

Green Industrial Policy and Trade

A Tool-Box





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Green Industrial Policy and Trade: A Tool-Box

The Environment and Trade Hub of UN Environment and UNIDO, under the Partnership for Action on Green Economy (PAGE), cooperate to undertake Green Economy Industry and Trade Assessments (GITA) in various PAGE partner countries, in collaboration with respective national partner institutes. To inform and guide the work of national partners, UN Environment and UNIDO have developed a tool-box discussing trade-related green industrial policies.

The Green Industrial Policy and Trade Tool-box serves as a 'how to' guide for national partners in considering different trade-related policy options to promote green industrial development. The tool-box provides a concise but encompassing overview of trade-related green industry policy tools and presents a methodology to assess the application of these tools. It is targeted primarily at national policy makers and green economy professionals that want to support green industrial development to transition to an inclusive green economy.

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Summary for policy makers

The green industrial policy turn

Emerging global threats arising from ecological tipping points and inequitable distribution of resources call for a new economic model capable of delivering enhanced prosperity and growing social equity, within the contours of a finite and fragile planet. This requires a structural change towards an economy that is low carbon, efficient and clean in production but also inclusive in consumption and outcomes. Industrial policy refers to government actions to alter the structure of an economy, encouraging resources to move into sectors that are perceived as desirable for future development. As such, lessons from industrial policy in the past can provide important guidance for countries transitioning to an Inclusive Green Economy. A green industrial policy can therefore be defined as an industrial policy that is meant to trigger and facilitate structural changes as entailed, or required, both to respond to environmental conditions or situations, and to develop a green, circular economy. As such, green industrial policy can be an important instrument to facilitate structural change. This is the case particularly in situations where so-called ‘market failures’, or imperfect market conditions, prevent the structural changes required to shift to an Inclusive Green Economy.

Trade-related green industrial policy tools

This tool-box aims to guide policy makers in the use of green industrial policy instruments that can be employed to improve a country’s economic competitiveness while advancing environmental protection and social inclusiveness. In doing so, **this tool-box focuses on a sub-set of green industrial policies, namely trade policies that can be harnessed to promote green industries and green industrial policies that are of particular relevance from an international trade perspective.** This is important because, firstly, trade is a highly regulated area of international law and policy makers must ensure that their policy choices are aligned with their obligations in global, regional and bilateral frameworks.

Secondly, trade has increasingly been recognized by the international community as an important driving force for sustainable development. This tool-box therefore aims to provide policy makers with guidance on how to navigate the complex interface between trade and green industrial policy, while realizing the potential that trade has to offer for the global shift towards an Inclusive Green Economy.

How to use this tool-box

This tool-box is intended as a practical and policy-relevant manual, targeted at national policy makers concerned with industrial, trade or environmental policies, as well as negotiators of trade and investment agreements. It therefore aims to provide a ‘menu for choice’ of the trade-related green industrial policy tools available and clarify their structure and operation, while outlining their implications with regard to trade policy. In doing so, the tool-box refers to some of the most relevant examples, successful but also unsuccessful. It also points to more specific resources for those that want to explore a particular tool further.

This tool-box can be used in two main ways: firstly, it can be used as a stand-alone resource by decision-makers who want to consider a wide range of trade-related policy options to advance certain pre-set goals. Secondly, when a State is still in the process of exploring whether or not to implement a green industrial policy and no general or specific goals have been set, a broader strategic process is necessary. In this case, this tool-box can be used as a complement to UNIDO’s *Practitioner’s Guide to Strategic Green Industrial Policy*.

The policy tools discussed in this tool-box

Within the broad spectrum of green industrial policies, this tool-box focuses on trade-related policy options that are made up of two categories of policies: the first category includes typical trade policies, such as tariffs and other border measures or provisions in trade agreements. These can be

used to conduct green industrial policy or to secure policy space for domestic instruments that promote green industrial policy. The second category encompasses policy instruments, such as subsidies and other support schemes, standards and public procurement, which due to their influence on trade, are highly regulated in international trade law. This category also covers employment-related policies, because trade normally entails major structural adjustments which, together with the transitional dimension of the move to a green economy, call for adequate employment and social policies. These policy tools are presented in individual chapters. Each chapter discusses the policy rationales for using the tool, the main varieties of the tool and their implications, and some representative examples. A summary table places the tool within an overarching methodology to guide trade-related green industrial policy. Furthermore, each tool-chapter is accompanied by a list of carefully selected resources to go further in the understanding and implementation of the tool.

Chapter 2 discusses a variety of border measures that can be used by either importing or exporting countries as a tool of green industrial policy. These include tariff adjustments, carbon equalization measures, trade remedies and export restrictions. Tariffs adjustments, for example, may take the form of tariff increases or coordinated tariff reductions. The manual outlines a country's option to increase tariffs on certain goods, which may, in particular circumstances, help to shield infant green industries and realize a latent comparative advantage. However, the manual also draws attention to the complex considerations that should be taken into account by decision-makers before embarking on this policy approach: green goods are included in global value chains and even a small increase in tariffs might lead to large price increase for the final product. Furthermore, tariff increases by one State may lead to retaliatory measures by other States. The case study on the APEC experience of liberalizing trade in environmental goods illustrates how countries may agree on a coordinated tariff reduction policy that can promote economic competitiveness while advancing environmental protection. The case study further clarifies the

operationalization of liberalizing environmental goods at international level and the different avenues chosen by States to implement this approach within their national tariff schedules.

Chapter 3 discusses a wide variety of support schemes, organised under two broad headings, so-called 'soft' and 'hard' green industrial policies. 'Soft' policies include investment in infrastructure, research and development, as well as the reduction or removal of distortive subsidies to brown economy sectors. The enactment of a conducive regulatory framework and innovation policies, such as green patent fast-tracking, are also vital to create an enabling environment. One form of specific, or 'hard' green industrial policies include various forms of targeted financial subsidies. The chapter focuses on two tools that are more specifically related to trade, namely the use of local content requirements and export-related support. The chapter surveys their wide use in practice and alerts policy makers to the diverging views that exist on the use of these policy tools. The chapter closes with a case study on the experience of South Africa that switched from a feed-in-tariff to a competitive bidding system for renewable energy generation. The case study illustrates the South African experience of promoting renewable energy capacity while, at the same time, advancing economic development through a criteria-based bidding system linked to local content requirements.

Chapter 4 discusses standards which are broadly understood in this manual to include technical regulations, voluntary standards and conformity assessment procedures. The chapter illustrates how standards can, among others, help to promote exports by making visible the social and environmental benefits of their production vis-à-vis conventional products. From the perspective of importing countries, they can be an important tool to assure that imported products adhere to the same environmental and social standards as domestic products. Furthermore, standards can be part of a coordinated green industrial policy by reflecting the negative externalities of brown sectors and therefore help promote green products. The manual particularly highlights the importance of using international standards, as

this will be a consideration in determining the conformity of this policy tool with a country's trade law obligations. One of the case studies of the chapter illustrates three landmark cases of the WTO Appellate Body to provide an insight into the complex legal considerations that decision-makers have to take into account when adopting standards.

Chapter 5 exemplifies the potential leverage of sustainable public procurement as an industrial policy tool: Making up 30 per cent of total GDP in developing countries, public procurement can provide a powerful tool to boost green industrial capacity. Furthermore, its strategic importance has been highlighted in numerous policy frameworks and significant space is provided for sustainable public procurement considerations in a variety of legal frameworks, including the GATT. In a second part, chapter 5 reviews green manufacturing processes and stresses the importance of green manufacturing in making products more competitive by reducing costs while improving environmental performance. The case study on green public procurement in the EU highlights the importance of two main elements: Firstly, obligatory green procurement standards, and, secondly, country-level action plans and strategies, which is complemented by knowledge exchange across local or regional networks. A second case study reviews the experience of China's efforts to make its economy more circular and resource-efficient, particularly by investing in integrated eco-manufacturing parks.

Chapter 6 discusses provisions in trade agreements promoting or reserving policy space for green industrial policy. Policy makers should carefully consider the level of protection and legal implications of different types of provisions: preambular references in trade agreements have, for example, often been misunderstood and may actually provide a powerful tool while being more easily obtainable in a negotiation context than other types of provisions. Policy makers should furthermore pay attention to the legal differences between reservations for environmental policy

space, so called 'carve outs', and exceptions, with the former being preferable in terms of level of protection to the latter. In a second part, the chapter discusses provisions relevant to particular types of green industrial policy tools. The chapter closes with a survey of the treaty practice of the EU and the US: Free trade agreements, or FTAs, increasingly refer to general environmental, as well as specific renewable-energy provisions. Of note is particularly that provisions seem to be moving from a situation in which green industrial policies promoting renewable energy are admitted, to one in which they are actively encouraged.

Chapter 7 discusses employment-related schemes, which are of critical importance in order to ensure that the transition is sensitive not only to prosperity and environmental protection but also to considerations of inclusiveness. This is the case as, firstly, green industrial policy requires the availability of an appropriately trained workforce to avoid mismatches between industry support policies and the availability of skilled workers. Secondly, employment-related schemes are important from the perspective of structural adjustment that may arise from both trade opening and the transition to an Inclusive Green Economy. In order to respond to these needs and challenges, various types of policy measures may be applied: information gathering and assessment, social dialogue, participation and coordination measures, social protection measures and, last but not least, education and training. A case study on the ILO Green Jobs Assessments methodology illustrates the relevance of information gathering and assessment, with employment effects of a policy often being one, if not the main, decisive argument for or against its adoption. Policy makers should furthermore consider what methods may be appropriate to estimate jobs, taking into account resource and data availability and what shall be measured, such as 'net' employment creation through green growth or 'gross' employment effects, which take into account new green jobs created and those potentially lost in brown sectors.

Chapter 1

Green industrial policy and international trade

Key contents of the chapter:

- 1** The need for government action to sustain the transition to an inclusive green economy has gained traction, particularly after the 2008 economic crisis. A variety of policy rationales (e.g. situations where the forces of the market lead to undesirable or sub-optimal outcomes, so-called 'market failures') can provide a basis for the conduct of green industrial policies. These policy rationales include lack of appropriability (internalisation) of certain benefits, imperfect competition in goods markets, capital markets failures, learning processes, potential for increasing returns to scale, potential for agglomeration economies, and coordination/sequencing problems.
 - 2** Within the broad range of green industrial policies, a sub-set consists of trade (e.g. border measures or provisions in trade agreements) or trade-related measures (e.g. support schemes, standards, sustainable public procurement and manufacturing, and employment-related schemes). The need to harness trade as an instrument to support the transition to an inclusive green economy has been recognised by States in international policy frameworks, particularly in the Sustainable Development Goals adopted in 2015 as part of the 2030 Agenda for Sustainable Development.
 - 3** A number of organisations, including those forming the PAGE Partnership, have developed a wealth of resources relating to green industrial policy, trade and the green economy, specific sectoral policies, specific policy tools, and specific countries. The present manual relies on and complements these resources by providing an overview of a selection of trade and trade-related green industrial policy tools. By outlining their implications with regards to trade policy and placing them in the context of an integrated methodology, it aims to assist decision makers in their efforts to transition to an inclusive green economy, based on their country's own unique context and aspirations.
 - 4** The methodology is embedded in UNIDO's overall strategic green industrial policy methodology and expands it as regards the assessment and use of trade and trade-related green industrial policy tools.
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1. Green industrial policy and trade

1.1. The green industrial policy turn

Green Industrial Policy can provide an instrument to facilitate structural change and accelerate a country's transition towards an Inclusive Green Economy. A range of reports from international organisations, including UN Environment's *Green Economy Report*, the *New Climate Economy Reports*, as well as a stream of publications from the organisations forming the Partnership for Action on Green Economy (**PAGE**), namely UN Environment (formerly **UNEP**), the United Nations Industrial Development Organisation (**UNIDO**), the United Nations Development Programme (**UNDP**), the United Nations Institute for Training and Research (**UNITAR**) and the International Labour Organisation (**ILO**) have investigated different dimensions of the transition to an inclusive green economy and the role of green industrial policy within it. The policy mandate for these efforts is stated in the 2030 Agenda for Sustainable Development, which in its Sustainable Development Goal (**SDG**) 17 identifies trade as one of the key means of implementation of the Partnership for Sustainable Development envisaged in the Agenda.

Green industrial policy tools can be broadly understood as 'sector-targeted policies that affect the economic production structure with the aim of generating environmental benefits' (World Bank (2013)). A green industrial policy is therefore 'an industrial policy that is meant to trigger and facilitate structural changes as entailed, or required, both to respond to environmental conditions or situations, and to develop a green, circular economy' (UNIDO (2016)). As such, learning lessons from industrial policy in the past can provide important guidance for countries transitioning to an Inclusive Green Economy. Importantly, however, green industrial policy is not a mere repetition of industrial policy approaches explored in the past. The objectives and policies of green industrial policy are broader. In addition to higher productivity, competitiveness and economic growth, green industrial policy has the core aim of reducing the environmental footprint of economic processes and ensuring inclusiveness (UN Environment/DIE (2017c)). Green industrial policies therefore seek to embed the economic production structure in an Inclusive Green Economy concept (UNIDO (2016)).¹ As such, green industrial policy must fully integrate and take into account the potential for synergies but also for trade-offs between different objectives in

1 In contrast to UNIDO (2016), which focuses specifically on the manufacturing industry, this manual takes a broader – yet fully consistent – approach to defining green industrial policy, following UN Environment (2017). Green manufacturing is discussed as a separate tool or an enabling condition in this manual (see Chapter 5).

not only a national, but global context. At the core of such integration is the idea that ‘decoupling’ growth from environmental degradation is possible through a carefully assessed set of policies and that it can be a key strategy for States to be competitive in the economy of the future.

The instruments of green industrial policy are intended to enable or trigger structural changes, particularly in situations in which so-called ‘market failures’, or imperfect market conditions, prevent the structural changes required to shift to a global green economy. They seek to set the right incentives for facilitating this shift, while boosting a country’s economic competitiveness and promoting sustainable growth. The following list (Cosbey (2013)) identifies some of the most common policy rationales for green industrial policy. They are further developed and placed in context in chapters 2 to 7 by making reference to specific examples:

- **Lack of appropriability:** investment in the development and production of goods, services and works that have benefits in terms of inclusiveness, environmental protection, or technological spillover cannot be realized through mere market forces (i.e. through the price of the goods sold or services provided). States can take action to ‘internalise’ these ‘positive’ externalities by ensuring that providers of these goods and services are compensated for at least a part of the broader benefits generated, both as a matter of fairness and as a way of incentivising such beneficial activities.



- **Imperfect competition in goods markets:** the lack of appropriability problem is even more acute if beneficial industries are not only unable to reap the full benefits of their investment (because their ‘positive’ externalities are not compensated) but, in addition, they have to compete with producers who are not required to pay for their negative externalities (e.g. pollution) or are massively subsidised for political economy reasons (e.g. fossil fuel subsidies).
- **Capital market failures:** in the absence of State action, through so-called ‘sunrise policies’, some of these beneficial industries may not be able to access sufficient financial resources (e.g. because lenders/investors are reluctant to support producers in early stages or are unfamiliar with the sector). Investors tend to prefer investing in incremental improvements of existing technologies rather than in the more speculative and riskier emergence of truly new technologies. This inherent bias may hinder or delay innovation unless States help to reduce the risk or facilitate access to finance.
- **Learning by doing:** sunrise policies may also help companies to go through a ‘learning-by-doing’ process that can eventually result in the realisation of an – until then – latent comparative advantage (a comparative advantage that could only emerge after the industry had grown sufficiently).
- **Increasing returns to scale:** without some initial support that allows companies to reach a certain volume of production, a competitive ratio between the costs per unit produced and the revenues of the company may not be achieved.
- **Agglomeration economies:** State action may facilitate ‘virtuous circles’ among different complementary industries that emerge and thrive together in a symbiotic manner, as in the example of Silicon Valley.
- **Coordination or sequencing problems:** much in the same way as the emergence of complementary industries can generate synergies, the absence of some industries may prevent the emergence of some others or make them less competitive.

These policy rationales as well as the role of government action in addressing them are discussed in great detail in the *Green Economy Report* published by UN Environment in 2011, in the run-up of the 2012 Rio Summit on Sustainable Development (see below in section 2.2.)

The types of policies that can be used to address these market conditions and failures have been organised under different headings, with references to ‘soft’ (general market organisation) and ‘hard’ (more targeted and differential) industrial policy, ‘sunrise’ (promoting the emergence of industries) and ‘sunset’ policies (phasing-out certain industries), among others. Green industrial policy can also rely on such distinctions. However, as noted earlier, green industrial policy is not merely a repetition of industrial

policy approaches. It has a wider set of objectives and it relies on a wider set of policy instruments, including environmental policies. At the heart of green industrial policy is the need to integrate different objectives, including productivity, growth inclusiveness and environmental protection, through a wide set of policies capable of decoupling growth from social and environmental degradation.

As discussed next, the **focus of this manual is not on the wide range of policies on which green industrial policies can rely but only on a sub-set of them, namely trade or trade-related green industrial policies**. A variety of resources and tool-kits, including some addressing green industrial policy in general (e.g. PAGE's *Practitioner's Guide to Strategic Green Industrial Policy* (2016), or *UNIDO Green Industrial Policy. Policies for supporting Green Industry* (2011)) and others more focused on trade aspects (e.g. UN Environment's *Green Economy and Trade* (2013)), are reviewed in section 2 of this

chapter. Diverging opinions exist on the desirability of some trade-related green industrial policies presented in this manual, their environmental and economic impacts and their potential risks. A survey of the empirical literature relating to the advantages and disadvantages of some trade-related green industrial policies is provided in Cosbey (2013). The empirical aspects of green industrial policy in general are dealt with in more detail in UN Environment/ DIE (2017c).

Importantly, policy makers must take into account the fact that, depending on their design and implementation, trade-related green industrial policy tools may be consistent or inconsistent with the international obligations of a State in the areas of trade, investment and environment.² This key issue has been identified and explained in detail in some recent studies (Viñuales (2012); Viñuales (2013); Wu/Salzman (2014); Dupuy/Viñuales (2015); Boute (2017)). **The analysis provided in such studies of the complex relationship between green industrial policy and economic liberalisation, and the need to support**

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2 UN Environment is developing an International Investment Agreements and Inclusive Green Economy Policy Note, which will provide a concise introduction to the relations between green industrial policy and international investment agreements. For a detailed account of these relations see Viñuales (2012).

synergies and defuse frictions between them is at the roots of the development by the PAGE partner organisations of this manual. The manual is therefore meant as a policy-relevant but not a policy-prescriptive tool-box, and it cannot replace a case-by-case analysis in the context of a country's specific circumstances. It is intended to give policy makers an overview of the tools available and clarify their structure and operation, while outlining their implications with regards to trade policy, referring to the most relevant examples (successful but also unsuccessful), and pointing to more specific tool-kits.

1.2. Trade-related green industrial policies

This manual focuses on a sub-set of green industrial policies, namely trade policies that can be harnessed to promote green industries and green industrial policies that are particularly relevant from an international trade perspective. The first category includes typical trade policies, such as tariffs and other border measures or provisions in trade agreements, which can be used to conduct green industrial policy or to secure policy space for domestic instruments that promote green industrial policy. The second category encompasses policy instruments, such as subsidies and other support schemes, standards and public procurement, which due to their influence on trade are highly regulated in international trade law. This category also covers employment-related policies, because trade normally entails major structural adjustment. This, together with the transitional dimension of the move to a green economy, calls for adequate employment and social policies. For ease of reference, both categories will be referred to as **'trade-related green industries policies'**.

The selection of the six policy tools presented in this manual is based on discussions among PAGE partner organizations as well as on the consultation of five external experts. The focus on trade is part of current efforts of PAGE to advance the trade and environment agenda under the umbrella of the **2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs)**. As noted above, **SDG 17** on partnerships sees trade as one of the activities through which the implementation of the SDGs can be promoted and achieved. Trade, and more generally, the connection between trade and the transition from a brown to an inclusive green economy, are mentioned in several substantive SDGs. For example: **SDG 2** on food security mentions the need to remove distortive barriers in agricultural markets; the need for international cooperation in the diffusion of clean technologies is highlighted in **SDG 7** as a means to 'ensure access to affordable, reliable, sustainable and modern energy'; **SDG 8** on sustainable and inclusive economic growth refers to an increase of Aid for Trade support to developing countries, particularly least

developed countries; **SDG 9** on industry, innovation and infrastructure refers to the development of ‘quality, reliable, sustainable and resilient infrastructure’, to the promotion of ‘inclusive and sustainable industrialization’ and to the upgrading of ‘infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes’; **SDG 11** on the conservation and sustainable use of oceans mentions the removal of distortive fisheries subsidies; **SDG 12** on sustainable consumption and production patterns mentions the promotion of ‘public procurement practices that are sustainable’.

Trade is highly regulated and countries must take into account the global, regional and bilateral frameworks in considering the adoption of domestic policies or negotiating international agreements.

Thus, trade is at the heart of the 2030 Agenda for Sustainable Development. **At the same time, trade is a highly regulated area, and countries must take into account the global, regional and bilateral frameworks in considering the adoption of domestic policies or negotiating international agreements.** The manual supports this by providing a general overview of the state of trade law relating to the six

policy tools discussed in the following chapters. Overall, the manual is intended as a practical and policy-relevant tool-box to guide national partners in exploring the use of the main trade-related green industrial policy options. It is targeted primarily at national policy makers and green economy professionals, but also to negotiators of trade and investment agreements.

