging Investors in the Renewable Energy Market.

International Finance Corporation (2017), *MSME Finance Gap: Assessment of the Shortfalls and Opportunities in Financing Micro, Small and Medium Enterprises in Emerging Markets*. [40]

Jalonen, H. (2011), "The Uncertainty of Innovation: A Systematic Review of the Literature", *Journal of Management Research*, http://dx.doi.org/10.5296/jmr.v4i1.1039. [32]

Jenkins, B. et al. (2010), *Scaling Up Inclusive Business: Advancing the Knowledge and Action Agenda*. [17]

Kok, J., C. Deijl and C. Veldhuis-Van Essen (2013), *Is Small Still Beautiful? Literature Review of Recent Empirical Evidence on the*, ILO; GIZ, http://www.ilo.org. [12]

Krämer, A. and M. Herrndorf (2012), *Policy Measures to Support Inclusive and Green Business Models*. [52]

Lee, S. (2008), "Drivers for the Participation of Small and Medium-Sized Suppliers in Green Supply Chain Initiatives", *Supply Chain Management*, http://dx.doi.org/10.1108/13598540810871235. [68]

Levine, R. (2005), *Does Firm Size Matter for Growth and Poverty Alleviation?*. [80]

Malaysian Green Technology Corporation (2017), *Green Procurement*, https://www.myhijau.my/green-procurement/. [65]

Martinez-Fernandez, C., C. Hinojosa and G. Miranda (2010), *Greening Jobs and Skills: Labour Market Implications of Addressing Climate Change*, OECD Publishing, Paris, http://dx.doi.org/10.1787/5kmbjgl8sd0r-en. [44]

McDaniels, J. and N. Robins (2017), *Mobilizing Sustainable Finance for Small and Medium Sized Enterprises*, http://www.unep.org/inquiry. [20]

Mehralian, G. et al. (2016), "The Effects of Corporate Social Responsibility on Organizational Performance in the Iranian Pharmaceutical Industry: The Mediating Role of TQM", *Journal of Cleaner Production*, http://dx.doi.org/10.1016/j.jclepro.2016.06.116. [50]

Natural England (2007), *Natural England Sustainable Procurement Policy*. [67]

Neilsen (2015), *The Sustainability Imperative: New Insights On Consumer Expectations*. [23]

NetRegs (2016), *NetRegs Awareness Survey 2016*. [37]

Ngoasong, M. (2016), *Inclusive Business Models? How SMES are Developing Inclusive Value Chains and Combating Social Exclusion in Bottom-Of-The-Pyramid Markets*. [16]

OECD (2018), *Environmental Policy Toolkit for SME Greening in EU Eastern Partnership Countries*, OECD Green Growth Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264293199-en. [5]

OECD (2018), *Fostering Greater SME Participation in a Globally Integrated Economy*. [41]

OECD (2017), *Employment Implications of Green Growth: Linking Jobs, Growth, and Green Policies*, http://www.oecd.org/greengrowth.. [51]

OECD (2017), *Enhancing the Contributions of SMEs in a Global and Digitalised Economy*, OECD, [2]

https://www.oecd.org/mcm/documents/C-MIN-2017-8-EN.pdf.

OECD (2017), *Small, Medium, Strong. Trends in SME Performance and Business Conditions*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264275683-en. [1]

OECD (2016), *Resource-Efficient Practices in the Ukrainian Concrete Products Industry: Business Case for Saving Money and Increasing Performance*, http://www.oecd.org/env/outreach/Pocket%20Guide_Cement%20Industry_A5_V2.pdf [30]

OECD (2015), *Promoting Better Environmental Performance of SMEs: Moldova*, http://www.oecd.org/env/outreach/EI-country-pilot-Moldova-en.pdf [58]

OECD (2015), *Towards Green Growth?: Tracking Progress*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264234437-en. [9]

OECD (2013), *Green Entrepreneurship, Eco-Innovation And SMEs*. [6]

OECD (2011), *Administrative Simplification in Vietnam: Supporting the Competitiveness of the Vietnamese Economy*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264096646-en. [55]

OECD (2009), *Sustainable Manufacturing and Eco-Innovation: Framework, Practices and Measurement*, http://www.oecd.org/innovation/inno/43423689.pdf [21]