2. The manual in the broader context of green industrial policy resources

2.1. Overview of existing resources

Over the last years, the organisations forming PAGE as well as several other organisations have developed a number of resources and tool-kits to guide States in their efforts to conduct a green industrial policy to transition from a brown to an inclusive green economy. These resources have covered five main areas, namely the conduct of green industrial policy in general (section 2.2), trade aspects of the transition to a green economy (section 2.3), some specific sectors (e.g. green jobs, renewable energy, fisheries, agriculture, tourism, etc.) (section 2.4), some specific tools and processes (e.g. public procurement, provisions in trade agreements) (section 2.5), and some specific countries (section 2.6). The main resources in each of these areas are discussed in turn and the complementarity with this manual is indicated. These and other resources are also mentioned in the subsequent chapters, as relevant, in a dedicated section at the end of each chapter.

2.2. Green industrial policy

Among the many resources that government officials can use to develop a green industrial policy strategy, two stand out. The first is the comprehensive *Green Economy Report* published in 2011 by UN Environment in advance of the Rio Summit on Sustainable Development (2012). This report was a key step in:

- Challenging several misconceptions regarding government action in facilitating the allocation of capital;
- Revealing a growing consensus on the need for action to transition to a green economy; and
- Providing a detailed discussion of how to reorient enabling conditions such as ‘national regulations, policies, subsidies and incentives, as well as international market and legal infrastructure, trade and technical assistance’ from a system implicitly biased in favour of a brown economy (relying on fossil fuels, resource depletion and environmental degradation) to a system favouring a green economy.

The focus of the report is on the economic and environmental rationales for embracing the transition. It is therefore not intended to offer a policy tool-box for action, but as an important reference for government officials and policy makers in understanding the implications of a transition and, crucially, in advocating it.

Another significant resource is the PAGE report led by UN Environment and produced in cooperation with the German Development Institute (**DIE**), *Green Industrial Policy: Concept, Policies, Country Experiences* (UN Environment/DIE (2017c)). This report provides an up-to-date overview of the debate on Green Industrial Policy in a development context. It refines the conceptual understanding of green industrial policy and its potential for driving structural change. In addition, it demonstrates environmental and economic co-benefits of green industrial policies and provides an overview over policy instruments available.

A third important resource was developed by UNIDO in the context of a PAGE project, which resulted in a *Practitioner's Guide to Strategic Green Industrial Policy and supplement to the Guide* (2016). The guide, together with its supplement, provide a detailed description of the process through which green industrial policies can be identified, assessed and implemented. The guide organises this process in six phases and provides, for each phase, detailed procedural suggestions, including stakeholder coordination:

- **Phase 1:** High-level vision setting (it must rely on an influential lead, provide a long-term view, and rely on sufficient consultation and engagement with relevant stakeholders)
- **Phase 2:** Stock-taking (policy and data stock-taking for baseline-setting and benchmarking, conducted in parallel with phase 1)
- **Phase 3:** Prioritising intervention areas and goal-setting
- **Phase 4:** Policy domains and policy instruments (identification of specific domains, e.g. product, capital, land, labour or technology markets, and policy tools)
- **Phase 5:** Policy pathways design and impact assessment (identifying scenarios according to policy choices and assessing the impact of each scenario, conducted in parallel with phase 4)
- **Phase 6:** Implementation (the output would be a strategic document identifying the baseline, the opportunities, the vision agreed, the priorities set, the policy instruments selected, the strategy to reach it, including benchmarks).

The guide provides a variety of concepts and tools to be considered in managing each phase. As such, it offers a useful basis for government officials and policy makers to organise the process of introducing and conducting green industrial policy. Its focus is not on trade but on green industrial policy in general and it only provides a concise overview (particularly in the supplement) of the policy tools available. The present manual is thus complementary in that (i) it focuses specifically on trade-

related green industrial policy tools and (ii) it provides a methodology that is fully consistent with the more general methodology of UNIDO's guide (particularly as regards phases 2, 3, 4 and 5 of that methodology).

A fourth resource is the development of country-level green industry assessments by UNIDO, within the framework of PAGE. So far, four country assessments have been developed with a focus on **Burkina Faso** (2016), **Ghana** (2016), **Peru** (2016) and **Senegal** (2016).

2.3. Green Economy and Trade

Following the 2012 Rio Summit on Sustainable Development, UN Environment undertook the Green Economy and Trade Opportunities Project (**GE-TOP**) to identify and enhance possibilities for sustainable international trade. The founding piece of this project is the report *Green Economy and Trade. Trends, Challenges and Opportunities* (2013), which has been followed by a number of specific reports focusing on the potential of certain sectors in specific countries, including solar energy exports from **Ghana** (2015 and 2016), certification and biotrade exports in **Peru** (2015 and 2016), sustainability standards in aquaculture in **Vietnam** (2015 and 2016), sustainability standards in the agricultural sector in **Chile** (2016), and organic farming in **South Africa** (2016). The project follows a case-based approach with a combination of enabling conditions in specific sectors as applied to particular countries in order to take advantage of sustainable trade opportunities. Its **focus on trade-related opportunities** differs from the 2016 UNIDO Guide. The material is mostly organised around different types of sectors, particularly agriculture, fisheries and aquaculture, forestry, energy, manufacturing, and tourism. Government officials can make good use of this resource when considering action in these specific sectors and they can also request a more specific study of trade opportunities in their own economies, as in the case of Ghana, Peru, Chile, Vietnam and South Africa. Unlike the present manual, the GE-TOP report is not concerned with presenting a toolbox of trade-related policy measures that can be explored by a country to harness trade for green industrial development. This is the main area of complementarity between the GE-TOP report and the present manual.

The second resource that must be noted is the third edition of *Trade and Green Economy: A Handbook*, developed by UN Environment and the International Institute for Sustainable Development (**IISD**) and published in 2014. This handbook provides an accessible and comprehensive discussion of the legal aspects of the trade and environment nexus, including the World Trade Organisation (**WTO**) system and free trade agreements. Government officials can refer to this resource when seeking to understand the legal space for the adoption of certain green industrial policy measures. The present

manual discusses these dimensions too, but focuses specifically on certain types of policy measures, whereas the handbook provides a more general account of the law in this area.

The third resource that is worth noting is the e-learning course on *Green Economy and Trade* developed by UNITAR in collaboration with UN Environment within the context of a PAGE project. This e-learning course provides an introduction to the trade-related opportunities arising from the transition to a green economy and relies on a variety of sources, including the two resources previously discussed. Its contents are organised in five modules, namely one introductory module on trade and the green economy, one module providing an overall view of the analytical framework that government officials can rely on when exploring trade-related opportunities (enabling conditions, policy assessment and design, sectoral and cross-sectoral opportunities, and specific domestic and international actions), two sectoral modules (one on sustainable agriculture and the other on renewable energy), and a module concisely introducing the main rules of international trade law. Unlike the present manual, the learning course is simply an introductory resource, not a tool-box.

Despite the different perspectives taken in the resources discussed so far, the material presented in them and their recommendations are consistent and complementary with the contents on the present manual.

2.4. Sector-specific and cross-sectoral resources

Many resources have been developed for specific sectors. The reports available are numerous and, therefore, only those that stand out can be mentioned here.

With respect to the agricultural sector, organisations such as the Food and Agriculture Organisation (**FAO**) regularly publish reports providing authoritative data on agricultural markets, including *The State of Food and Agriculture* or *The State of Agricultural Commodity Markets*. Two other organisations, the Research Institute of Organic Agriculture (**FiBL**) and the International Federation of Organic Agriculture Movements (**IFOAM**) – Organics International, published annually a report on *The World of Organic Agriculture*, that also provides authoritative data.

There are also a number of regular authoritative publications on energy markets, such as those of the International Energy Agency's *World Energy Outlook* or REN21's *Renewables [2016] Global Status Report*. The International Renewable Energy Agency (**IRENA**) also publishes a series of handbooks on questions such as biogas for road vehicles, electric vehicles, biofuels for aviation, long-term modelling of renewable energy scenarios, wind power, smart grids, and many others.

A cross-sectoral area where several resources have been developed is green jobs. Some tools that stand out include UN Environment/ILO's, *Green Jobs. Towards decent work in a sustainable, low-carbon world* (2008), IRENA's *Annual Review of Renewable Energy and Jobs*, and above all the ILO's work on green jobs, such as *Assessing Green Jobs Potential in Developing Countries: A Practitioner's Guide* (2011) and the *Guidelines for a just transition towards environmentally sustainable economies and societies for all* (2015).

Other selected resources are mentioned in the tool chapters of this manual. As a general matter, this manual adopts a cross-sectoral approach focusing on trade-related policy tools to promote green industrial development in a variety of sectors.

2.5. Tool-specific resources

Many resources exist on specific policy tools relevant for this manual. In some cases, these resources provide a much more comprehensive presentation of the policy tools discussed in the present manual. The most important and up-to-date ones are mentioned in the tools chapters of this

manual. The relation between such resources and this manual is one of specificity. Whereas the resources in question can provide great detail with respect to a tool such as local content requirements or green public procurement, among others, this manual is intended to provide a full ‘**menu for choice**’ allowing government officials and policy makers to identify and understand the main varieties of each policy tool and, as the case may be, to go deeper in the investigations of one or more of them.

2.6. Country-specific resources

Much of the work of the PAGE partner organisations is to assess the situation of specific countries and develop tailored recommendations on how to develop green industries, including through trade-related green industrial policies. A simple search in the databases of just one organisation (UN Environment) shows that it has developed several dozen reports and briefs relating to trade and the green economy for at least twenty different countries. Some examples were mentioned in the context of UNIDO’s green industry assessments (see section 2.2. above) and the GE-TOP programme (see section 2.3 above).

Of particular relevance for the present manual are the *Green Economy Industry and Trade Assessments conducted for Ghana (2015) and South Africa (2017)* which can be seen, to some extent, as an implementation of the manual. The manual provides a general methodology to identify the questions that must be considered when conducting such assessments for a specific country, with particular reference to the menu of policy tools. However, instead of focusing on the economic opportunities not fully explored by certain countries in their green economy and trade sectors, which requires a country-specific analysis, the focus of the manual is on the policy instruments that may be used to promote these sectors, as well as on the implications of using them from a trade policy perspective.

3. How to use this manual: Methodological framework

The methodology presented in this manual has been specifically designed to complement previously reviewed tool-kits and manuals, particularly the process guidance developed in UNIDO's *Practitioner's Guide on Strategic Green Industrial Policies*. It can be used in two main ways. **Firstly, the manual can be used as a stand-alone tool-box** by government officials, policy-makers and/or trade negotiators who want to consider a wide range of trade-related policy options to advance certain pre-set goals. The manual will be helpful for decision makers working on various policy areas, including but not limited to: industrial development, economic policy, labour, environment, and trade policy. From this perspective, the manual offers a tool-box that can be used much in the same way as other general tool-boxes reviewed in this chapter and subsequent ones. **Secondly, when a State is still in the process of exploring whether or not to conduct a green industrial policy and no general or specific goals have been set, a broader strategic process is necessary.** This is the type of process that the UNIDO guide envisions and where trade-related options are but one aspect of a broader policy process. **The present manual can be used to support this process by supplementing the UNIDO guide.**

Specifically, within the broader six-phase process introduced in that guide, the methodology presented provides decision makers with more information on phases 2 to 5, namely (2) stocktaking, (3) prioritising intervention areas and goal-setting, (4) selecting policy domains and policy instruments, (5) designing and assessing policy pathways. **Phase 1 (high-level vision setting and stakeholder consultation) and phase 6 (implementation)** do not call for additional specification and users of this manual are referred to UNIDO's guide for further information. Figure 1 provides an integrated overview of the methodology.

Figure 1: Methodology to guide trade-related green industrial policy

<p>High-level vision setting and stakeholder consultation [UNIDO phase 1]</p>	<p>See UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 1</p>
<p>Stock-taking [UNIDO phase 2]</p>	<p>Gathering information of socio-economic, environmental and existing policies to define a baseline, particularly in regards to the following enabling conditions for trade-related green industrial policies:</p> <ul style="list-style-type: none"> • Appropriate resource endowment and political/social conditions • Public investment and access to credit • Adequate infrastructure • Domestic legal and regulatory framework • Integration into international agreements
<p>Prioritising intervention areas and goal-setting [UNIDO phase 3]</p>	<p>Identifying policy rationales to be acted upon and sustainability goals to be reached. Policy rationales may include, among others:</p> <ul style="list-style-type: none"> • Lack of appropriability • Imperfect competition in goods markets • Capital market failures • Learning processes • Potential for increasing returns to scale • Potential for agglomeration economies • Coordination or sequencing problems
<p>Selecting the tools [UNIDO phase 4]</p>	<p>Matching selected policy rationales with policy options. Policy options may include:</p> <ul style="list-style-type: none"> • Border measures • Support-schemes • Standards • Sustainable public procurement and manufacturing • Provisions in trade agreements • Employment-related schemes
<p>Design and assessment [UNIDO phase 5]</p>	<p>Specific design of policy option:</p> <ul style="list-style-type: none"> • Selection within each tool of specific design features • Assessment of consistency and impact: • Legal assessment • Integrated socio-economic and environmental impact assessment
<p>Implementation [UNIDO phase 6]</p>	<p>See UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 6</p>

The **stocktaking phase** is intended to develop a sufficient understanding of the initial conditions where trade-related green industrial policies could be used. Of particular importance is the understanding not only of the socio-economic basis (including enabling conditions such as appropriate resource endowment and political/social conditions, public investment and access to credit, adequate infrastructure) but also of the relevant legal and policy framework (enabling conditions such as the domestic legal and regulatory

framework and the integration of a country within international trade and investment agreements). Some of the trade-related policy tools discussed in this manual, particularly those that can be seen as ‘soft’ or ‘structural’ industrial policies, may be used to adjust these enabling conditions to make them more conducive for more targeted or ‘hard’ green industrial policies. However, most trade-related green industrial policies tend to be specific and therefore rather on the ‘hard’ side.

The **prioritisation of intervention areas and goal-setting** is a very important process that must rely both on the information arising from the stocktaking exercise and on strategic considerations. From the perspective of this methodology, the two main questions are the identification of the specific policy rationales or latent opportunities that the policies intend to address and the identification of the specific goals to be achieved by doing so. Even if the stocktaking process indicates that several challenges require action, governments may prefer, for a variety of strategic and political considerations, to focus only on some of them. Furthermore, as it is not always clear where a latent comparative advantage of a country lies, policy making upon that basis always entails some degree of uncertainty. This makes political leadership and stakeholder consultation in phase 1 particularly important and highlights the need for careful assessment of the measure before and during implementation. Country-specific Green Industry and Trade Assessments, such as those conducted for Ghana and Peru can help governments identify opportunities for trade-related green industrial policy in their specific country context.

The **selection of the policy tools** must be based on the specific policy rationales that the government aims to address. Not every trade-related policy tool may be effective or useful to address every challenge. This manual provides guidance in this regard by identifying six trade-related green industrial policy tools, each with its different varieties explored in the practice of States, and by linking them to specific policy rationales. The tools are, as mentioned in figure 1, border measures, support-schemes, standards, sustainable public procurement and manufacturing, provisions in trade agreements, and employment-related schemes.

Once the policy rationales and the most appropriate policy tools have been identified, it is important to **select the most suitable varieties or options within each policy tool and assess their individual and combined legality and impact**. This manual provides guidance on the wide variety of design options for each trade-related green industrial policy tool as well as on their consistency with international agreements. The room left for green industrial policy in international trade law is not without limits and these must be taken into account in designing a strategy. Similarly, the social and environmental impacts of such policies must be assessed. This manual provides some guidance on assessment methodologies in connection with employment-

related schemes, which are partly a tool to reduce adverse impacts. Further guidance on integrated policy assessments can rely on some useful resources developed by UN Environment, namely the *Reference Manual for Integrated Assessment of Trade-Related Policies* (2001), the *Training Resource Manual. Integrated Assessment* (with focus on trade-related policies) (2004), the *Integrated Policy-Making for Sustainable Development. A Reference Manual* (2009) and the more recent *Guidelines for conducting Integrated Environmental Assessments* (2017). These resources provide a range of approaches and methodologies presented in a very practical manner.

The methodology outlined in this section will be recalled at the end of each of the tool chapters of this manual and adjusted to the specific policy tool discussed in the chapter. A carefully selected list of additional resources is provided at the end of each chapter for further reference.

Resources

NB: all links last visited on 15 September 2017

- Boute, A., 'Energy Trade and Investment Law. International Limits to EU Energy Law and Policy', in: M. Roggenkamp et al (eds.), *Energy Law in Europe. National, EU and International Regulation* (Oxford University Press, 3rd edn., 2017), pp. 137-185.
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- FAO, *The State of Food and Agriculture* (2016).
- FAO, *The State of Agricultural Commodity Markets 2015-16* (2016).
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- IEA, *World Energy Outlook* (2016), (summary).
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- ILO, *Assessing Green Jobs Potential in Developing Countries: A Practitioner's Guide* (2011).
- ILO, *Guidelines for a just transition towards environmentally sustainable economies and societies for all* (2015).
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- UN Environment, *Integrated Policy-Making for Sustainable Development. A Reference Manual* (2009).
- UN Environment, *Green Economy Report* (2011).
- UN Environment/IIED, *Trade and Green Economy: A Handbook* (3rd edn. 2014).

Green Industry Assessments

- UNIDO, *L'industrie Verte au Burkina Faso: Évaluation et perspectives de développement* (2016).
- UNIDO, *Ghana: the role of Green Industry and Trade* (2016).
- UNIDO, *Perú: la Transición Hacia Una Industria Verde: Perspectivas de la industria manufacturer* (2016).
- UNIDO, *L'industrie Verte au Senegal: Évaluation et perspectives de développement* (2016).

GE-TOP Project:

- UN Environment, *Green Economy and Trade. Trends, Challenges and Opportunities* (2013).
- UN Environment, *Green Economy and Trade. Ghana Solar Export Potential Study* (2015).
- UN Environment, *Green Economy and Trade. GE-TOP Ghana Strategy Proposal* (2016).
- UN Environment, *Green Economy and Trade. Peru's Sustainable Trade Potential – Biodiversity-based Products* (2015).
- UN Environment, *Green Economy and Trade. Sustainability Standards in the Vietnamese Aquaculture Sector* (2015).
- UN Environment, *Action Plan to Promote Responsible Aquaculture Standards in Vietnam* (2016).
- UN Environment, *Green Economy and Trade. A Sustainability Standard for the Chilean Agriculture Sector* (2016).
- UN Environment, *Green Economy and Trade. Trade in Certified Organic Agriculture – Challenges and Opportunities for South Africa* (2016).
- UN Environment, *Green Economy and Trade. Contributions to the Implementation of Peru's National Biotrade Strategy: Trade and Agricultural Production* (2016) (in Spanish).
- UN Environment, *Green Economy and Trade Opportunities Project. Synthesis Report* (2016).

Green Economy Industry and Trade Assessment (GITA):

- UN Environment, *South Africa: Green Economy Industry and Trade Assessment* (2017a, forthcoming).
 - UN Environment, *Ghana: Green Industry and Trade Assessment* (2015).
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 - UN Environment and DIE, *Green Industrial Policy: Concept, Policies, Country Experiences* (2017c, forthcoming).
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 - UNITAR, *Green Economy and Trade (e-learning course)*, (leaflet)
 - Viñuales, J. E., *Foreign Investment and the Environment in International Law* (Cambridge University Press, 2012).
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Chapter 2

Border measures

Key contents of the chapter:

- 1** Border measures can provide breathing space to infant green industries, promote industries with positive spillovers, level the playing field reflecting the negative externalities of competitors, and therefore reduce the environmental footprint of domestic industries while providing economic benefits.
 - 2** Main varieties of this policy tool include tariff increases, coordinated tariff reduction (e.g. for environmental goods), carbon equalisation measures, trade remedies (countervailing and antidumping duties), and export restrictions.
 - 3** Major illustrations to be considered in designing border measures include the APEC experience with environmental goods liberalisation, different forms of carbon equalization measures, and the trade remedies introduced by the US, the EU and China in connection with renewable energy equipment.
 - 4** A summary table placing the tools reviewed in this chapter within the overall methodology presented in Chapter 1 is provided at the end of the chapter.
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1. Overview

Within the tool-box of trade-related measures that could promote green industry development, border measures such as tariffs are a key instrument. Tariffs are measures applied at the border to products imported from other countries. They usually take the form of a custom duty charged *ad valorem* (e.g. 10 per cent of the value of imported goods) but they may also be calculated on a different basis (e.g. per imported item or set of imported items). Tariffs are not the only measures that can be applied at the border on imported products. A variety of other measures, including duties, fees and taxes can be applied. One measure that has received much attention in the context of climate change is the adoption of carbon adjustment (or equalisation) measures at the border. Moreover, border measures can also be imposed on exported goods in the form of a variety of export restrictions, such as export duties. The interest of border measures for green industrial policy is two-fold.

Firstly, these measures can serve to **boost the competitiveness of certain producers or even entire sectors with benefits for the environment** (e.g. renewable energy equipment, more efficient products, organic agricultural products, etc.). One channel is the **protection of nascent domestic green industries** that are not yet capable of facing competition from foreign producers. Increasing the tariffs applied on certain competing products will raise their price in the domestic market and thereby make them less competitive as compared to products not subject to the tariff. This is a form of protectionism that is controversial because it rewards less efficient and less competitive producers and may lead both to rent-seeking behaviour and to trade retaliation by other States. Moreover, as other support schemes (see Chapter 3), protective tariff increases are difficult to phase out, as companies may take them as part of the playing field instead of becoming genuinely competitive as compared to foreign companies. A non-protectionist variant of this approach is to increase tariffs on certain goods because of their higher environmental footprint as compared to other similar but less harmful goods or, conversely, to decrease the tariff level on the latter to make them more competitive. In this case, the distinction is not between domestic and foreign products but between environmentally-friendly and less environmentally-friendly ones. A **coordinated increase in the tariffs on more environmentally-harmful products or a coordinated decrease in the tariffs on more environmentally-friendly products** can promote green industries across countries as compared to brown economy industries. It is, in fact, a multilateral or coordinated green industrial policy rather than a merely unilateral one. Another way in which border measures can boost the

A coordinated increase in the tariffs on more environmentally-harmful products or a coordinated decrease in the tariffs on more environmentally-friendly products can promote green industries across countries.

competitiveness of green industries is by **correcting a competitive disadvantage** arising from lower environmental requirements abroad. A carbon

equalization measure applied on imported products would thus reflect the lower costs of those products resulting from less demanding mitigation requirements in the country of origin. It is a cost-internalisation measure that levels the playing field between dirtier products and cleaner (domestic or foreign) ones and may also serve to prevent carbon leakage (relocation of polluting industries to permissive jurisdictions or ‘pollution havens’). Similarly, certain trade remedies (e.g. countervailing duties, anti-dumping measures, and safe-

guards) can be used to reflect competitive distortions and level the playing field. Yet another way in which border measures and, specifically, export restrictions may benefit the environment and domestic industry is by **raising the cost of exporting products such as raw materials or other inputs** so as to reduce the environmental footprint of their production and to make them more cheaply available to domestic producers who use these inputs. In all these cases, the boost of competitiveness enjoyed by certain producers or sectors is intended to promote their development and thereby to move from a brown to an inclusive green economy, domestically and internationally. Their specific impact and their consistency with international agreements will depend on the design of the measure. Box 1 summarises the channels through which tariffs and other border measures can increase the competitiveness of green industries.

Box 1: Boosting green industries through border measures

- Protection of domestic nascent green industries by increasing the tariffs on competing foreign products (controversial but ingrained in the WTO system)
- Promotion of green industries by reflecting their positive externalities through tariff reductions (coordinated green industrial policy)
- Promotion of green industries by reflecting the negative externalities of dirtier competing products through border measures (e.g. tariff increase, carbon equalization measures and trade remedies – countervailing duties, anti-dumping, safeguards)
- Reduction of the environmental footprint of certain industries (e.g. raw materials or extractives) through an increase in the costs of exporting their products (through export restrictions) which also makes the use of these inputs cheaper for domestic producers as compared to foreign producers.

Secondly, **international trade rules leave significant space** for countries to resort to tariff adjustments and border measures, if these are appropriately designed. The consistency of a measure with international trade rules can only be assessed on a case-by-case basis but, as discussed in section 2 of this chapter, policy action in this context can be designed in a way that is consistent with the World Trade Organization (**WTO**) agreements as well as with other trade agreements. As with other green industrial policy tools, their combined economic, environmental and social effects have to be evaluated on a case-by-case basis by policy makers.

In the next sections, we discuss the spectrum of border measures that can be used for green industrial policy as well as their legal implications (section 2) and then provide some representative illustrations of the main varieties of this tool (section 3). Section 4 summarises the chapter and places this tool within the methodology presented in Chapter 1.

2. The tool-box

2.1. Spectrum of measures used in practice

The main varieties of border measures that can be part of a green industrial policy strategy include unilateral tariff increases to protect one industry (2.2), coordinated tariff reductions to promote green industries across many countries (2.3), carbon equalization measures (2.4), countervailing and anti-dumping duties to level the playing field (2.5), and export duties to reduce the environmental footprint of certain industries (2.6). Although several options can be used for one specific purpose (e.g. levelling the playing field) and often the terminology referring to these instruments varies, the distinction used in this chapter reflects both policy practice and international trade rules. In what follows, these options are discussed with reference to their **main components, their operation, and their potential legal implications**. Specific and representative examples are provided in section 3. The objective of the presentation is to show the menu of options that can be used as part of a green industrial policy strategy and to explain their implications in practical terms. As noted in Chapter 1, the discussion is not intended as a policy-prescriptive exercise but only as a policy-relevant analysis of the main varieties of relevant border measures.

2.2. Tariff schedules and their adjustment

States normally require the payment of a custom duty for the importation of a good. Such duties are financial charges calculated for certain categories of products as a percentage of their monetary value (*ad valorem*) or on some other basis (per item, number of items, weight, volume, etc.). For members of the WTO, these appear in the member's tariffs list. Categories of products are defined by the Harmonized Commodity Description and Coding System (**HS**) and the commitments of WTO members regarding tariffs are set in each member's Schedule of Concessions. Schedules typically define maximum levels of tariffs, known as 'bound tariffs' (e.g. 10 per cent *ad valorem*) for a certain category of goods and, often, the 'actual tariff' level is set below that maximum (e.g. 5 per cent *ad valorem*) thus leaving some space for the adjustment of the tariff. Within this maximum, a member can thus increase the tariff applicable to certain categories of goods to provide some protection to domestic producers of similar goods. Such an increase will apply in principle to the goods of all trading partners (most-favoured-nation clause) although preferential treatment may be granted to developing countries and no tariff will apply to trading partners within a regional integration block.

Such an approach, which would be consistent with international trade rules under certain conditions (Article II of the General Agreement on Tariffs and Trade of 1994 or **GATT**), could boost infant green industries and retain jobs in such industries. A tariff could be introduced to protect a sector where domestic small and medium enterprises may have a latent comparative advantage. Such sector would be identified during phase 3 of the methodology introduced in Chapter 1 (prioritisation of intervention areas and goal-setting). Tariff protection could, for example, be offered for a limited period of time and progressively phased out as the domestic industry becomes more competitive (or if the presumed latent advantage fails to materialise). But the net effects are difficult to assess and, depending on the industry and the timeframe, the implications of protecting less efficient and competitive producers may entail a greater environmental footprint. To illustrate this point, Box 2 discusses the example of tariffs on the fuel ethanol and highlights the extent to which the effects of such a measure are fact-dependent. Moreover, there may be trade-offs between domestic industries as, for example, certain domestic industries may prefer to acquire foreign (but cheaper and better) goods rather than domestic (more expensive and less efficient) ones. Furthermore, the social ('inclusiveness') and environmental ('green') implications of such policies may not necessarily be aligned, as the efforts of trade unions to obtain greater protection for workers in less competitive industries may come at the price of a higher environmental footprint from more harmful/less efficient production processes or, conversely, the lack of protection from foreign green goods may lead to job losses and inequality (Chapter 7 discusses policies to address this issue). In addition, although lawful under certain conditions, a protective tariff increase may lead other countries to apply similar measures. Various countries might therefore choose to increase their tariffs to protect their 'young' green industries or even their brown economy. Policy makers should keep in mind that the integration of green industries into global value chains means that the same product often passes many borders, sometimes multiple times. Thus, the effects of even moderate tariff increases may be multiplied. A moderate increase in tariff levels by one country, which is followed by others, could therefore lead to significant cost and price increases for the relevant goods.

Box 2: Fuel Ethanol Tariff

Ethanol tariffs are a type of border measure used by governments to encourage domestic ethanol production. However, existing research has found that removing the ethanol tariff increases social surplus and decreases greenhouse gas (GHG) emissions. This is due to the replacement of corn ethanol with lower GHG-intensive sugarcane ethanol. In a 2011 study, Crago & Madhu showed that, where the domestic industry also produces cellulosic ethanol, the effect of removing the tariff is ambiguous, depending on which biofuel market the tariff is protecting, which again depends on the relative cost and supply elasticity of the different types of ethanol. If the tariff protects corn ethanol, its removal increases welfare and reduces GHG emissions, a finding in line with existing research. However, if the tariff protects the cellulose ethanol market, which is the case if the price for cellulosic ethanol is low enough to be competitive, removing the tariff may increase emissions. Policy makers should therefore review what type of domestic biofuel the ethanol tariff protects and evaluate how this affects different policy objectives to be achieved through bioenergy deployment.

Source: Crago & Khanna (2011)

In practice, the protection of national green industries has been a factor in the efforts of some States to oppose the adoption of an environmental goods agreement that would reduce or eliminate tariffs on a range of green goods, as discussed next and in section 3.1.

2.3. Coordinated tariffs reduction

If **green industrial policy is approached at the level of several countries**, which seek to promote the transition to greener production capacity by acting together, then a potentially useful step may be to decrease (rather than to increase) the tariffs imposed on green products. Such a coordinated approach, which has been used regionally (by the members of the Asia-Pacific Economic Cooperation forum or APEC) and is currently being negotiated at a global level, boosts the competitiveness of green industries in several States as a whole as compared to brown economy industries. It can furthermore boost a country's industrial competitiveness by reducing the cost of inputs for production processes of green goods that form part of regional value chains.

This tool has essentially **three components**: (a) the identification of the list of goods (and potentially services) that will benefit from the preferential regime (the list retained in the APEC context contains 54 HS sub-headings); (b) the tariff structure (itself consisting of the specific categories of goods, the applicable tariff commitments, and the rules defining the origin of the products that enjoy beneficial treatment), and (c) the implementation approach (which involves matters of legal form, e.g. a multilateral, plurilateral, regional or bilateral agreement or some other form of coordination, and timing, e.g. progressive introduction of the scheme to give domestic industries some time for adjustment). It requires a careful

assessment of the strengths and weaknesses of the industries in each participating State because, depending on how competitive different green industries may be in a country, reducing tariffs on green goods may have adverse impacts on less competitive industries, especially in the short-term.

The socio-economic implications of a coordinated tariff reduction must be carefully assessed and managed. There are a range of tools that can be used to assess, in an integrated manner, the impact of such a policy. In Chapter 1, we reviewed several tools focusing on the environmental implications of policies. Chapter 7 further discusses the tools to assess (through models) and manage (through structural adjustment policies) the impact that opening to trade may have on employment in less competitive industries. The practical opportunities and challenges that may arise from the implementation of this policy can be illustrated by the APEC experience. Given their complexity, a full case study is devoted to it later in this chapter (see section 3.1 below).

2.4. Carbon equalization measures

A State may adopt a measure to **re-establish a level playing field** between domestic producers that are subject to certain charges and foreign producers that are not. Such measures can apply both to imports (thus subjecting the foreign products to similar or the same charges) and to exports (thus relieving domestic products exported to other countries of taxes paid domestically in the country of origin). The key principle is that of destination: the tax base applied to the commercialization of a good should be that of the country of consumption. Originally used to compensate for differences in taxation across countries, such border adjustment measures are particularly relevant for climate change policy because they can be used to reflect the lower production costs of carbon intensive goods in countries with less demanding laws. Thus, a border adjustment measure would re-establish a level playing field by imposing on imports the same burden that applies to domestic products. It would also prevent carbon leakage by discouraging relocation of carbon-intensive industries to countries with less demanding laws. Such industries would face carbon equalization when exporting back to the markets of the countries from which they delocalised.

A State considering the introduction of a carbon equalization measure must assess a number of highly technical legal issues to ensure its **consistency with international trade rules**. As a general matter, such measures will be consistent with WTO rules (Articles II:2(a) and III:2 of the GATT) if:

- They do not amount to discriminatory treatment between domestic and foreign like products (i.e. the measure must not go beyond equalizing or offsetting the advantage enjoyed by the foreign product);

- They seek to equalize the burden arising for domestic products from certain specific climate policies (particularly financial charges on products, e.g. indirect taxes on a ton of cement or a litre/gallon of fuel). Justifying other types of policies (e.g. direct taxes on producers, regulation, or inclusion in a cap-and-trade system) is more difficult under the terms of the GATT;
- They are applied either at the border (as duties on imports) or at the commercialization level (internal taxes applied both to domestic and foreign products); and
- In cases where the measure would be in breach of basic trade disciplines, it could be designed to be justified under some of the general exception clauses (Article XX of the GATT).

The legality of carbon equalization measures is further discussed in section 3.2 below. A State considering the adoption of such a measure to level the playing field between its domestic industry and foreign carbon-intensive products produced under lower environmental standards must keep in mind that the specific design of the measure is particularly important.

2.5. Trade remedies (countervailing and antidumping duties)

Another tool to **level the playing field** is the use of so-called ‘trade remedies’, particularly the adoption of countervailing duties or antidumping duties. These measures consist, essentially, of increasing the price of goods imported from abroad by imposing duties on them. The purpose of such duties is to eliminate the unfair advantage arising from a subsidy given by a State to its exporters or to neutralise the attempts of foreign producers to sell very cheaply (at a price lower than in their home market) abroad to capture foreign markets. These measures may be unilaterally adopted by a WTO member under certain conditions (defined in Article VI of the GATT, the Anti-Dumping Agreement, and Articles 10 to 23 of the Agreement on Subsidies and Countervailing Duties or **SCM**).

For both countervailing and antidumping duties, the **process** unfolds as follows:

- A petition from a domestic industry is filed with the relevant authorities of the State or an *ex officio* investigation is initiated by them;
- The case is decided according to the relevant procedure established by the State;
- This procedure is intended to assess whether the conditions are met for the adoption of *countervailing duties* (three conditions: (i) imports of subsidized goods, (ii) material ‘injury’ or threat thereof to the domestic industry producing ‘like products’, (iii) causality between subsidized imports and the

injury) or *antidumping duties* (three conditions: (i) existence of ‘dumping’, namely if the ‘export price’ of a product is lower than the ‘normal price’ of that product in the domestic market of the producer, (ii) material ‘injury’ or threat thereof to the domestic industry producing ‘like products’, (iii) causality between the dumping and the injury); and

- The adoption of countervailing or antidumping duties to offset the anticompetitive effects of subsidization or dumping.

The adoption of countervailing and antidumping duties is a **frequent and widespread phenomenon**. In the context of green industrial policy, several States and groups, including the United States, the EU, China and India, have adopted such measures to protect their green industries from foreign producers, particularly in the renewable energy sector (i.e. solar but also bio-

fuels and wind), which is particularly important from both an environmental and a strategic perspective. It must be emphasised, however, that trade remedies are reactive measures rather than pro-active policies because they respond to anti-competitive practices abroad. They provide a faster (and unilateral) alternative to multilateral dispute settlement before the WTO Dispute Settlement Body, which takes more time and does not provide retrospective damages (i.e. does not address the damage suffered by the complainant’s industry while the dispute settlement process unfolds).

The adoption of countervailing and antidumping duties is frequent and widespread. In the context of green industrial policy, several States and groups, including the United States, the EU, China and India, have adopted such measures.

It should be further noted that trade remedies may be subject to abuse, for example when the duties imposed on foreign products more than offset the unfair advantage or, in other words, when rather than levelling the playing field they distort it in favour of domestic producers. Moreover, the use of trade remedies in one State may lead other States to do the same. Some commentators have pointed to the trade restrictive effects resulting from the application of excessively high and punitive duties in the clean energy sector in recent years (UNCTAD (2014)). To illustrate this tool, section 3.3 of this chapter discusses specific examples of measures adopted in a green industrial policy context and their repercussions.

2.6. Export duties

So far, the options discussed have focused on measures imposed on imported goods. Green industrial policy can also be pursued through the adoption of a variety of measures on goods exported from a country. Such instruments offer an avenue to **offset the increasing pressure from tariff reduction** arising from accession to the WTO or from bilateral/regional trade liberalisation, including specifically in the green sector. Domestic green industries in the downstream sectors (manufacturing) facing more foreign competition can thus be promoted by making some of the inputs from the upstream sectors (raw materials) that they use cheaper. This approach can be part of a green industrial policy strategy if it aims not only to protect domestic industries but also to genuinely protect the environment from the pollution generated by the overproduction of certain raw materials.

The main example is provided by **China**, which has imposed export restrictions (a combination of duties on exports and quantitative restrictions) on certain raw materials (e.g. bauxite to produce aluminium or fluorspar used to obtain hydrogen fluoride) and rare earths (e.g. lanthanum used in electric car batteries). These measures pursue several objectives. One of them is the **reduction of the high environmental footprint of producing such materials**. In other countries, such materials are imported from China rather than locally produced precisely because their production is very polluting. Another objective is to promote productivity and growth in different ways, such as by boosting the competitiveness of domestic industries that use these raw materials as an input, creating an incentive for foreign producers who rely on these materials to relocate to China to reduce their exposure to supply restrictions, and generating tax income from domestic industries that can be used to offset the environmental effects of mining such materials. Although the environmental footprint of these extractive industries could be reduced by measures that are less trade restrictive (e.g. the regulation of production), such an alternative approach may not allow China to target all these objectives at the same time. Thus, the rationale underlying the use of export restrictions is a combination of environmental and economic benefits.

Box 3: The *China – Raw Materials* and *China – Rare Earths* rulings

In 2009, China announced the reduction of exports of rare earths and adopted three types of export restrictions: (i) export duties, (ii) an export quota, and (iii) trading rights restricting the enterprises authorised to export rare earths. This led the US, joined by several other States, to bring a claim against China before the WTO (*China - Rare Earths*). In its defence, China argued that the measures were justified by environmental reasons under GATT Article XX (b) and (g), respectively. In its prior ruling in *China - Raw Materials*, the WTO Appellate Body had found that China could not rely on the general exception clause of Article XX of the GATT to justify a violation of paragraph 11.3 of its Protocol of Accession to the WTO (which bans export duties). In *China - Rare Earths*, the Appellate Body confirmed this finding relating to 'export duties'. As for the 'export quota' and 'trading rights', although Article XX could be invoked, its conditions were not met. While China argued for its right to regulate for environmental purposes, the Appellate Body ruled that China could have relied on other non-discriminatory measures to do so, thereby concluding that the export restrictions imposed by China were unlawful.

Source: Wagner (2014)

As with other instruments, specific design matters greatly for export restrictions to be consistent with international trade law. Box 3 discusses two cases brought before the WTO Dispute Settlement Body to challenge China's export restrictions on raw materials and rare earths. In both cases, China was found to have violated its **international trade obligations**, but because of specific commitments incorporated in the Protocol through which it acceded to the WTO, which specifically limited China's ability to set export duties and trading rights (which must be distinguished from export quotas, which are generally banned). Export restrictions are less frequently used than other border measures or support schemes (see Chapter 3) for green industrial policy, but their ability to offset some of the pressure arising from tariff reduction may be significant, particularly if trade in environmental goods is increasingly liberalised. In order to ensure that these measures yield environmental and socio-economic benefits, export restrictions must be carefully assessed on a case-by-case basis and in the light of other available – and less trade restrictive – options. The tools that can be used to conduct such assessment have been mentioned in Chapter 1.

3. Case-studies

3.1. Coordinated green industrial policies: the APEC's experience³

To boost trade in environmental goods among their group of trading partners, in November 2011 the 21 leaders of the Asia-Pacific Economic Cooperation (APEC) pledged to voluntarily reduce tariffs for a list of selected environmental goods to 5 per cent or less by the end of 2015. In 2012, APEC States subsequently endorsed the “APEC List of Environment Goods”. Trade negotiations are usually conducted on the basis of the Harmonized Commodity Description and Coding System (**HS**). However, these are only harmonised internationally up to the six-digit subheading level, which is much broader than environmental goods categories. The APEC agreement lists 54 product categories (that is 54 HS subheadings). To accurately define environmental goods, the APEC list further specifies environmental goods within the HS subheading as so-called called “ex-outs”, which are identified taking into account additional product specifications. Implementation of tariff reductions takes place at the level of tariff lines (TLs) in national tariff schedules. National TLs are not harmonised on an international level and are therefore not part of the negotiations. Countries may thus choose different approaches to implementing tariff reductions depending on the structure of their national tariff schedules.

While the APEC deal only requires implementation of tariff lines (TLs) in line with the specified ex-out descriptions, countries may adopt a Harmonised System (HS) codes approach covering all national TLs that fall into a given HS category, as chosen by Brunei Darussalam and Chile. Most APEC economies however adopted an approach whereby, for each of the 54 HS subheadings and ex-outs, they identified the corresponding TLs in their national tariff schedules. Implementation plans mark these TLs with a “yes”, whereas action is required for a TL with an above-5 per cent most-favoured-nation-applied tariff rate. A challenge for implementation is that most TL descriptions in national tariff structures are still (much) broader than the specified ex-outs defined in the agreement. This will generally lead to a higher volume of trade being liberalized than the agreement calls for. One option to get around this, which is transparent but costly, is to create new TLs that describe ex-outs more accurately, as Mexico has done. Tariff reductions may also be implemented for parts of existing TLs, corresponding to ex-outs, as seen as part of the APEC experience with Korea and China.

3 This section is based on Voseenaar, *Reducing Import Tariffs for Environmental Goods: The APEC Experience* (ICTSD, 2016).

Within the three-year implementation period from 2012 to 2015, most APEC members reduced their above-5 per cent most-favoured-nation-applied tariffs for goods covered by the agreement in a reasonably specific and environmentally credible manner. The APEC experience indicates that tariff-cutting pledges for environmental goods involving a larger group of WTO members can be successful. This may also be attributable to the voluntary and non-binding nature of agreement, as well as to an ambitious yet realistic target of cutting tariffs to 5 per cent or less, rather than aiming at total tariff elimination.