Pacheco, D., T. Dean and D. Payne (2010), "Escaping the green prison: Entrepreneurship and the creation of opportunities for sustainable development", *Journal of Business Venturing*, http://dx.doi.org/10.1016/j.jbusvent.2009.07.006. [43]

PAGE (2015), *First Global Forum On Green Economy Learning*. [72]

Polzin, F., P. von Flotow and L. Klerkx (2016), "Addressing Barriers to Eco-Innovation: Exploring the Finance Mobilisation Functions of Institutional Innovation Intermediaries", *Technological Forecasting and Social Change*, http://dx.doi.org/10.1016/j.techfore.2015.10.001. [33]

Reid, A. and M. Miedzinski (2008), *Eco-Innovation*, http://dx.doi.org/10.13140/RG.2.1.1748.0089. [38]

Rizos, V. et al. (2015), *The Circular Economy: Barriers and Opportunities for SMEs*, http://www.ceps.eu. [28]

Rodrik, D. et al. (1989), "Policy Uncertainty And Private Investment In Developing Countries", *NBER Working Paper Series*. [36]

Schaer, C. and N. Kuruppu (2018), *Private-Sector Action in Adaptation: Perspectives on the Role of Micro, Small and Medium Size Enterprises*, http://www.unepdtu.org. [84]

Schreiber, J. and J. Vincent (2012), *A Cost Benefit Analysis of Forest Certification at The Forestland Group*. [69]

Skudiene, V. and V. Auruskeviciene (2014), *The Contribution of Corporate Social Responsibility to Internal Employee Motivation*, http://dx.doi.org/10.1108/JWL-09-2013-0070. [49]

Statistics South Africa (2017), *Government Spending: How Much Goes to Environment Protection?*, http://www.statssa.gov.za/?p=10356. [75]

Tanaka, S. et al. (2014), *Environmental Regulation and Industrial Performance: Evidence from China*. [53]

U.S. EPA (2018), *EPA's Budget and Spending*, https://www.epa.gov/planandbudget/budget. [74]

U.S. EPA (2018), *Small Business Compliance*, https://www.epa.gov/compliance/small-business-compliance. [56]

UK Department for Business, Energy, and Industrial Energy (2017), *Social Enterprise: Market Trends 2017*. [19]

UNEP (2017), *Global Review of Sustainable Public Procurement*. [86]

UNEP (2016), *Green Finance for Developing Countries: Needs, Concerns and Innovations*. [63]

UNEP (2014), *The Business Case For Eco-Innovation*. [22]

UNEP (2013), *Green Economy and Trade: Trends, Challenges and Opportunities*. [70]

United States Environmental Protection Agency (2018), *What is an EMS?*, https://www.epa.gov/ems/learn-about-environmental-management-systems#what-is-an-EMS. [76]

United States International Trade Commission (2010), *Small and Medium-Sized Enterprises: Overview of Participation in U.S. Exports*, http://www.usitc.gov. [7]

Verdolini, E., V. Bosetti and P. Jockers (2015), *The Impact of Policy Uncertainty on Innovation in the Wind Industry: Evidence from EU Countries*. [35]

Walley, E. and D. Taylor (2002), "Opportunists, Champions, Mavericks...?", *Greener Management International*, http://dx.doi.org/10.9774/GLEAF.3062.2002.su.00005. [85]

Watal, R. (2017), *Strategy on Resource Efficiency*. [31]

Winston, A. (2009), *Energize Employees with Green Strategy*, Harvard Business Review, https://hbr.org/2009/09/energize-employees-with-green-strategy. [47]

World Bank (2017), *Financing for SMEs in Sustainable Global Value Chains*. [26]

World Bank (2013), *World Development Report: Jobs*. [13]

World Bank (2012), *Inclusive Green Growth: The Pathway to Sustainable Development*. [10]

World Trade Organization (2016), *World Trade Report 2016: Levelling the Trading Field for SMEs*, http://www.wto.org. [34]

2018 Green Growth and Sustainable Development Forum

&

Green Growth Knowledge Platform 6th Annual Conference

http://oe.cd/ggsd-2018

Sign up for the OECD's Green Growth Newsletter

www.oecd.org/login

Follow us on Twitter via

@OECD_ENV
@GGKPlatform
#GGSD

GREEN GROWTH Knowledge Platform

Global Green Growth Institute

OECD BETTER POLICIES FOR BETTER LIVES

UN environment

WORLD BANK GROUP