3.2. WTO consistency of carbon equalization measures⁴

This section discusses key WTO provisions that apply to border carbon equalization measures, notably (a) border tax adjustment (BTA) measures, and (b) border-trade adjustment measures linked to emissions trading schemes. As already noted in section 2, to be found consistent with WTO provisions, a policy measure must be in accordance with the WTO principles of non-discrimination between ‘like products’, i.e. the most-favoured-nation (MFN) obligation under GATT Article I:1 and national treatment, Art. III. A border tax adjustment measure will most likely be considered a taxation measure under GATT Article III:2, while a border adjustment measure linked to an emissions trading scheme is more likely to be considered as a law, regulation or requirement under GATT Article III:4. In order to be found consistent with GATT Article III, the exact amount of a border charge or tax becomes particularly relevant. A border tax adjustment measure may be consistent with Article III:2 if it is equivalent to the additional charge imposed on domestic products (as compared to the conditions prevailing in the foreign country producing competing products). Furthermore, in order to be in line with GATT Article III:4 and Articles 2.1 and 2.2 of the Agreement on Technical Barriers to Trade, the regulation must not be more trade restrictive than necessary to reach the required objectives.

If a measure is found to be inconsistent with the GATT, it may be justified under the exceptions set out in Article XX, notably Article XX letters (b) and (g). Article XX gives particular relevance to a State’s rationale for adopting a border equalization measure. Article XX (b) covers measures that are ‘necessary’ to protect human, animal and plant life, while letter (g) refers to measures that ‘relate to the conservation of exhaustible natural resources’. A State must establish whether a measure (i) falls into one of the exceptions

4 This section is based on F. Sindico, ‘National measures and WTO consistency: border measures and other instruments to prevent carbon leakage and level the carbon playing field’, in C. Carlarne, R. Tarasofsky, and K. Gray (eds.), *The Oxford Handbook of International Climate Change Law* (Oxford University Press, 2016), pp. 313-332, and S. Charnovitz, *Border tax equalization* (Draft Paper Prepared for the Conference on Challenges September 29, 2014).

under Article XX and (ii) whether the measure has the requisite ‘degree of connection or relationship between the measure under appraisal and the state interest or policy sought to be promoted or realized’⁵. Measures aimed at addressing carbon leakage will likely fall under the policy objectives of Article XX letters (b) and (g), respectively. A national measure aimed at promoting energy security may be covered if the link between the measure and climate change mitigation can be demonstrated. If the measure is found to contribute less to mitigating climate change and more to protecting local industry, it may be more difficult to justify under Article XX exceptions.

Measures also need to be consistent with the ‘chapeau’ of Article XX, stating that a measure may not to be ‘applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade’. Measures that covertly attempt to assist domestic producers may be interpreted as disguised restrictions on international trade as set out on the chapeau. Also, whether a measure constitutes an arbitrary or unjustifiable discrimination will depend on how the measure is applied (although this has been debated, see Bartels (2015)). As noted by the WTO Appellate Body, this ‘can be most often discerned from the design, the architecture, and the revealing structure of am measure’⁶.

3.3. The use of trade remedies in solar, biofuels and wind sectors⁷

Trade remedies are implemented by national authorities, without prior consent from the WTO. If they are consistent with WTO law, they will not be overturned in a subsequent WTO dispute settlement process. WTO rules allow for duties to be imposed at the border for goods that are deemed to be ‘dumped’ (i.e. sold too cheaply) and cause injuries to producers of competing products in the importing country. WTO law also allows States to adopt countervailing duties to offset the effect of subsidies given by another State to its exporters, if such subsidies cause injury to the industry of the importing country. Such trade remedy measures may remain in place for a maximum of five years unless extended by an expiry review.

Members of the WTO report a rising number of anti-dumping duties and countervailing measures initiated in the area of renewable energy over the past years, especially for solar technology. The EU, China and the US are still the main users of trade remedies in the clean energy markets. Australia has

5 Appellate Body Report, US—Gasoline, p. 18.

6 Appellate Body Reports, Japan-Alcohol Beverages II, p.29, EC-Seal Products, para 5.303.

7 This section is based on Kampel, *Options for Disciplining the Use of Trade Remedies in Clean Energy Technologies* (ICTSD, 2017).

also become a major user of trade remedies in recent years, together with Canada, India and Peru. It is estimated that for the period 2008 to 2012, trade remedies affected some US\$32 billion worth of trade in Clean Energy Technologies (CETs). In the clean energy sector, 45 trade remedy cases have been reported to the WTO for the period of 2006 to 2015, of these 17 countervailing measures and 28 anti-dumping initiations. Almost half of these cases related to solar technology (21 cases), while 15 related to biofuels, and 9 targeted wind energy. On average, the duty imposed was 26.6 per cent,⁸ but this number hides significant fluctuation. For example, Peru introduced a 26 per cent anti-dumping duty and a 22 per cent countervailing duty against the US on biodiesel, totalling an overall duty of 48 per cent. Another example is the 58.5 per cent antidumping duty imposed by the United States against Vietnam on utility scale wind towers in 2012.

Some studies have pointed to the trade restrictive effects of the application of excessively high and punitive trade remedy duties in the clean energy sector in recent years (UNCTAD (2014)). This has also triggered momentum for retaliatory patterns of use of these measures in the clean energy technology space. This occurred, for example, in the case of the US countervailing duties targeting China between 2007 and 2012. China challenged several such duties and took the case to the WTO. In 2014, the WTO Appellate Body found US duties inconsistent with WTO law. China then, in 2016, went back to the WTO to request consultations concerning the failure of the US to implement recommendations and rulings. The dispute is still on-going.

Summary table

High-level vision setting and stakeholder consultation	UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 1
Stock-taking	<p>Gathering information of socio-economic, environmental and existing policies to define a baseline, particularly as regards the following enabling conditions for trade-related green industrial policies:</p> <ul style="list-style-type: none"> • Appropriate resource endowment and political/social conditions • Public investment and access to credit • Adequate infrastructure • Domestic legal and regulatory framework • Integration into international agreements
Prioritising intervention areas and goal-setting	<p>Identifying policy rationales to be acted upon and sustainability goals to be reached. Policy rationales may include:</p> <ul style="list-style-type: none"> • Protection of infant industries with latent comparative advantages • Promotion of green industries with positive spillovers • Levelling the playing field by reflecting the negative externalities of competitors • Reducing the environmental footprint of domestic industries while reaping industrial policy benefits
Selecting the tools	<p>Matching selected policy rationales with policy options. Policy options within the broad category of border measures may include:</p> <ul style="list-style-type: none"> • Unilateral tariff increase within the maximum level set by the schedule of concessions • Coordinated tariff reductions for green goods and services • Carbon equalization measures • Trade remedies (countervailing and antidumping duties) • Export restrictions
Design and assessment	<p>Specific design of policy option. Selection within each variety of the tool of specific design features</p> <ul style="list-style-type: none"> • Specific market protected by a unilateral tariff followed by a phase-out • List, tariff structure, and implementation form of concerted tariff reductions • Removal of distortive subsidies or additional burdens to exports or introduction of a financial charges on products that only offset the advantage of foreign products • Efficient procedures for countervailing and antidumping duties that may provide a faster shield than multilateral procedures before the WTO. • Duties on exports, licensing requirements for exporters, or quantitative restrictions <p>Assessment of consistency and impact:</p> <ul style="list-style-type: none"> • Legal assessment • Integrated socio-economic and environmental impact assessment
Implementation	UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 6

Resources

NB: all links last visited on 15 September 2017

- Bartels, L. and C. Häberli, 'Binding tariff preferences for developing countries under Article II GATT' (2010) 13 *Journal of International Economic Law* 969.
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- Wagner, 'WTO Law and the Right to Regulate: China – Rare Earths' (2014) 18 *ASIL Insights*.
- Zhang Weiwei, 'Tracing GATT-Minus Provisions on Export Restrictions in Regional Trade Agreements' (2016) 11 *Global Trade and Customs Journal* 122.

Chapter 3

Support schemes

Key contents of the chapter:

- 1** Support schemes can compensate green industries for the positive externalities that they generate but for which they are not rewarded in the current market structure. They can also address financial, scale and coordination challenges in the market, and unlock latent or 'untapped' comparative advantages and learning processes.
 - 2** The spectrum of measures within this policy tool is wide and encompasses not only 'soft' green industrial policies (investment in infrastructure, investment in R&D and training, reduction/removal of distortive subsidies to brown economy sectors, conducive regulatory frameworks, green patent fast-tracking) but also more targeted 'hard' green industrial policy, such as targeted financial subsidies (including grants, loans, loan guarantees, equity infusions, tax credits, FIT schemes, etc.) and other measures that are more specifically related to trade (local content requirements, export-related support, and sustainable public procurement).
 - 3** Major illustrations to be considered in designing support schemes include the experience of China (Golden Sun Program), Germany (the move from a FIT scheme to competitive bidding), Brazil (development of wind energy to diversify its electricity sources), Canada and India (FIT schemes with local content requirements), Ecuador (support for exports of cacao and sustainable fisheries products), and South Africa (move from a FIT scheme to a competitive bidding system).
 - 4** A summary table placing the tools reviewed in this chapter within the overall methodology presented in Chapter 1 is provided at the end of the chapter.
-

1. Overview

Generally speaking, the main approach that has been followed to conduct green industrial policy is the provision of support in different forms. This is consistent with the key message of UN Environment's *Green Economy Report* (2011) to shift public spending from brown to green economy sectors and to reorient investment towards economic activities and processes that generate not only productivity and growth dividends but also environmental and social ones (UN Environment (2017)). In considering the introduction of a support scheme, it is useful to understand the rationale for supporting green industries, the range of tools available and, within them, the specific role of trade in promoting the transition to an inclusive green economy.

The rationale for supporting green industries stems from the recognition of situations where the action of market forces, left to itself, leads to undesirable or sub-optimal outcomes, often called 'market failures'. Green industrial policies and particularly support schemes seek to address **three main**

The rationale for supporting green industries stems from the recognition of situations where the action of market forces, left to itself, leads to undesirable or sub-optimal outcomes, often called 'market failures'.

categories of sub-optimal situations. First, investment in the development and production of green goods generates important positive externalities of both an environmental (e.g. better air quality, biodiversity protection, resource sustainability, climate change mitigation, etc.) and an economic nature (e.g. technological development and spillover, skilled labour, strategic sectors, etc.) that are not fully appropriated by producers. Thus, the return on investment received by the pro-

ducer only partly captures the benefits of these investments to society. Support schemes seek to compensate producers for the generation of such broader benefits so as to encourage the development of these industries. Secondly, in the absence of some initial support, potentially beneficial industries may not be able to develop because of a variety of reasons, including lenders/investors' reluctance to fund the early development stage of a new and unfamiliar industry, the need for a producer or an industry to reach a certain scale to be competitive, or the absence of coordination effects, where the emergence of an industry is difficult because of the absence of another industry (e.g. the availability of rare earths for the development of the battery industry and, in turn, of the electric car industry). Thirdly, initial

support may unleash certain comparative advantages that until then had remained untapped. Such advantage may result from a less polluted environment or from pre-existing economic and cultural practices or, still, from a creative workforce that when combined with a sufficient flow of funding and/or a stable and significant demand leads to high productivity.

Concerning the **available policy tools**, the selection of a specific type of support scheme will depend on the challenge that must be addressed. The spectrum of support schemes is very wide and includes, among others, corrective instruments (e.g. removal of distortive subsidies to fossil fuels, unsustainable fisheries or agriculture, but also tax rebates on exported products), targeted subsidies (e.g. subsidies for research and development, financial subsidies lowering the cost of capital, feed-in-tariff (FIT) schemes, subsidies to consumers of certain goods), conditional subsidies (local content requirements), certain intellectual property-related instruments (e.g. fast-tracking for green patents) and green public procurement schemes. These tools are relevant to conduct green industrial policy, but not all of them are relevant from the perspective of trade.



From a **trade policy perspective**, three types of support instruments are of **particular relevance** not only because they are frequently used in practice but also because they are highly regulated in international trade law. These are local content requirements, export-related support, and sustainable public procurement.

Table 1: Trade-relevant support schemes for green industries

Policy rationales	Green industrial policy tools	Trade-related instruments
Compensating positive externalities	<ul style="list-style-type: none"> • General R&D subsidies and grants • Green patent fast-tracking • Financial subsidies 	<ul style="list-style-type: none"> • Export-related support • Sustainable public procurement
Financial, scale and coordination challenges	<ul style="list-style-type: none"> • Financial subsidies • Infrastructure investments • Institutional coordination 	<ul style="list-style-type: none"> • Export-related support • Local content requirements • Sustainable public procurement
Unlocking latent (untapped) comparative advantages and learning processes	<ul style="list-style-type: none"> • Corrective measures • Green patent fast-tracking • Financial subsidies 	<ul style="list-style-type: none"> • Export-related support • Local content requirements • Sustainable public procurement

Table 1 summarises the three levels discussed so far (types of policy rationales, green industrial policy tools, trade-related policy tools). Some tools can help address more than one policy rationale. Their location in the table is merely indicative and it is intended above all to emphasise the place of trade-related instruments within the wider context of support schemes for green industrial policy.

In the next sections, after a general overview of support schemes used for green industrial policy, we discuss the two most widely used trade-related instruments (local content requirements and export-related support) with reference to their operation in practice and their consistency with international trade rules (section 2). Sustainable public procurement is analysed in Chapter 5. Section 3 of this chapter then provides a more detailed illustration of the use of such tools focusing on local content requirements in the renewable energy strategy of South Africa. Section 4 places the tools reviewed in this chapter within the broader methodology introduced in Chapter 1. **Given the difficulties that local content requirements raise under international trade law and the vivid debates over their operation and results, it is useful to remember that the manual is not intended as a policy-prescriptive resource** but only as an overview of current practice and its main implications.

2. The tool-box

2.1. Spectrum of measures used in practice

'Soft' green industrial policy

Several support schemes for green industrial policy are intended to address the broad enabling conditions (shifting public spending or developing a conducive regulatory framework) for the development of green industries, rather than to specifically boost the competitiveness of a producer or a sector. Such policies have been called 'soft' industrial policy because they are less targeted (Harrison/Rodriguez-Clare (2010)).

Shifts in public spending from the brown economy to activities supportive of an inclusive green economy can take several forms. **Investment in infrastructure** (e.g. roads, waterways, grids, internet infrastructure) that connects local production both to the wider domestic and international markets or that increases the potential for positive spillovers is an important enabling condition for green industrial policy. Similarly, long-term **investment in education, training and research & development** relating to green technology is another way of shifting public spending towards green industries. The **removal or reduction of distortive subsidies to brown economy sectors** is also a way of shifting public spending from brown to green sectors. By way of illustration, conventional agriculture is one of the most distorted sectors in international trade. Although the value of agricultural subsidies is difficult to estimate, a study of 49 developed and developing countries representing 88 per cent of global value added in agriculture suggests that these countries transferred, in the period 2012 to 2014, an annual average of US\$ 601 billion in subsidies to agricultural producers, mostly in the form of price-, output- or input-related support (OECD (2015)). Fossil fuel consumption is also massively subsidised and still receives several times the amounts channelled through renewable energy subsidies. This is problematic because such support distorts energy prices (making renewable energy less competitive) and amplifies negative environmental and health externalities at a large public cost. In both agriculture and energy, removing or reducing these subsidies would operate as a corrective policy and a key enabler for the emergence of green industries. Still another way of shifting public spending is through **sustainable public procurement**, briefly discussed below and addressed in more detail in Chapter 5.

Some other support schemes focus on the development of a **conductive regulatory framework**. Quality and food regulations that reflect the implications of different forms of producing agricultural goods or a regulatory framework for renewable energy (e.g. setting **targets** for the

amount of electricity to be sourced from renewable sources) that is sufficiently predictable may go a long way in generating investment in green industries and enabling positive spillovers. A key challenge is to structure the regulatory framework in such a way that strikes a balance between predictability and flexibility. Too much flexibility will make return on investment volatile and discourage private investment. Too much rigidity may push a country into electricity deficits and expose it to the risk of litigation for violation of domestic law or of international investment agreements. Countries such as Spain, Italy or the Czech Republic have faced many claims brought by investors in connection with the adjustment of the regulatory framework governing renewable energy subsidies. Sufficient protection of **intellectual property rights** offers a way to internalise the positive externalities of developing green technologies. Box 1 discusses attempts at fast-tracking patents relating to green technologies as a way of incentivising the development of green industries.

Box 1: Fast-tracking green patent applications

In order to support green innovation, several patent offices worldwide have introduced measures to fast-track 'green' patent applications, allowing applicants to protect and license their technology in less time. Empirical evidence on the introduction of fast-tracking procedures indicates that such measures have assisted in the diffusion of green technologies in the short-run. The grant-processing time can be reduced by up to 75% compared to a regular process. Moreover, green technologies undergoing the fast-tracking procedure receive more than twice as many citations as regular patents, indicating positive spillover effects through fast-tracking. Particularly valuable for green industrial policy is the fact that small but fast growing start-up companies in the green technology sector and domestic companies make use of fast-tracking procedures, indicating a demand for such programmes from this sector.

Source: Dechezleprêtre (2013)

'Hard' green industrial policy

In addition to a broad focus on enabling conditions, industrial policy can be more directly targeted to specific industries and producers. This form of action, sometimes called 'hard' green industrial policy, is becoming increasingly frequent. It may rely on a variety of sector specific financial subsidies or on specific sustainable public procurement programmes.

Targeted financial subsidies to green industries can have different policy rationales. The main rationale is to provide access to finance to producers or sectors that because of the novelty of their product, the lack of familiarity of private sector investors or lenders, or the uncertainties surrounding the prospects of the industry are unable to receive sufficient funding to develop their activities. Other rationales may include the internationalisation of a positive externality (e.g. environmental protection) of the industry or the

activation of a latent competitive advantage, particularly for export industries. The instruments used may range from **grants or equity infusions** to – more often – **tax credits and rebates, low interest-rate loans, and loan guarantees**. Box 2 discusses a subsidy scheme introduced by China in 2009, the Golden Sun Program.

Box 2: China's Golden Sun Program

Established in 2009, China's Golden Sun Program covers up to 50 per cent of the installation, transmission and distribution costs of grid-connected photovoltaic projects and up to 70 per cent of the installation costs of off-grid photovoltaic projects at the national level. Over time, China has introduced some cuts to the subsidies to reflect the drop in the price of equipment and the significantly higher returns of developers under this scheme as compared to China's FIT scheme. As other countries, the advantages provided by China to solar developments have led the programme to be oversubscribed thus requiring adjustments to limit financial exposure.

Source: IEA/IRENA Joint Policies and Measures Database

Financial support may come from domestic sources (through State programmes) or from multilateral institutions. The **Global Environmental Facility** and the **Green Climate Fund** have both established platforms to engage with the private sector, including green industries, mostly through the use of risk-reducing instruments that help to leverage private financing. Private investors and lenders are more likely to provide finance if their risk is limited by a loan repayment guarantee or some other financial instrument from a multilateral institution. Other international schemes, sometimes of a bilateral State-to-State nature, have provided finance to combat deforestation (so-called **REDD-plus** programmes) or to maintain a wider variety of 'services' provided by the natural operation of ecosystems (payments for ecosystem services or **PES schemes**). A particularly important instrument is the use of **Feed-in-Tariff (FIT) schemes** to support electricity generation from renewable sources. FIT schemes consist of government purchases of certain amounts of electricity at a guaranteed price (tariff) for a guaranteed number of years. The combination of FIT schemes with renewable energy targets has been an important driver of the market introduction of renewable energy. A report from a think-tank specialised in renewable energy estimates that, in 2014, 144 countries had renewable energy targets and 138 countries had introduced support policies (as compared to only 48 countries in 2004) (REN21 (2014)). Of note is that most of the expansion in recent years has been observed in developing countries and emerging economies (REN21 (2014)). Box 3 discusses the experience of Germany and Brazil in growing a renewable energy sector through support schemes.

Box 3: The experience of Germany and Brazil in developing a renewable energy industry

Germany

A major success factor behind Germany's energy transition was its Renewable Energy Act (EEG), which foresaw a feed-in tariff that guaranteed an above wholesale price for green electricity for 20 years. However, the success also resulted in a 20 billion surcharge for consumers in 2015, concerns over grid stability and possibly overshooting RE targets, which led the government to reform the EEG. The reform came into effect in 2017 and replaces the former system with an auction-based competitive bidding process. This is expected to reduce costs and help grid development keep pace with green power generation. Critics of the EEG reform however fear that an auction-based system may lead to higher uncertainty for investors and crowd-out smaller actors like energy cooperatives.

Brazil

Brazil has put in place various mechanisms to diversify its electricity matrix, which heavily relies on hydroelectric power. In order to encourage domestic manufacturing of wind turbines, Brazil offers highly subsidised loans through its National Development Bank (BNDES), conditional on a local content requirement (LCR) of 60%, coupled with the weight of its components. Prior to BNDES, Brazil already offered feed-in-tariff incentives for wind electricity generation conditional on LCRs through its incentive programme PROINFA. In 2007, Brazil switched to an auction-based system to contract energy, mainly to reduce market asymmetries. While several foreign companies have already invested in local wind production facilities some developers blame LCRs for the slow uptake of wind energy, especially due the de-facto requirement to procure expensive domestic steel.

Source: Kuntze/Moerenhout (2013) and
Clean Energy Wire (2016)

Source: Kuntze/Moerenhout (2013)

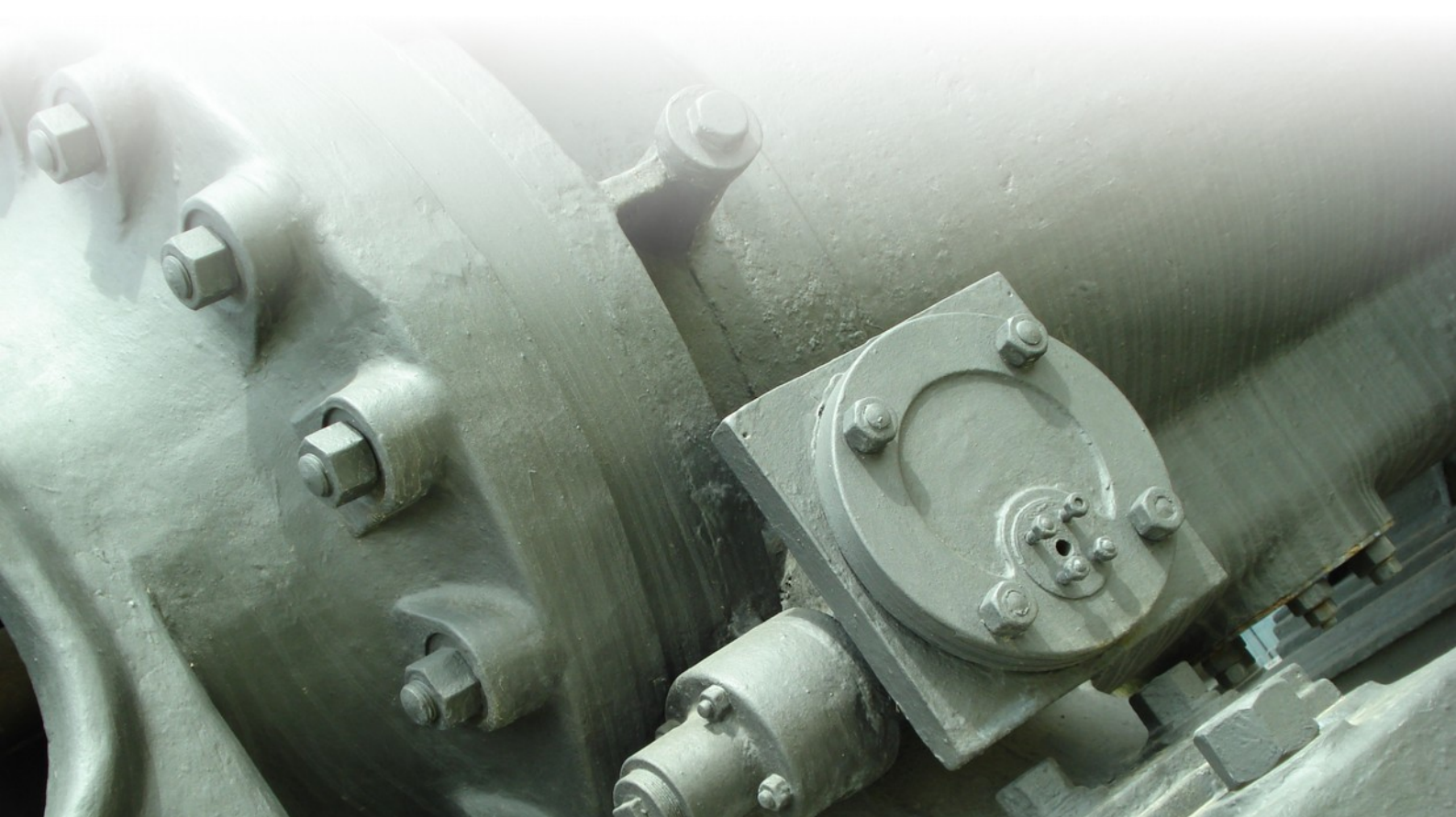
FIT schemes can be considered a specific application of a **sustainable public procurement** policy. This policy can be defined as 'a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured' (European Commission (2011)). Given the volume of governmental procurement every year, sustainable public procurement can be a major tool to bring infant green industries to scale, unleash a latent (currently untapped) comparative advantage, as well as trigger a learning-by-doing process. This tool is discussed in detail in Chapter 5.

Together with sustainable public procurement, two 'hard' green industrial policies of particular relevance from a trade perspective are **domestic or local content requirements** and **export-related support**. Local content requirements are often linked to financial subsidies, which are conditional upon sourcing some share of the relevant materials or part of the labour force from the home country. Export-related support can also be made

conditional upon the export of a certain volume of the product. Both types of measures are, as a general matter, inconsistent with international trade law and, in some cases, they have led to disputes before the WTO Dispute Settlement Body or to the adoption of trade remedies by importing countries. In what follows, these two instruments are discussed with reference to their main components, their operation, and their potential legal implications.

2.2. Local content requirements

Local content requirements are a widely used industrial policy tool, particularly in the automobile and energy sectors and, increasingly, as a tool to facilitate a transition to an inclusive green economy. **They are, however, controversial because, in most cases, they go against foundational non-discrimination standards** in international trade law. Moreover, their overall effectiveness from a green economy perspective has been questioned and it is likely highly dependent on the context of the measure. The key purpose of local content requirements is to ensure that ‘domestic’ materials, products, labour and services are sufficiently used and hence that they benefit from a sustained demand. To understand their operation, it is necessary to clarify the different **policy rationales** underpinning their use, their different **forms and design** (including the characterisation of what is defined as ‘local’), and their **legal implications** (discussion based on IFC (2011); UNCTAD (2014); Ramdoo (2015)).



Policy rationales

The use of local content requirements seeks to promote the development of infant green industries, to shift the economic structure of a country from rent-seeking industries (e.g. fossil-fuel sectors) into more diverse and high-value-added sectors, and to ensure that economic development is more inclusive. The **development of green industries** can be promoted by ensuring a relatively steady demand (required by local content requirements), which may allow certain industries to have better and cheaper access to capital and investment as well as to increase the production volume (thus reducing marginal costs of production). A frequent goal of certain types of local content requirements (e.g. requiring investors to domestically produce high value-added products and to locally hire some labour and services) is technological ‘leapfrogging’, i.e. the ability to learn from innovative practices in other countries without going through the entire trial and error process. This is particularly the case for sectors where the positive spillover effects are high (e.g. green services). Local content requirements are also used as a tool **to shift the economic structure of a country from a brown to a greener economy**, as for example in countries that are highly concentrated on fossil-fuel extractive industries. In this context, local content requirements can promote higher value-added production (e.g. equipment) and services (e.g. engineering) as well as address potential coordination problems (e.g. when large industries are not engaging enough with the local manufacturing or services sectors). Local content requirements are also used to ensure a **higher level of resource distribution and inclusiveness**. Indeed, large and concentrated industries may be highly profitable but, if these profits are not shared more widely with other stakeholders (e.g. workers, small businesses, local providers of goods and services, etc.), this gap may lead to increasing inequality. Tax revenues generated by large industries may not be a sufficient redistributive tool in countries facing the so-called ‘resource curse’, where oftentimes wealthy elites hold the power and capture the occurring rents.

Design of the local content requirement policy

It is important to clarify the goal pursued when designing the local content requirement policy. Three sets of considerations have to be kept in mind, namely (a) what is meant by ‘**local**’, (b) the specific **structure** of the requirement (whether it is explicit or implicit, quantitative or qualitative, focused on materials, labour, services, etc.), and (c) the **legal form**.

The specific definition of **what is ‘local’** depends on the goal pursued by the policy. Ownership (requiring foreign firms to form joint ventures with local ones or to open their equity to local participation) can be used to retain control over strategic industries, including ‘national champions’. Location of production (requiring a certain amount of locally manufactured goods or

equipment) can be used to increase demand for infant green industries (thus generating scale and improving access to funding), address coordination problems (prompting the creation of a link between large industries and smaller local ones), diversifying the economy, and locating a larger portion of the value chain in a country's territory. Similar considerations apply to the use of local workers (workers living and paying taxes in a country) or local services companies (e.g. consultants). In this case, two further considerations include a potential focus on 'nationals' of the host State (rather than on 'residents') and the advantages for positive spillovers (as the knowledge learnt by workers and consultants would remain in the country). In order to foster technological spillover, 'local' may be defined as R&D or high value-added manufacturing being conducted in the territory of the host State. In this case, ownership would be less relevant but employment of locally-based (potentially national) workers and service companies would remain very relevant.

The **specific structure of the local content requirement** can be explicit or implicit. Explicit local content requirements can be quantitatively defined and typically call for a minimum threshold of locally sourced materials (expressed by volume, tonnage, etc.) or labour (expressed by number of hired local workers or by expenditure on locally-sourced services). They can also be defined qualitatively by reference to the training of staff, integration of local development in a company's plans, R&D activities conducted locally, etc. Table 2 provides a concise taxonomy of different forms of local content requirements.

Table 2: Taxonomy of local content requirements

Policies	Measures	Examples
Quantitative requirements	Quotas based on numbers	Number of local population employed Certain categories of procurement reserved for locals Specific content target for certain products
	Quotas based on values	Technological transfer Percentage of local procurement spending going to local companies Local suppliers to benefit from percentage preferential price State participation to obtain license
Qualitative requirements	Reporting and justification	Companies must report and justify hiring foreign labour or sourcing inputs from abroad
	Information sharing	Companies must advertise vacancies or publish tenders and procurement opportunities
	Capacity and knowledge development	Companies to train local staff or train and certify local suppliers
	R&D contribution and transfer of technology	Companies commit to transfer technology to local firms / companies required to carry out some levels of R&D
	Preferential treatment	Companies must hire local staff or source inputs locally if available on a competitive basis

Source: Ramdoo (2015)

Importantly, local content requirements have been very frequently used in **connection with FIT schemes** for renewable energy. One study reviewing previous work on this issue discusses the use of local content requirements in renewable energy policies in a dozen countries, namely China, India, Brazil, South Africa, the United States, France, Italy, Spain, Croatia, Turkey, Argentina and Canada (Kuntze/Moerenhout (2013)). It finds that the

effectiveness of local content requirements is context-specific but, as a general matter, empirical work emphasises the importance of the following factors:

- Market stability and size (this is because to attract sufficient investment in the locally sourced products, there must be a sufficiently stable and large demand for such products);
- The level of domestic input required must not be too high and it must be gradually phased in (provided that market stability and size are sufficient);
- A sufficient level of coordination with the local industries that will have to provide the goods and services in question and some related financial incentives (this is because locally sourced products must be available when the scheme starts to run and in the absence of sufficient supply capacity the market may be captured by foreign entrants, depending on the definition of ‘local’);
- Specific balancing of, on the one hand, the increased cost borne by companies that are required to source local products and, on the other hand, the ability of local producers to promptly develop efficiency, cost and technological gains to become truly competitive and lower the costs (the latter element must rapidly outweigh the former, which requires a focus on specific infant green industries with a latent comparative advantage rather than on mature but underperforming ones).

More generally, local content requirements are often introduced together with investment promotion policies, so as to attract foreign investment. Foreign Direct Investment will benefit from certain advantages while being subject to local content requirements or, depending on the definition of ‘local’, will benefit from the local content requirements as such. This has important implications for the legal assessment of local content requirements, which will have to take into account both trade and investment agreements.

Legal treatment

Despite their wide use, local content requirements **are generally inconsistent with trade and investment law**. This is because trade and investment agreements require that foreign and national like products and producers (investors) are treated similarly (the ‘national treatment’ standard). The legality of a measure must be assessed at three levels, which vary significantly across countries, namely the applicable legal framework, the specific design of the measure, and the likelihood of legal challenge (litigation risk).

The **applicable legal framework** includes, in most cases, trade disciplines arising from the General Agreement on Tariffs and Trade (**GATT**, Articles III:4 and III:5), the Agreement on Trade-related Investment Measures (**TRIMS**, Articles 2.1 and 2.2), the Agreement on Subsidies and Countervailing Duties (**SCM**, Article 3.1(b)), and a variety of regional or bilateral trade and investment agreements. In virtually all cases, an obligation of national treatment will be part of the applicable framework to both trade flows (i.e. treatment of foreign products no less favourable than the one accorded to domestic ones) and investment schemes (i.e. treatment of investments made by foreign investors no less favourable than that accorded to domestic ones). Support schemes may also constitute a prohibited subsidy under the SCM because subsidies conditioned on the use of domestic over

imported products are prohibited by Article 3.1(b). The relevance of the SCM is further discussed in Box 4 and in section 2.3 below.

Consistency of a local content requirement with this standard will largely depend on the **specific design of the measure**. From a trade perspective, design is important to determine whether the measure can benefit from a derogation (or carve-out) includ-

ed in Article III:8(a) for public procurement of products for governmental purposes. Box 4 discusses rulings by the WTO dispute settlement organs according to which this derogation was considered to be unavailable for local content requirements connected to FIT schemes because the product procured was electricity whereas the local content sourced was equipment. The TRIMS clarifies the scope of Article III:4 and specifically lists local content requirements as inconsistent with it. Under the GATT, it is possible to justify an otherwise inconsistent measure if it falls under one of the hypotheses envisioned in Article XX and it is not applied in a discriminatory manner. However, this is an exception and the burden of proof rests on the respondent State. The practice on green industrial policies so far suggests that justification is very difficult. Design is also important because consistency with one legal framework (e.g. a trade treaty) is unrelated to – and hence does not guarantee – consistency with another (e.g. an investment treaty). Thus, a local content requirement that considers domestic and foreign-owned companies based in the territory of the host States as ‘local’ for the purpose of the support scheme may be consistent with the national treatment clause in the applicable investment treaty, although it would still discriminate between domestic and foreign products from a trade perspective. Moreover, regional and bilateral treaties tend to address local content requirements and

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public procurement, as well as more generally environmental regulatory space, in more specific terms (see Chapter 6). This changes the way the measure is treated legally.

Box 4: The *Canada – Renewables* and *India – Solar Cells* rulings

In 2011 the European Union and Japan challenged a feed-in tariff (FIT) scheme that supported solar and wind power in the Canadian province of Ontario. The complainants emphasised that they did not object to the FIT as such, but rather to the fact that receipt of the FIT was conditional on the use of local content to produce renewable electricity. They argued that the scheme constituted a prohibited subsidy (and also that it violated the Agreement on Trade Related Investment Measures or TRIMS, again because of the local content requirement). The WTO Appellate Body (AB) ultimately found that it could not rule on whether the measure was even a subsidy in the first place, since it could not determine at what price renewable electricity should be bought. However, it declared that the price for conventional electricity was not the right comparator, and that the government-created market for renewable energy was a new market that needed its own benchmark price. The FIT was still found to be illegal. The AB considered that the public procurement derogation (Article III:8(a) of the GATT) was not available and, as the measure discriminated against foreign producers, it breached the TRIMS and Article III:4 of the GATT. But it left open the question of whether a FIT—which most observers consider to be a “good” subsidy because it pays for social environmental benefits, facilitating the transition to a green economy—could be considered a subsidy under WTO rules.

A similar case was decided in early 2016. In April 2014, after more than one year of consultations, the United States requested the establishment of a panel to review the WTO consistency of a support scheme introduced by India under which solar power developers selling electricity to the government were required to purchase solar cells and modules from domestic Indian producers. The United States and several States intervening argued that these requirements were in breach of Article III:4 of the GATT, the TRIMS and the SCM Agreement. The panel and the Appellate Body concluded, referring to *Canada – Renewables*, that the measure was in breach of both Article III:4 of the GATT and the TRIMS. India tried to justify the measure through several means, including Article XX letter (d). Under this clause, India argued that the measure was necessary to secure compliance with international agreements, including the UN Framework Convention on Climate Change, but the panel and the Appellate Body rejected this argument on the debatable ground that such agreements had no direct effect.

Source: UN Environment/IISD (2014)

In practice, a country considering the introduction of local content requirements to support green industries would have to assess its **exposure to litigation risk**. That assessment can only be done on a case-by-case basis but it would include the determination of the specific treaties potentially applicable, any contractual arrangements, the importance of the market from the perspective of trade partners and foreign investors, and the implications resulting from the use of different measures. Claims before the WTO dispute settlement organs may take years to be decided and, if lost, they do not lead to the payment of retrospective damages but to the obligation to change the unlawful measure. By contrast, investment claims are brought by private parties who claim monetary compensation covering both retrospective and

prospective damages, plus compound interest. Such compensation can be claimed by each party affected by the measure. Thus, the same measure can lead to many claims, each heard by a different tribunal, sometimes with inconsistent results. For both trade and investment, the exposure to litigation risk can be seen as a component within a broader cost-benefit analysis encompassing environmental, social and strategic benefits. In practice, there is a clear gulf between the wide number of States using local content requirements to advance green industrial policy and the very limited number of cases that have been brought against them so far.

2.3. Export-related support

Policy rationale

Export-related support includes a variety of measures that help green industry to produce cheaper and better and hence to compete in international markets. The design of these measures varies significantly as does their legal treatment. The support schemes that have been discussed so far can be understood as export-related measures in a broader sense to the extent that they increase the ability of domestic green industries (e.g. manufacturers) to export in more competitive terms. There are, however, support schemes that are more specifically targeted to develop green exports. Depending on their design and the types of advantages they provide, they can help domestic green industries to correct competitive disadvantages (e.g. a tax rebate on low-carbon exports) or to unleash a latent (untapped) comparative advantage. But they can also result in more aggressive export policies leading to the adoption of countervailing duties or antidumping duties in importing countries (see Chapter 2).

Design of the export-related support scheme

Export-related support schemes can take several forms. However, the more export-oriented and specific the more likely they will be inconsistent with international trade law.

Export-related support to green industries in the form of soft industrial policy, such as the general provision of infrastructure (grids or roads) will generally be generally consistent with trade law and potentially very important for green exports. Moreover, establishing a regulatory framework that favours sustainable agriculture is also very useful, and this can be combined with more targeted measures such as support for organic agriculture techniques, standard selection, certification processes, and the like (see Chapter 4).

In some cases, such support schemes are particularly advantageous to activate a so far largely untapped comparative advantage of developing countries, as in the case of organic agriculture: several developing countries can rely on better climate conditions and on the fact that most farming is at present already conducted in organic conditions and, thus, there would be no need for a costly transition away from conventional agriculture into organic one. In turn, this represents a significant trade opportunity because most organic agriculture (ap-

In some cases, support schemes are particularly advantageous to activate a so far largely untapped comparative advantage of developing countries.

proximately 80 per cent) is conducted in developing countries and it is mostly consumed (approximately 90 per cent) in the United States and the EU, with growing demand also from China (FiBL (2015)).

Specific examples of export-related measures that can be adopted to pursue such trade opportunities include the adop-

tion of laws and regulations governing organic agriculture with equivalent standards to those set by major markets or the provision of support to learn how to produce agricultural products that are certifiable and exportable to international markets. Box 5 provides an example of the first type of measure focusing on the conditions set by the EU to access its market for organic agricultural products. Box 6 discusses the green export strategy of Ecuador with respect to cacao and sustainable fisheries products.

Box 5: The influence of EU organic requirements

Together with the United States, the European Union (EU) accounts for over 90 per cent of the consumption of organic agricultural products. The main piece of legislation governing organic production in EU law is Council Regulation (EC) No. 834/2007. This regulation authorises the distribution of organic products from non-EU countries if they have been produced and inspected under equivalent conditions to those applied in the EU. This can be ensured in two ways: (a) certifying organisations that operate in non-EU countries can receive an authorisation from the European Commission and EU countries; (b) products from non-EU countries are admitted if the country appears in a list of countries considered by the EU to have equivalent standards or – when the country is not listed – if a recognised control body has certified the goods.

Source: UN Environment (2013)

Box 6: Ecuador's green exports strategy

Ecuador is the biggest exporter of cacao 'fino de aroma' and a major exporter of fish products. To boost its export earnings while protecting its environment and creating more and better jobs, Ecuador adopted a National Export Strategy for Sustainable and Green Products in 2015. The strategy identifies the cocoa-chocolate and fisheries sectors as socio-economic priority sectors and outlines a Green Export Action Plan for 2015 to 2019 to make these sectors greener and more competitive. In the fisheries sector, the action plan calls for improved efforts against illegal, unreported and unregulated fishing activities and the adoption of voluntary sustainability standards. In its cacao-chocolate sector, Ecuador plans to become the first country to have complete traceability of its entire cacao harvest and to get all cacao and chocolate certified as environmentally and socially sustainable.

Source: UNCTAD (2015)

Legal treatment

The legal treatment of subsidies is governed by the SCM. Under this framework, subsidies can be illegal in two ways. As a general matter, subsidies that are conditional on export performance (Annex I of the SCM provides an illustrative list) or on local content requirements are prohibited by the SCM (Article 3). Otherwise, subsidies are permitted but they may be challenged if they are 'actionable' (Article 5). Subsidies are considered actionable by the SCM if they are 'specific' to an industry (Articles 1.2, 2.1 and 2.2) and cause 'adverse effects' to the interests of another WTO member. A subsidy is specific if the governing framework specifically limits access to it to certain companies or industries or to companies in designated geographical areas. Adverse effects may take the form of injury – or threat thereof – to the domestic industry of another member, the offsetting of benefits that would otherwise be enjoyed by other members, or serious prejudice – or threat thereof – to the interests of another member.

Both the prohibition under Article 3 and the actionable clauses under Article 5 only apply when it is indeed a 'subsidy' in accordance with the definition of Article 1.1 of the SCM. That is the case when there is a financial contribution by a government or public body, or income or price support, and a benefit is thereby provided. Grants, loans, loan guarantees, equity infusions, tax exemptions, government payments to a funding mechanism and government purchase of goods all qualify as 'financial contributions'. However, this is not enough. The financial contribution must, in addition, provide a 'benefit' to the recipient, i.e. it must give the recipient an advantage beyond market terms. The question of whether a feed-in-tariff scheme (in

Ontario; see Box 4) confers a 'benefit' beyond market terms has been left open by the WTO Dispute Settlement Body, which creates potentially significant space for this type of green industrial policy.

Of note is that the provision of general infrastructure (a key enabling condition for green industrial policy) is not regarded as a 'financial contribution' and that subsidies are not considered to be specific if they are based on clear and objective eligibility criteria that are strictly adhered to and automatically applied (Article 2.1 of the SCM). The latter could be found to be specific if they are *de facto* so in accordance with Article 2.1(c) of the SCM.



3. Case-study: Supporting renewable energy in South Africa

South Africa's energy system has historically relied mostly on electricity generated from cheap domestic coal, supplied by the national utility Eskom that enjoys a *de facto* monopoly on generation, supply and transmission of electricity. Between 1998 and 2010, South Africa put in place a policy framework to attract domestic and foreign investment and to facilitate the introduction of renewable energy into the power system. In its **2003 Renewable Energy White Paper**, the government provided a framework for the development of suitable financial and legal instruments, as well as technology development, awareness raising, capacity building and governance mechanisms. The 2003 White Paper furthermore called for **NERSA**, the National Electricity Regulator, to explore appropriate fiscal and financial mechanisms to support the promotion of renewable energy. It also introduced a shift in the responsibility for energy planning from Eskom to the government: through a process of integrated resource planning by the government, different energy sources are to be treated objectively in line with their performance and potential. The finalisation of the **Integrated Resources Plan (IPR)** in 2010 gave effect to this provision and provided investors with a longer-term planning horizon. In the IPR, the government planned to increase electricity generation capacity by more than 46 Gigawatts (**GW**) by 2030, with the requirement that 23.6 GW should come from renewable energy sources.

Within this overall context, in 2009, NERSA initially put in place a generous **feed-in-tariff scheme**. However, this scheme faced significant challenges and was replaced in 2011 with a **criteria-based bidding system** on the basis of which contracts to build, operate and maintain renewable energy generation plants would be awarded. The so-called **Renewable Energy Independent Power Producer Programme (REIPPP)** invites bids from independent power producers in a competitive bidding process along five separate bidding windows. The programme structure provides that, for each bidding window, the programme commission is to determine a ceiling tariff for each technology and a total megawatt (**MW**) allocation as per technology category – i.e. onshore wind, solar thermal, solar photovoltaic, biomass solid, biogas, landfill gas and small hydro. Each bidding window is opened with a request for proposals and interested bidders are then required to submit proposals with specific timelines. Bidders have to demonstrate a very advanced state of development, including the requirement to have certain permits in place, present a final project structure (including technology suppliers, contractors and financiers), offering an electricity price equal or below the price cap and **meeting the minimum economic development**

requirements. Successful bidders are awarded a generation licence by NERSA, and enter into a Power Purchase Agreement with Eskom. This provides for a secure 20-year revenue projection, which renders a power generation project bankable and appealing to investors. Furthermore, the separate bidding windows allow for the incorporation of lessons learnt and help to improve cost effectiveness.

In line with the two main industrial development government strategies, i.e. the **New Growth Path** and the **Industrial Policy Action Plan (IPAP)**, the **REIPPP reflects the importance of local content and economic diversification.** The 70:30 split between price and economic development considerations balances timely provision of renewable energy at the required scale with the provision of development benefits for the country. Development criteria include various categories, including ownership, technology transfer, socio-economic development and local content provisions. Local content requirements for the REIPPP differ between types of technology and between bidding windows. However, the framework explicitly provides for an increase in local content requirements over time. For solar and wind, local content requirements increased from 28.5 per cent and 21.7 per cent in round one, to 47.5 per cent and 36.7 per cent in round two, respectively.

As of 2017, and since its inception in 2011, the programme has selected 102 preferred bidders across five bidding windows and procured over 6300 MW of RE capacity, whereas an additional capacity of over 2500 MW has been connected and is feeding electricity into the national grid. This amounts to 90 per cent of the 2020 target of 7,000 MW RE capacity to be procured by 2019 and commissioned by 2030. In 2015, the government furthermore launched a **small Independent Power Producer (IPP)** programme through which generation capacity from projects of less than 5 MW will be procured, which shall reduce the administrative burden for small projects. Including the recent ministerial announcement to add close to 8 GW, effectively doubling the procurement through the REIPPP, the cumulative capacity determined for procurement stands at over 14 GW.

The REIPPP has attracted close to R200 billion (ca. US\$15 billion) of investment, of which more than a quarter is foreign investment, one of the largest investment streams in the country. Foreign equity and financing in the REIPPP (bidding window 1 to 4) was with R53.2 billion equivalent to 85.8 per cent of the total foreign direct investment attracted into South Africa during 2014. It should be noted that an **important feature in the design of the REIPPP was to keep at least 40 per cent of the projects in the hands of South Africans.** Bid requirements have furthermore secured shareholding for Black South Africans across the value chain as well as a minimum ownership of 2.5 per cent by local communities. Actual equity shareholding across the portfolio well exceeded minimum requirements, with 47 per cent of local South African shareholding and a share of 10.5 per cent of community shareholding.

Summary table

High-level vision setting and stakeholder consultation	UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 1
Stock-taking	<p>Gathering information of socio-economic, environmental and existing policies to define a baseline, particularly as regards the following enabling conditions for trade-related green industrial policies:</p> <ul style="list-style-type: none"> • Appropriate resource endowment and political/social conditions • Public investment and access to credit • Adequate infrastructure • Domestic legal and regulatory framework • Integration into international agreements
Prioritising intervention areas and goal-setting	<p>Identifying policy rationales to be acted upon and sustainability goals to be reached. Policy rationales may include:</p> <ul style="list-style-type: none"> • Compensate for positive externalities non-appropriated by green industries • Facilitating access to finance • Facilitating increases in the scale of production • Addressing coordination problems • Unleashing latent comparative advantages and learning processes
Selecting the tools	<p>Matching selected policy rationales with policy options. Policy options within the broad category of support schemes may include:</p> <p>Soft green industrial policies (addressing mostly the enabling conditions identified in the stock-taking exercise):</p> <ul style="list-style-type: none"> • Investment in infrastructure • Investment in R&D and training • Removal/reduction of distortive subsidies to brown sectors • Enacting conducive regulatory frameworks • Fostering innovation through the fast-tracking of green patents <p>Hard green industrial policies (covering most trade-related measures):</p> <ul style="list-style-type: none"> • Targeted financial subsidies (grants, loans, loan guarantees, equity infusions, tax credits, FIT schemes, etc.) • Local content requirements • Export-related support • Sustainable public procurement
Design and assessment	<p>Specific design of policy option. Selection within each variety of the tool of specific design features:</p> <ul style="list-style-type: none"> • Different definitions of ‘local’ in local content requirements • Specific structure of the local content requirement (quantitative requirements: based on numbers and/or value; qualitative requirements: reporting and justification, information sharing, capacity and knowledge development, R&D contribution and transfer of technology, preferential treatment) • Less or more export-oriented subsidies • Export equalisation measures at the border <p>Assessment of consistency and impact:</p> <ul style="list-style-type: none"> • Legal assessment • Integrated socio-economic and environmental impact assessment
Implementation	UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 6

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Chapter 4

Standards

Key contents of the chapter:

- 1 Standards can help to promote exports of green goods by making visible the social and environmental benefits associated with their production and appealing to certain consumers, by realising untapped comparative advantages and triggering learning processes, and by increasing scale and access to finance. Standards can also serve to promote green industries in a coordinated manner across countries by reflecting the negative externalities of brown sectors, whether domestic or foreign, through export or import policies.
 - 2 Standards can take different forms depending on their nature (binding or non-binding), their source (public, private, mixed), their target and contents (either the product, the production process or both, from different perspectives, e.g. environmental, social, etc.), and their governance (specifically their method of assessment, e.g. public authorities, third-parties, producer-assessed, and the consequences, e.g. commercialisation, disclosures, etc.). They can be used from the perspective of exporters (to increase the competitiveness of certain products) or importers (to control the quality of imported products and make sure domestic and other foreign producers are not disadvantaged by products developed with lower standards).
 - 3 Major illustrations to be considered include the experience of South Africa in using standards to boost green exports, as well as those of the United States and India, where a variety of measures have been used to regulate imports, and these measures have been challenged as inconsistent with international trade rules.
 - 4 A summary table placing the tools reviewed in this chapter within the overall methodology presented in Chapter 1 is provided at the end of the chapter.
-

1. Overview

An increasing number of States are using a variety of standards, broadly understood, to promote trade in sustainably sourced fishery, forestry and agricultural products, manufactured products as well as sustainable tourism. The nature of standards ranges from specific regulations to privately developed labels on products. Their content and operation varies significantly depending on factors such as the values these standards aim to reflect (agricultural or fisheries products that are organically produced, fair conditions of labour and trade, extraction of forestry products with low environmental impact, tourism that is respectful of ecosystems, etc.) or the method used to certify adherence to such standards (government-certified, private third-party certified, self-assessed), among others.

From a green industrial policy perspective, such standards are usually employed to reflect the negative externalities, particularly social and environmental, of different production processes, products and activities (e.g. services) or, seen from another perspective, to compensate for the positive externalities of some products and activities. Thus, the use of standards has a **corrective rationale**. Products or activities that are not standard-compliant may be banned (e.g. by a food safety regulation) or may face a lower demand,

From a green industrial policy perspective, standards are usually employed to reflect the negative externalities, particularly social and environmental, of different production processes, products and activities.

as it is easier for consumers to identify their negative impacts. At the same time, standards may serve to realise a **latent – currently untapped – comparative advantage or to trigger learning processes**. For example, as discussed in Chapter 3, some developing country producers may be producing sustainable agriculture by default, which could help them to shift to, for example, certified organic agriculture more easily. However, understanding the requirements of standards used in different export markets can be complex. Thus, technical and financial as-

sistance may be needed for their farmers to produce in a way that complies with a given sustainability standard used in importing countries, in order to expand their exports to such markets (see Box 4 below for a concrete example). Moreover, this type of support can trigger a wider learning process as other producers join the approach due to the significant price premiums

enjoyed by, for example, organic or Fairtrade agricultural exports. The same logic applies to other sectors, such as fisheries, forestry and tourism. Finally, access to international markets can serve as a basis for increasing the **volume of production** as well as to improve **access to finance**. From the perspective of a **coordinated (rather than country-focused) green industrial policy**, the use of standards in both exporting and importing countries can result in a general advantage given to sustainably-sourced or produced goods, and hence to a general incentive for industries across countries to adopt more sustainable production processes and methods. Box 1 summarises the policy rationales for the use of standards as a trade-related green industrial policy tool.

Box 1: Boosting green industries through standards

- Promotion of green industries – and exports – by reflecting their positive social and environmental externalities to gain admission in foreign markets and appeal to certain categories of consumers.
- Promotion of green industries by ensuring that the negative externalities of harmful competing products are explicit and, as the case may be, by banning such products from certain markets (coordinated green industrial policy)
- Promotion of green industries – and exports – by realizing latent comparative advantages in certain countries that can more easily switch to competitive products (e.g. organic agricultural or fisheries products) and by triggering fast learning processes.
- Promotion of green industries – and exports – by streamlining access to international markets and thereby increasing scale and access to finance.

The next section of the chapter discusses the spectrum of standards used in practice, focusing on their nature, content, certification processes, related support schemes, and the implications of their use for exporting and importing countries (section 2). The chapter then provides some representative illustrations of the main varieties of this tool (section 3). Section 4 summarises the chapter and places this tool within the methodology presented in Chapter 1.

2. The tool-box

2.1. Spectrum of measures used in practice

Main components

Broadly understood, the term ‘standards’ refers to a variety of statements (whether of binding or non-binding nature) from either public authorities or private entities setting certain minimum expectations relating to the composition and operation of products or their production processes and methods. This broad definition points to the main components of standards that governments have to take into account when using them, namely:

- Their nature
- Their source
- Their target and content
- Their governance

Table 1 summarises the four components of standards and their design options.

Table 1: Standards and their design options

Components	Design options
Nature	Binding
	Voluntary (different degrees of authority)
Source	Public
	Mixed (e.g. officially endorsed or jointly developed)
	Private
Target and content	Product (defining characteristics / informational)
	Production process (defining impact / informational)
	Both (defining characteristics and impact / informational)
Governance	Assessment (public/third-party/self-assessed)
	Consequences (production/access/cost/litigation exposure/informational)

Variations in these components are important not only for understanding how different instruments operate but also with respect to their legal treatment under international trade law. This section discusses each component. Section 2.2 addresses the use of standards by exporting countries or other entities to promote exports from green industries. Section 2.3 then turns to the perspective of the importing country and purchasers based in end markets.

Nature of standards

The nature of standards affects their operation as a green industrial policy tool. Binding standards enacted through laws or regulations (sometimes called 'technical regulations') impose requirements on the composition, structure or operation of a product (e.g. agricultural products or toys or car parts or electronic equipment) or on its production processes and methods (e.g. produced respecting certain labour norms or with a low footprint on the environment or using certain desirable techniques). These requirements will determine whether a domestic or an international producer can commercialise its products in the regulating country or not and under what conditions (e.g. disclosure and commercialisation requirements).

Standards, in the broad meaning in which this chapter refers to them, may be binding or voluntary. Standards that are not formally binding may nevertheless command great authority in practice either because they significantly facilitate certain regulatory procedures if met (e.g. permits) or because they are widely recognised by large-scale purchasers (e.g. industries that buy them as inputs or distributors such as supermarkets) or consumers (e.g. Fairtrade or organic labels).

Source of the standard

The source of the standard is related to its nature. Whereas a standard cannot be binding unless it is issued or endorsed by a public authority, non-binding standards can be adopted by a wide variety of organisations, including State authorities, but also international organisations, non-governmental organisations or the private sector. Box 2 briefly introduces one of the major standard-setting private organisations, the International Standardisation Organisation (**ISO**), and its work on one widely used environmental standard.

Box 2: ISO 14001 certification

The ISO has developed a series or 'family' of environmental standards that are increasingly sought after by companies sourcing products abroad. The ISO 14000 family of standards has been very successful and widely adopted. There are currently over 300,000 companies in 171 countries with ISO 14001 certified environmental management standards, which reflects a significant increase in recent years. As of 2009, over 50 per cent of ISO 14001 companies were based in East Asia compared to 40 per cent in Europe and only three per cent in North America. For companies in developing countries, ISO 14001 certification can be an important way to demonstrate environmental responsibility and thereby increase export opportunities. An empirical study by the OECD found that the adherence to international standards in most cases leads to a positive effect on export performance for the respective country.

Source: UN Environment (2013) and <http://www.iso.org/iso/home/standards/management-standards/iso14000.htm> (visited on 14 June 2017)

The wide range of possible standard-setting organisations has led to a multiplication of standards (several hundred of them exist just for environmental matters) with the resulting challenge of selecting one or the other standard from a production or purchase perspective. At the same time, private standards may be useful as a civil society discipline imposed on both States and the private sector when it is difficult to officially regulate certain industries for political or economic reasons. This is particularly relevant for the promotion of green industries, which can rely on non-binding standards to showcase the environmental and social advantages of their products and their production processes (e.g. organic agriculture has a much lower environmental footprint as well as an advantage in terms of human health due to its non-reliance on pesticides and agrochemicals).

Target and content of standards

The target and contents vary across standards, depending on their intended purpose. Generally speaking, standards may seek to govern the **product itself and/or the process to produce it**. Standards governing the product characteristics are aimed at limiting the health or environmental hazards of a product. They can relate to features as diverse as chemical residues in food products, energy consumption by electronic devices, emissions of air pollutants in cars or car parts, the biodegradable nature of a product, and many others. Standards governing the production processes and methods may target elements that are present or related to the product itself or to elements that are totally absent from it. Box 3 briefly discusses the standards administered by the Forest Stewardship Council (**FSC**), which relate to sustainability of the processes through which wood products are sourced.

For both product and process characteristics, the use of standards can introduce a certain degree of discipline in industrial production in a way that requires or incentivises the industry to apply greener processes and business models (e.g. extension of the social and environmental responsibility of the producer to waste and recycling) or even to turn to new lines of production (e.g. a variety of green products).

Box 3: Premium prices for Forest Stewardship Council-certified wood and products

Processors, traders and businesses can benefit from enhanced market access and higher prices for certified wood and products. Depending on the operation, price premiums for FSC-wood, particularly from the tropics, range from 15 to 25 per cent. For example, FSC-certified sawn hardwood exported to the UK by Malaysia's KPKKT (a timber management company) can fetch 30 per cent more than non-FSC certified products. The practice of reduced impact logging at site – a form of sustainable forest management advocated by the FSC – also saves money for forest owners, as they do not have to repair damage done to the forest from conventional logging.

Source: UN Environment (2013).

The specific **objectives** pursued by a standard (e.g. social and distributional considerations, reduction of the environmental footprint, protection of plant, animal and human health) may be relevant from a legal perspective in the context of international trade rules, as discussed in section 2.3. The information about the product or the process, when the product is placed on the market, can be conveyed in a way so as to highlight the environmental/social positive externalities of the product (hence to compensate in some way for them by the higher appeal to consumers), to warn about negative externalities or potential dangers (e.g. warning labels in hazardous chemicals and pesticides) or in a neutral manner (as food composition label) (Czarnecki/Pollans/Main (2017)).

Governance of standards

The governance of standards will normally be part of a broader set of institutional arrangements and their performance will highly depend upon them. In recent years, there have been efforts to situate such governance within the wider '**quality infrastructure system**' which relies on institutions, regulations (including standards) as well as on market and consumer feedback to ensure that products are fit for purpose. In other words, that products are of sufficient quality for their intended purpose (e.g. education and training that is useful for the needs of an industry in the green industrial sector see UNIDO, *Quality Infrastructure. Building Trust for Trade* (2015) and Chapter 7). Within this broader framework, the governance of standards can be seen both as part of the institutions governing the standard and as a service, i.e. the assessment of conformity.

Conformity assessment involves a variety of processes followed to check whether a product, a service, a work, an organisation or its personnel meet certain quality standards. It can take several forms, from inspection and/or testing by public officials, to third-party assessment by independent third-parties (in some cases officially accredited), to producer self-assessment (see ISO/UNIDO, *Building Trust. The Conformity Assessment Tool-Box* (2010) and section 2.3 below relating to the conformity assessment agreements signed by the EU). The selection of a specific type of conformity assessment process may have significant implications not only for the credibility of the assessment but also from a legal standpoint, because the legal instruments on

which different conformity assessment processes are based (e.g. consumer protection law, administrative law, or international trade law) are themselves different and rely on different agencies and tools for their deployment.

The **consequences** may range from a simple ban of production or commercialisation, including prohibition to access certain markets, to fines and penalties (in case of non-conformity), to product liability frameworks, and informational and packaging requirements (e.g. the pro-*vision* of certain information or the ad-

dition of warnings). From the perspective of green industrial policy and, more specifically, of trade-related instruments, the governance of standards is important to ensure the credibility of the standard and hence of the compliant products or, in other words, to avoid so-called 'green-washing'. Only genuine sustainably certified products must enjoy the competitive advantage arising from the standard in both the domestic and international markets. At the same time, to the extent that standard administration affects market access, it may also operate as a technical (non-tariff and non-quantitative) barrier to trade and it is therefore subject to detailed trade disciplines discussed in section 2.3.

In recent years, there have been efforts to situate governance within the wider 'quality infrastructure system' which relies on institutions, regulations as well as on market and consumer feedback to ensure that products are fit for purpose.

2.2. The use of standards to promote exports

Overview

Making use of standards to develop, consolidate and promote green industries is becoming widespread, particularly for agricultural, fisheries and forestry products, manufacturing, and tourism. Standards can channel interest and investment into some trade-related opportunities (e.g. sustainable agricultural products, responsibly-sourced forestry products, more efficient equipment, tourist facilities with a lower environmental footprint), especially in sectors where some countries have **untapped comparative advantages** due to the climate, the availability of land, and the current production practices. Standards can also help to **adequately reflect both the desirable characteristics** of a product and the **positive externalities** of its production, thus appealing to environmentally- and socially-conscious consumers. Such

Standards can also help to adequately reflect both the desirable characteristics of a product and the positive externalities of its production, thus appealing to environmentally and socially-conscious consumers.

positive externalities can be reflected in a price premium, a more stable international demand, and a better redistribution of the profit (with more going to the small farmers or producers, and less captured by intermediaries).

However, as there are hundreds of environmental standards and their requirements and potential are not always easy to assess, some **form of support from governments, development agencies, multilateral agencies or other partnerships** (including the private sector) is very important. Such support has to tackle sector identification needs (e.g. data gathering to be able to focus on those industries where there is untapped potential), training needs (both for production practices and for standard adherence), financial needs (to cover, for example, the certification fees and initial investment required to shift from conventional production practices), coordination challenges (ranging from coordinating small producers among themselves and with suitable larger companies, to providing appropriate marketing for international markets, to accessing such markets, and redistributing a sufficient share of the profits back to the small producers).

Use of standards in the primary sector: Sustainable agriculture

In the primary sector, many examples of policies and transnational initiatives can be given. One interesting example, discussed in Box 4 is a transnational initiative for the export of organic tea from **Nepal** to international markets. Most of Nepalese tea is sold to India and it is then exported to international markets as India Darjeeling tea. In an effort to reach international markets directly, a partnership was formed in 2007 between over a hundred local farmers, a private Nepalese tea company, the German Development Agency and a German private company for the production and direct exportation of organic Nepalese tea.

Another example discussed in Box 6 in Chapter 3 is provided by the policies in **Ecuador** to promote its exports of organic cocoa and sustainable fish products. In its *2015 National Export Strategy for Sustainable and Green Products*, Ecuador identified cocoa-chocolate and fisheries as socio-economic priority sectors and set out an action plan to make these sectors more competitive and socially and environmentally sustainable. The action plan calls for the adoption of voluntary sustainability standards in the fisheries sector and the certification of its entire cacao and chocolate production according to environmental and social sustainability standards.

Box 4: Exports of Nepalese organic tea

The partnership brought together over a hundred small tea farmer groups of the Sunderpaani Tea Cooperative in Eastern Nepal, the local tea company, the German Development Agency and a German private sector partner. The farmers and the tea company received training and equipment to conduct organic agricultural practices, organic standards and certification, management and monitoring software (for the tea company to track the quality of the tea through the production process). Some 100 farmers were trained to be able to train other farmers in turn (training the trainers). The tea thus produced was commercialised through the German private sector partner directly to international markets as organic Nepalese tea 'Spirit of the Sunderpaani'. The transaction was not only socially and environmentally positive but also economically profitable for farmers, who spent less on chemical inputs and received twice as much money per kilogram of green tea leaves compared to the national average for conventional green tea leaves. This shows the types of benefits - social, environmental, and economic - that can be derived from this type of support. The key is the identification of a sector where there is untapped potential and where initial support can result in further and exponential development. The approach of training the trainers and the economic advantages attracted in turn many more farmers interested in switching to organic production.

Source: GIZ/Inclusive Development of the Economy Programme (2012)

Opportunities in organic agriculture are just one illustration of the broader opportunities that arise from sustainable agriculture, which also include more efficient agricultural methods (e.g. with less carbon-intensive or water-intensive irrigation systems), fair-trade labelled agricultural products, and many others.

Use of standards in the secondary sector: Green manufacturing

In the secondary sector, green manufacturing, broadly understood as manufacturing processes that reduce the amount of natural resources and energy required for a finished product as well as the externalities associated with waste and pollution, can be certified with significant advantages for market access and product competitiveness. For example, certification of compliance with the **ISO 14001** (Environmental Management System) standard discussed in Box 2 can increase market access opportunities. This is why the Egyptian Ministry of Trade and Industry has supported companies that wish to be certified as complying with the ISO 14001 standard paying up to 85 per cent of the consultancy and certification costs. Green manufacturing is further discussed in Chapter 5.

Use of standards in the tertiary sector: Sustainable tourism

Standards can also be used for the tertiary (services) sector. **Services** offered to foreign tourists can be understood as a form of trade to the extent that tourists exchange foreign currency (converted into local currency) for services provided to them. The selection of such services is sometimes driven by appropriate certification of touristic facilities (e.g. hotels or lodges) as socially and/or environmentally responsible. One particularly noteworthy advantage of tourism is its spillover effect promoting the development of other sectors such as energy, telecommunications, protection of environmental and cultural sites, and the like. Box 5 briefly refers to a **private standard** used to certify the energy and resource efficiency of hotels and resorts in Asian countries.

Box 5: Leadership in Energy and Environmental Design (LEED)

One exemplary initiative that helps promote sustainable tourism is the Leadership in Energy and Environmental Design (LEED) certification programme. LEED certifies that a building is designed and constructed with the goal of achieving high performance in key areas of human and environmental health, based on indicators such as water savings, energy efficiency, materials selection and indoor environmental quality. LEED provides a point-based system across several relevant areas. Based upon the number of points achieved, a project receives the LEED rating levels *Certified, Silver, Gold or Platinum*. The LEED is administered by the Green Building Certification Inc (GBCI), which guarantees independent, third party review and verification of registered projects to determine if they have met the standards set forth by the LEED rating system. LEED certification can be adapted to different types of buildings, from homes, to hotels, to corporate headquarters, and be conducted at all phases of development. Therefore, LEED may certify building design, interior design and construction, as well as building operations and maintenance. LEED furthermore certifies sustainable neighborhood development projects. LEED is the most widely used third-party verification for green buildings, with around 2.2 million square feet being certified daily.

Source: <http://leed.usgbc.org/>

2.3. The use of standards to regulate imports

Overview

Standards, in the broad meaning used in this chapter, which encompasses regulatory measures as well as private standards and initiatives, can be a tool of green industrial policy by importing countries. Green infant industries can be protected through a variety of measures, which include **tariff and non-tariff barriers**. Among the latter, certain categories of measures that can be called **technical barriers to trade** specifically address the characteristics, composition, safety, production process, packaging and labelling of traded products. Within this type of measures, a sub-category specifically focuses on the protection of plant, animal and human health. They are called **sanitary and phytosanitary measures**.

Given the trade restrictive potential of technical barriers to trade, including sanitary and phytosanitary measures, they are specifically regulated at the WTO level by the Agreement on Technical Barriers to Trade (**TBT**) and the Agreement on Sanitary and Phytosanitary Measures (**SPS**). These two agreements aim to balance the need to adopt this type of measure, which constitutes legitimate regulatory action, with the need to avoid their misuse for protectionist purposes. The **protection of green industries, whether to promote their development or to correct distortions** (i.e. when the harmful effects of a product are left unaddressed) sits somewhere in the middle of these two opposite sides of the spectrum. Hence, the legality of such

measures must be assessed in the light of the specific design features and context of each measure. This said, one important avenue through which consistency can be achieved is by adherence to **international standards** harmonising the requirements imposed on imported products. Thus, the adoption of such international standards can be seen as another example (see also the discussion in Chapter 2 of an environmental goods agreement) of a coordinated green industrial policy, whereby many States decide to raise the bar for product characteristics and processes so as to reflect their desirable environmental and social implications. The present section discusses the types of measures that can be adopted by States to regulate imports in order to promote green industries and then turns to the legal space under international trade rules left for unilateral technical barriers to trade (including sanitary and phytosanitary measures) as well as for measures that are based on international standards.

Varieties of technical barriers to trade

The use of policy measures that are legally considered technical barriers to trade (including sanitary and phytosanitary measures) is widespread in practice. The US Office of the Trade Representative prepares an annual report on foreign barriers to trade (of US products and services) and records, among others, the adoption of these types of measures country-by-country. We have discussed components and design of technical barriers to trade in section 2.1. It may be useful to identify some recurrent types of measures (USTR (2013)).

Food safety regulations as well as non-binding standards are recurrent. By way of illustration, **nutritional labelling and advertising** is generally subject to either mandatory regulations (e.g. in Chile or Thailand) or voluntary standards (e.g. Korea) and it can adopt different formats (e.g. front-of-package labels, of a certain size, using a 'stop light' format to better convey the message).

Another measure frequently used by the EU is resort to **Agreements on Conformity Assessment and Acceptance** with trading partners on a variety of goods ranging from machinery and electrical products, to toys, medical appliances or pharmaceuticals. Under these agreements, the trading partner agrees to adhere to EU technical standards and regulations in exchange for facilitated conformity assessment in the EU for some categories of products.

States may also resort to **voluntary standards** that, in practice, condition the viability of commercialising a product in a given market. Box 6 briefly discusses the case of solar panel certification in Korea.

Box 6: Korea's standards for solar panels

Korea's Energy Management Corporation (KEMCO) only certifies one type of thin film solar panel, which is manufactured by Korean producers, as meeting its version of the International Electrotechnical Commission standard. While compliance with that standard is not technically required for sale of solar panels in the Korean market, a company will not be commercially viable in Korea without KEMCO certification. As a result, foreign solar panel producers that make different kinds of thin film panels will find themselves unable to compete in the Korean market.

Source: USTR (2013).

Regulation of Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) measures in international trade law

Standards adopted by countries are highly regulated in international trade law. The TBT and SPS agreements impose some disciplines on governments when adopting such standards as well as when regulating standard-adopting constituencies (local governments and non-governmental agencies). Generally speaking, the system of these two treaties is based on three components:

- The first inquiry is whether the measure in question falls within the scope of the relevant agreement;
- If that is the case, then a number of disciplines have to be complied with; and
- Compliance is facilitated (presumed) if the measure reflects international standards.

Generally, measures that qualify as **technical barriers to trade** are regulated by the TBT Agreement. A measure is defined as a technical barrier to trade and therefore falls under the TBT Agreement if it qualifies as a 'technical regulation', a 'standard' or a 'conformity assessment' procedure, as defined by the Agreement. If this is the case, then a number of obligations apply, including: non-discrimination (most-favoured-nation clause and national treatment clause); proportionality (generally referred to as 'necessity' because it requires that the measure is not more trade restrictive than necessary to fulfil a legitimate objective); and transparency (including advance notification, some measure of participation by affected trading partners, and reasonable interval in the introduction of the measure). As discussed in the next paragraph, meeting international standards is important for the assessment of whether the measure is necessary or proportionate to the objective pursued.

Within the broad category of technical barriers to trade, some measures have a specific purpose of protecting **human, animal and plant life and health** against risks in food, feed, pests or disease. These measures are governed by the SPS Agreement. The system is similar to the TBT Agreement. If the measure qualifies as an SPS measure (in other words: if it falls under the definition of a SPS measure under the Agreement), then it must meet certain requirements, namely that the measure is science-based (with a narrow exception for the adoption of precautionary measures), it is non-discriminatory (the test here does not concern competing products as the case in the GATT but rather the absence of discrimination between States party to the Agreement, that have similar conditions, in terms of risk or exposure to substances that may have a sanitary or phytosanitary impact), and it is transparently adopted and implemented (which includes obligations of notification and consultation, as well as obligations of reasonableness in the processes to assess compliance with the measures). Again, consistency with international standards facilitates the assessment of consistency of the measure with international trade rules.

Consistency with **international standards** is therefore important for the development and adoption of the measures discussed in this chapter. Under the TBT Agreement, international standards are those adopted by bodies whose

activities in standardisation are widely recognised and whose membership is open on a non-discriminatory basis to all WTO Members, even if the standard has not been adopted by consensus. If an existing or forthcoming international standard is 'used as a basis' of the measure at stake, and this measure is an effective and appropriate means to fulfil a legitimate objective,

One important avenue through which consistency can be achieved is by adherence to international standards harmonising the requirements imposed on imported products

then there is a rebuttable presumption that the measure does not constitute an unnecessary obstacle to trade. A similar test for international standards is applied in the context of the SPS Agreement, which specifically refers to the Codex Alimentarius Commission, the World Organization for Animal Health, and the Secretariat of the International Plant Protection Convention. The measure adopted by States may rely on such standards in different ways (it may be 'based on' the standard, it may 'conform to' it, or it may impose a higher level of protection than the standard). If the State's measure conforms to the international standard, then there is a rebuttable presumption of consistency with both the SPS Agreement and the General Agreement on

Tariffs and Trade (**GATT**). In practice, the assessment of the standard as well as of the relation between the measure and the standard are complex matters both under the TBT Agreement and the SPS Agreement. Representative examples are provided in section 3.2 below.

3. Case-studies

3.1. Green export policy in the making: the case of South Africa

South Africa has a diverse agricultural sector that includes field crops, horticulture, animal production, dairy farming, fish farming, game farming and agro-processing. While the share of organic agricultural production is currently small (0.04 percent as of 2013) and local demand limited, developing organic agricultural exports could be a major driver for South Africa's green economy, supporting social development while safeguarding natural resources. As of December 2016, South Africa did not have a government regulation or standard for organic products in place (although it subsequently established one). Also, it is difficult to identify organic products with high export potential as neither government nor industry collect data on organic products and most available information from international organic certification bodies is based on estimates only and on 'demand' rather than supply. While these factors demonstrate some of the existing challenges, they also illustrate the untapped potential of organic agriculture in the country.

In this context, UN Environment was requested to analyse South Africa's potential for organic agriculture. The results of the analysis were published in its **Green Economy and Trade Opportunities Project (GE-TOP) South Africa country study (2016)**. The report identified a number of products that, if suitably certified, bear major organic trade opportunities. These include rooibos tea, honeybush, grape wine, table grapes, apples, pears, citrus, etc. For South Africa to be able to make use of these trade opportunities, the study recommends several initiatives, e.g. the establishment of a national organic regulation or standards (which South Africa did in 2017), specific data gathering on the organic market and the development of information, training and capacity-building schemes to facilitate conversion of non-organic farming systems. Furthermore, the report recommends the establishment of Organic Agricultural Development Zones, and the provision of financial incentives and support for compliance with foreign food safety and sanitary/phytosanitary regulation as well as for suitable certification.

To support the export potential for South Africa's organic agricultural products, the report recommends facilitating trade through international agreements. To do so, South Africa may build upon its pre-eminent position in Africa and promote organic agriculture exports through regional economic integration schemes. Also, South Africa could consider trade facilitation/preferential agreements with major markets for organic agricultural products, notably the EU.

3.2. Green standards under the TBT and SPS Agreements⁹

In the cases *US – COOL* (2012) and *US – Tuna-Dolphin II* (2012), the WTO Appellate Body found that the US measures challenged (labelling requirements) violated the non-discrimination discipline in Article 2.1 of the TBT Agreement. *US – Tuna-Dolphin II* (2012) concerned labelling requirements (the DPCIA dolphin-safe label) relating to the process through which tuna was caught, which could only carry the dolphin-safe label in the US markets if certain conditions on the catch-area, type of vessel and fishing method were met. Mexico challenged the measure, which it characterised as a ‘technical regulation’ in the meaning of Article 2.1 of the TBT Agreement. The US contended instead that the measure in question was voluntary and was therefore not to be considered a technical regulation. The Appellate Body sided with Mexico. It considered that while the label was not a requirement for the sale of tuna in the US, “the US measure establishes a single and legally mandated set of requirements”¹⁰ to the exclusion of other dolphin-safe labels. It was therefore to be considered a technical regulation under the TBT Agreement. In *US – COOL* (2012), Canada challenged US labelling measures requiring that consumers at the retail level be informed of the country of origin of certain commodities (beef and pork) and that, in order for the US to be considered the country of origin, the animals must be exclusively born, raised and slaughtered in the US. The Appellate Body confirmed the finding of the panel according to which the measure amounted to *de facto* discrimination between domestic and foreign cattle in violation of Article 2.1 of the TBT Agreement. In both cases, the Appellate Body clarified that labelling measures incentivizing private action to the detriment of a foreign product as compared to a domestic one can constitute *de facto* discrimination in violation of the TBT Agreement.

A variety of standards, broadly understood, may be also governed by the SPS Agreement when they concern human, plant and animal health. In *India – Agricultural Products* (2015), the WTO Dispute Settlement Body assessed measures adopted by India banning the import of certain agricultural products due to alleged concerns over the spread of avian influenza (**AI**), otherwise known as bird/avian flu. In its ruling, the Appellate Body agreed with the panel’s finding that measures that are not adopted on the basis of a risk assessment are presumed to be in violation of Article 2.2 of the SPS Agreement. However, it reversed in part the panel’s finding that this

9 This section is based on WTO dispute settlement reports (www.wto.org) and on Shedd, D. T., *The World Trade Organization Agreement on Technical Barriers to Trade and Recent Food Labeling Cases*. Congressional Research Service, available at: <http://nationalaglawcenter.org/wp-content/uploads/assets/crs/R44210.pdf> (11 June 2015) (Last retrieved 31 July 2017).

10 Appellate Body Report, *US Tuna II*, at paragraph 193

provision had been violated. Indeed, the Appellate Body considered that the panel had failed to take into account the evidence relied on by India to rebut the presumption of inconsistency. However, the Appellate Body confirmed the panel's finding that India's measures violated Article 6 of the SPS Agreement because they required the prohibition of all imports from countries that had notified cases of AI, thereby including in the prohibition also AI-free areas within those countries. The Appellate Body also confirmed the panel's finding that India's measures were significantly more trade-restrictive than necessary to achieve India's level of protection against AI, and therefore that they were in violation of Article 5.6 of the SPS Agreement.



Summary table

High-level vision setting and stakeholder consultation	UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 1
Stock-taking	<p>Gathering information of socio-economic, environmental and existing policies to define a baseline, particularly as regards the following enabling conditions for trade-related green industrial policies:</p> <ul style="list-style-type: none"> • Appropriate resource endowment and political/social conditions • Public investment and access to credit • Adequate infrastructure • Domestic legal and regulatory framework • Integration into international agreements
Prioritising intervention areas and goal-setting	<p>Identifying policy rationales to be acted upon and sustainability goals to be reached. Policy rationales may include:</p> <ul style="list-style-type: none"> • Promoting green industries and exports by reflecting their positive externalities and thereby making them more appealing to international markets • Promoting green industries by accounting for the negative externalities of competing domestic and foreign products • Unleashing latent comparative advantages and learning processes • Promoting green industries and exports by streamlining access to international markets and thereby increasing scale and access to finance
Selecting the tools	<p>Matching selected policy rationales with policy options. Policy options within the broad category of standards may include:</p> <ul style="list-style-type: none"> • Technical regulations • Voluntary standards • Conformity assessment systems
Design and assessment	<p>Specific design of policy option. Selection within each variety of the tool of specific design features:</p> <ul style="list-style-type: none"> • Nature (binding vs non-binding) • Source (public, private, mixed) • Target (products, production processes, or a combination) • Content (environmental, social, etc.) • Assessment method (government, private third-parties, self-assessed) • Consequences (possibility of commercialisation vs simple disclosure) <p>Assessment of consistency and impact:</p> <ul style="list-style-type: none"> • Legal assessment • Integrated socio-economic and environmental impact assessment
Implementation	UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 6

Resources

NB: all links last visited on 15 September 2017

- Czarnezki, J., M. Pollans and S. Main, 'Eco-labelling', in E. Lees and J. E. Vinuales (eds.), *The Oxford Handbook of Comparative Environmental Law* (Oxford University Press, forthcoming 2018).
- GIZ/Inclusive Development of the Economy Programme, *Organic Tea. A Public Private Partnership* (2012).
- IISD/ITC/FiBL, *The State of Sustainable Markets: Statistics and Emerging Trends 2015* (2016).
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- Thorstensen, V. et al, *Private Standards — Implications for Trade, Development, and Governance* (Geneva: ICTSD/WEF, 2015).
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- UN Environment, *Green Economy and Trade. Trends, Challenges and Opportunities* (2013).
- UN Environment, *Trade and Green Economy. Trade in Certified Organic Agriculture – Challenges and Opportunities for South Africa* (2016).
- UNIDO, *Quality Infrastructure. Building Trust for Trade* (2015).
- US-ITA, *2016 Top Markets Report. Building Products and Sustainable Construction* (2016).
- USTR, *2013 Report on Technical Barriers to Trade* (2013).
- Wijkstrom, E. and D. McDaniels, 'Improving regulatory governance: International standards and the WTO TBT Agreement' (2013) 47 *Journal of World Trade* 1013.
- World Trade Organization, *Trade and Food Standards* (2017).

Chapter 5

Sustainable public procurement and manufacturing

Key contents of the chapter:

- 1 Two categories of policy rationales underpin sustainable public procurement and green manufacturing, namely (a) to address imperfect market conditions (e.g. compensating positive externalities generated by certain sectors, facilitating access to finance, reducing cost through increases of production scale, addressing coordination problems, and realising latent comparative advantages) and (b) to generate efficiency gains (this applies both to producers and to governments, that will be able to reduce the cost of performing a variety of public sector functions that are affected by cheaper but more polluting products and services procured in other areas)
 - 2 The spectrum of policies that can be adopted may be organised under two main headings. Firstly, sustainable public procurement processes, which have developed significantly in the last decades, can be implemented through a four-step approach involving the setting up of a team piloting the initiative, assessing the initial conditions, adopting policies and plans, and monitoring and managing the implementation of specific contracts awarded. The measures to give effect to such policies and plans depend upon the type of procurement process and the stage at which sustainability considerations are integrated. Secondly, green manufacturing processes can be driven by different rationales according to their target, with standard abidance and certification being a key driver when necessary to participate in sustainable public procurement processes.
 - 3 Two representative illustrations are provided by the implementation of sustainable public procurement programmes in the European Union and by China's efforts to make its economy more circular and resource-efficient.
 - 4 A summary table placing the tools reviewed in this chapter within the overall methodology presented in Chapter 1 is provided at the end of the chapter.
-

1. Overview

The use of sustainable public procurement and the greening of manufacturing processes are in many ways an extension or a more specific application of the policy tools discussed in Chapters 3 and 4, namely support schemes and standards. Indeed, sustainable public procurement aims to use the purchasing power of governments to promote products and services that meet certain sustainability standards. The greening of manufacturing processes is a way of becoming more sustainable (at the level of the product, the process, or the business model) and thereby to benefit from the opportunities presented by sustainable public procurement.

Green public procurement (GPP) can be characterised as ‘a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured’ (European Commission (2011)). A wider but related concept is that of **sustainable public procurement (SPP)**, which relies on both environmental and social criteria in the selection of goods, services and

The key component in green public procurement and sustainable public procurement is the use of the government’s purchasing power to promote environmental protection and social inclusion.

works procured. The key component in both concepts is the use of the government’s purchasing power to promote environmental protection and social inclusion. When the focus is on the purchasing power of the private sector (in order to influence producers of inputs in the supply chain), the logic is similar. In both cases, however, purchases are based on a variety of criteria aimed at reorienting the products, processes, or business model of providers. **Green manufacturing** is closely connected to the

mobilisation of purchasing power. It differs from conventional manufacturing in that ‘it aims to reduce the amount of natural resources needed to produce finished goods through more energy- and materials-efficient manufacturing processes that also reduce the negative externalities associated with waste and pollution. This includes more efficient transport and logistics, which can also account for a significant percentage of the total environmental impact of manufactured products’ (UN Environment (2011)). Making manufacturing greener is not only a way of reducing overall costs

(efficiency gains) but it may also place a producer in a better position to compete for either public procurement contracts and private procurement ones.

The **rationale for applying these tools is therefore two-fold**. On the one hand, as already noted in Chapters 3 and 4, sustainable public procurement and green manufacturing can be used to ensure some level of **compensation of green producers for the social and environmental benefits** they generate, to realise **untapped potential** (enabled by increased demand) as well as to improve access to **sufficient finance** (which is facilitated by higher demand for the product and hence the lower credit risk from a lender/investor perspective), reduce **production costs** (as a result of economies of scale) and address **coordination problems** (the public sector serves as a large company or industry procuring the products, services and works from greener producers). On the other hand, sustainable public procurement and green manufacturing enable **efficiency gains for the producers**. Manufacturers become more efficient by reducing the cost of inputs and hence save costs. As for the public sector, supporting greener production and manufacturing is also a way of reducing the overall cost of performing other governmental functions (e.g. lower levels of pollution can lead to lower costs in sectors such as health care, waste treatment, water treatment, etc.). Both sustainable public procurement and green manufacturing are, moreover, of special relevance from a trade perspective because they are specifically regulated in a variety of contexts discussed later in this chapter.

Figure 1: Rationales and policy tools

Policy rationales	Type of market failure/efficiency gain	Policy tools
Market failures	<ul style="list-style-type: none"> • Compensating positive social and environmental effects • Tackling financial, scale and coordination challenges 	<ul style="list-style-type: none"> • Sustainable public procurement • Trade facilitation for green manufactured products
Efficiency gains	<ul style="list-style-type: none"> • More efficient production processes at the firm or supply chain level • More efficient production processes at the level of society (reduced social and environmental burden that would otherwise be borne by tax-payers) 	<ul style="list-style-type: none"> • Sustainable public procurement • Green manufacturing standards

Figure 1 summarises the rationales and the policy tools that can be used to tackle them. The rationales are similar to those reviewed in other chapters because they are the general backdrop of green industrial policy. But the measures selected focus on those steps that can be taken to promote both sustainable public procurement and green manufacturing and, specifically, those steps that are particularly relevant from a trade policy perspective.

In the next sections, the chapter discusses the varieties of programmes that can be adopted to promote sustainable public procurement as well as green manufacturing (section 2). Section 3 then provides two examples, namely the implementation of sustainable public procurement in the European Union and circular economy policies in China. Section 4 summarises the chapter and places this tool within the methodology presented in Chapter 1.

2. The tool-box

2.1. Spectrum of measures used in practice

The spectrum of measures covered in this chapter can be organised under two main headings, namely measures relating to sustainable public procurement and measures relating to green manufacturing. As already noted, both are related because the former can be used to induce manufacturers to produce green products, adopt greener production processes and methods or change their business model. They do not overlap entirely however and some differences also exist as regards their legal treatment. For this reason, it is useful to discuss them separately.

2.2. Sustainable public procurement

Public procurement can provide a powerful lever for industrial policy because it represents between 12 per cent (in countries that are part of the Organisation for Economic Co-operation and Development, **OECD**) and up to 30 per cent (in many developing countries) of Gross Domestic Product (**GDP**). It is, moreover, one of the strategic areas envisioned in the **2030 Agenda for Sustainable Development**, adopted by the UN General Assembly in 2015. One of the Sustainable Development Goals (**SDG**) identified in the Agenda, focusing on sustainable consumption and production patterns, specifically targets the promotion of ‘public procurement practices that are sustainable, in accordance with national policies and priorities’ (**SDG 12.7**). In this section, we discuss four aspects of sustainable public procurement, namely:

- Global trends;
- Approaches to introducing sustainable public procurement at the national and local levels;
- Some questions of policy design (definition of the requirements of contracts, selecting and excluding tenderers, awarding contracts, and contract performance clauses); and
- The international trade law dimensions of sustainable public procurement.

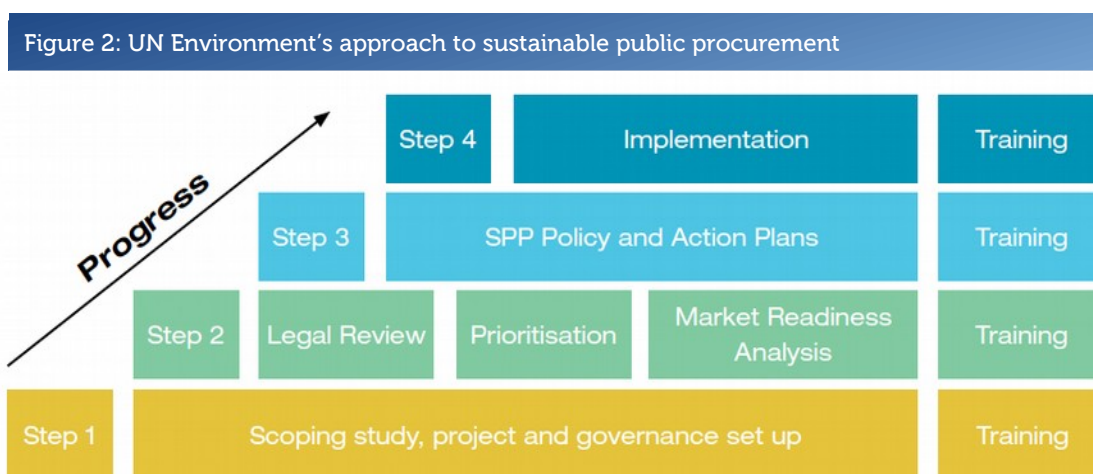
Global trends

A recent global review of sustainable public procurement practice prepared by UN Environment and encompassing 41 States (UN Environment (2017)) suggests a number of broad trends that must be taken into account by States wishing to understand how this major market for their exports is evolving. Overall, the report suggests that sustainable public procurement provisions are **increasingly frequent** in all policy areas but that, in many cases, they result from the **initiative of individual departments, agencies and ministries** rather than from a general economy-wide policy. The **scope of the goals pursued through this instrument is widening** to include not only environmental issues (e.g. energy conservation, resource efficiency, and climate change mitigation) but also social issues (diversity and equality, employment and business development, and human well-being and social justice). **Ecolabels** (a variety of the standards discussed in Chapter 4) are increasingly used as mandatory requirements in product or service specifications (i.e. to be able to provide such products or services to the government, a producer/provider needs to have its products/services suitably certified as meeting the requirements of certain labels). Last but not least, sustainable public procurement is increasingly being used as a **strategic instrument** to achieve certain sustainable development and green industrial policy goals.



Introducing sustainable public procurement: The UN-Environment’s four-step approach

As part of the **UN 10-Year Framework on Sustainable Consumption and Production**, a set of principles and guidelines on the implementation of sustainable public procurement programmes was developed (see for a detailed implementation manual UN Environment (2012)). These guidelines proposed a structured but flexible approach that has been tested in a number of countries, including Chile, Colombia, Costa Rica, Lebanon, Mauritius, Tunisia and Uruguay. The approach is based on four steps, summarised in Figure 2:



Step 1 focuses on who will lead the project and how. The necessary governance framework must be set up, including the buy-in from leaders with sufficient authority and power, and training must be provided to the pilot team.

Once the group leading the project is established and trained, **Step 2** focuses on assessing the situation on the ground as well as the goals that are pursued by means of sustainable public procurement. This step entails a number of reviews or assessments of the initial conditions, including a ‘status assessment’ (of existing public procurement policies and practice), a ‘legal review’ (of existing laws, both at the domestic and the international level, to avoid taking measures that would be inconsistent with international commitments), a ‘prioritisation exercise’ (aimed to clarify the priorities in using sustainable public procurement), and a ‘market readiness analysis’ (this is particularly important from the perspective of domestic green industrial policy because if the market is not ready most of the benefits will be captured by foreign producers/providers and infant green industries may face an additional competitive disadvantage).

The four assessments conducted in Step 2 provide the basis for the development of the policy strategy, in **Step 3**, on which sustainable public procurement will rest.

The action plan is critical as it will provide the road map of the implementation of the programme in **Step 4**. At this stage, it is particularly important to monitor the development of the programme to spot potential difficulties and adjust the framework as early as possible.

Also, appropriate training of staff managing the processes across government divisions is key at all steps, from the beginning to the end of the process. Box 1 illustrates the four-Step approach by reference to the case of Hong Kong's procurement of LED traffic light retrofit.

Box 1: Hong Kong's procurement of LED traffic light retrofit

The Transport Department of Hong Kong Special Administrative Region (HKSAR) is the authority responsible for regulating road traffic, public transport and major transport infrastructure. In an effort to promote more sustainable transport solutions, it implemented a project replacing all conventional traffic lights with LED traffic light modules. Since 2000, the Transport Department had monitored the development of LED traffic signals to understand the technology and prices. Between 2007 and 2008 it then engaged in a pilot scheme to replace about 100 conventional traffic lights by LED modules. After verifying that the newly installed LED lights operated satisfactorily, the Department issued three public contracts through which all conventional traffic lights were to be replaced by 85,000 LED traffic light modules. The tender was open to those suppliers that completed, before, a prequalification scheme, as part of which suppliers needed to submit their technical proposal and sample material for testing. While suppliers needed to invest considerable resources to adjust their products to the prescribed specifications, the sizeable market created by the public procurement scheme made the project financially attractive. The project resulted in an annual cost saving of US\$ 48.500 and a reduction of 55000 tonnes of CO₂ emissions per year.

Source: UN Environment (2013a)

Design features of sustainable public procurement measures

When considering the specific measures to be undertaken under Step 3 and 4, it is useful to take into account the type of procurement procedure and the different stages at which sustainability considerations can be integrated in a procurement process.

Regarding the **type of procedure**, the procurement process can be organised as follows:

- As an **open tender** (where any producer/provider could present a bid if it meets the eligibility requirements),
- a **restricted tender** (where only a limited number of pre-selected producers/providers are invited to tender),
- a **competitive procedure with negotiation and dialogue** (where the tendering authority engages more directly with potential tenderers, suggesting and discussing sustainability criteria but also learning about available technologies and possible combinations),
- or the establishment of an **innovation partnership** (where the tendering authority enters into a partnership with some contractors to develop a technology, product or service that is not currently available on the market).

In all these cases, sustainability criteria can be introduced at **different stages** of the tendering process. Most frequently, this is done in the **tender documents** through technical specifications relating to the products and services to be procured, increasingly by reference to widely recognised standards. Tendering authorities have great latitude in defining the subject-matter of the procurement process, i.e. the type of product, service or work that is to be procured. In describing this subject-matter they can therefore integrate sustainability considerations, including through the use of a functional or a performance-based definition. Such description is made more specific and above-all measurable through technical specifications that must be met by the product, service or work to be procured. This is done through standards, which can in turn be of different sorts. Performance-based standards (which instead of requiring a specific design focus on the performance of alternative designs) tend to allow for more – and thereby promote – innovation. Specifications can relate to a product's content (the materials it contains) and/or the processes through which it has been produced (which can vary significantly even for identical end products).

In addition, sustainability considerations can target more generally the **performance of tenderers** (the producers and service providers of products or services) as regards certain criteria (environmental and technical capacity,

environmental and supply chain management, or proven compliance with certain environmental and other laws). In practice, such performance can make tenderers eligible or ineligible (in an open tender process) irrespective of whether the specific products or services offered meet themselves the criteria. These performance requirements of tenderers can also be implemented through a pre-selection process in a restricted tender procedure: In this case, only products of those tenderers that are deemed eligible in the pre-selection, will be considered in the actual tender process.

Sustainability considerations can also be integrated into the **criteria for awarding a contract** so as to encourage tenderers to go beyond the minimal technical specifications (hence providing an advantage to the most sustainable bidders), or by ensuring that life-cycle costs or implications are taken into account when comparing bidders (as the environmental footprint of a good or service may change significantly when the entire life-cycle of the product is taken into account) or, still, by excluding excessively low bids (that tend to be strategically used by bidders to enter into a market and are often poorly performed).

Sustainability considerations must be taken into account beyond the award of a contract and **during its implementation**, with suitable contractual clauses requiring monitoring throughout the process (including of sub-contractors) and adequate remedies in case of failure to meet sustainability standards.

The green procurement practice in the European Union can serve as a detailed illustration of all these variants (see European Commission (2016)). Some aspects of this practice are discussed below in section 3.1 of this chapter.

Legal aspects

Given the practical importance of public procurement and the possibility that it may lead to uncompetitive practices, it is regulated in some detail in international trade law. Such regulation is of particular relevance for sustainable public procurement because the criteria used to favour more sustainable products and services may introduce differential treatment and distort market access by different providers. The regulation of this question in international trade law thus seeks to **balance two competing considerations**. On the one, it seeks to ensure non-discriminatory access to public procurement by different (foreign and national) providers whereas, on the other hand, it allows for some measure of differentiation based on a variety of preferential criteria to pursue sustainable development. The **three most important layers of regulation** are Article III:8(a) of the General Agreement on Tariffs and Trade (**GATT**), the **Government Procurement**

Agreement (GPA), which is a plurilateral treaty that binds some but not all WTO members, and a number of free trade agreements between specific States, which contain provisions on public procurement.

Article III:8(a) is a derogation clause excluding certain forms of public procurement from the obligation to treat foreign products no less favourably than domestic ones. The provision concerns ‘laws, regulations or requirements’ governing the procurement by ‘governmental agencies’ of ‘products’ that are purchased ‘for governmental purposes and not with a view to commercial resale or with a view to use in the production of goods for commercial sale’. If these requirements are met, then a government can treat foreign products less favourably than domestic ones in its purchases of a range of materials.

Given the importance of this loophole in the national treatment provision, a number of WTO members decided to conclude a specific plurilateral agreement on government procurement. The 1994 Government Procurement Agreement sought to impose some level of discipline in providing market access to foreigners in public procurement processes (and thus limiting the space for national preference). To do so, each party to the agreement submits a ‘Coverage Schedule’ defining the procuring entities, the goods/ services/ construction works, and the threshold values to which the market access disciplines of the GPA will apply. The Schedule also defines the exceptions to the coverage of the GPA. In 2014, the GPA was revised to apply to more

entities and to smaller contract values, thus extending its coverage. At the same time, the revision of the GPA placed the system in a different light: it is no longer limited to a focus on market access but also seeks to provide some flexibility for the pursuit of social and environmental values. By way of

Generally speaking, green manufacturing aims to redesign products, production systems and business models.

illustration, Article X paragraphs (6) and (9) specifically envision the inclusion in the contract specifications and award criteria of matters such as the conservation of natural resources, the protection of the environment or environmental characteristics. More generally, public procurement can be used to achieve social and environmental objectives if the measures are not discriminatory or, if they are so, if the measures can either benefit from a derogation included in a party’s Coverage Schedule or be justified under one of the exceptions in Article III(2) of the revised GPA (Corvaglia (2016)). Article III(2) is very similar to the general exceptions clause in Article XX of

the GATT. For those countries that are parties to the GPA, this agreement takes precedence (is a *lex specialis*) over the derogation in Article III:8(a) of the GATT.

In addition to the above layers, some countries have signed **free trade agreements**, whether bilateral or regional, that are relevant to matters of public procurement, including provisions on eco-labelling, production cycles, as well as a variety of references to renewable energy and energy efficiency. A survey of such agreements is beyond the scope of this chapter (see Chapter 6 for a general discussion of treaty provisions relating to green industrial policy), but a relevant illustration is provided by Articles 19.9(6) and 19.9(9) of the Comprehensive Economic Trade Agreement (**CETA**) between Canada and the EU, which are very similar to Article X paragraphs (6) and (9) of the revised GPA.

2.3. Green manufacturing

Overview

As already noted, from an industrial policy perspective, green manufacturing can be seen as an extension of policy tools already studied in this manual, particularly standards and their integration in sustainable public procurement. There are also other drivers of green manufacturing, such as the search for resource and energy efficiency, branding, and private consumer demand. From a trade perspective, both the policy and the private drivers are important, as producers and service providers harness green manufacturing to be more competitive in foreign markets. This section discusses the main varieties of green manufacturing and how they fit within two types of policies that can be used to advance it (standards and sustainable public procurement). The legal questions these policies raise under international trade law have already been discussed in the preceding section (as regards sustainable public procurement) as well as in Chapter 4 (as regards standards). The discussion is organised around the targets of green manufacturing.

Generally speaking, green manufacturing aims **to redesign products, production systems and business models** (e.g. by extending the responsibility of the purchaser with respect to the practice of sub-contractors or with respect to the management of waste arising from its products). The gains of green manufacturing are derived from:

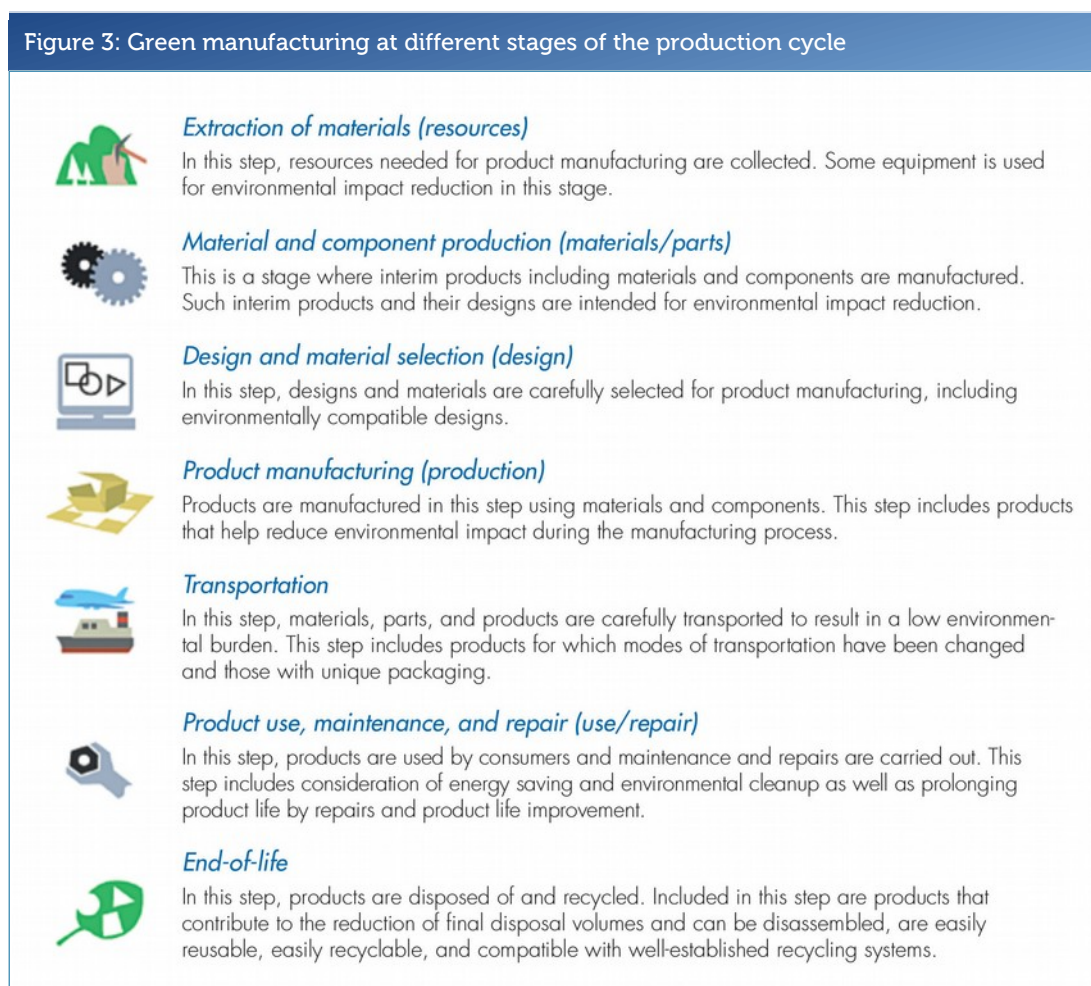
- The cost reduction made possible by more resource- and energy-efficient processes;
- The increasing demand for green manufactured and suitably certified products from both major private and public sector purchasers; and

- The possibility of producing new products or offering new services that satisfy the increasing demand for environmental goods, services and works.

These approaches (efficiency gains, products/processes certified as standard compliant, new green products and services) to green manufacturing are inter-related but they can also be seen as levels of ambition in the transition to greener manufacturing.

Green manufacturing and efficiency gains

Green manufacturing can result in significant efficiency gains. The search for such gains is not necessarily related to public policies but rather to cost reduction, branding and marketing strategies adopted by companies. Figure 3 identifies, for different stages of the production process, the types of measures that can be adopted in pursuance of green manufacturing:



Source: UN Environment (2013b)

Green manufacturing and standards

Another form of greening manufacturing processes is by complying with certain recognised standards and seeking certification for such compliance. At this level, the connection between green manufacturing, standards and sustainable public procurement is particularly close, as suggested by the increasing reliance on a variety of standards in sustainable public procurement processes.

Standards are widely used in four of the main sectors where sustainable public procurement constitutes an important share of the market, namely:

- buildings (e.g. the use of LEED certification, i.e. 'Leadership in Energy and Environmental Design'),
- food and catering services (e.g. standards certifying that at least some percentage of the food sourced is organically produced),
- vehicles (e.g. requiring that vehicles meet the latest EURO norms on emissions particulate matter and nitrous oxide), and
- energy-using products (e.g. IT equipment purchased by central government authorities in the EU must belong to the highest energy-efficient class available for the product category, according to the Energy Efficiency Directive).

Green manufacturing and sustainable public procurement

The third approach is to specifically cater to the demand for new green products and services. As discussed in the section 2.2. of this chapter, this can be driven through certain types of procurement processes such as competitive procedures with negotiation and dialogue or innovation partnerships. In this case, sustainable public procurement becomes not only a tool to encourage green manufacturing but also to encourage green innovation and realise latent comparative advantages.

In the next section, two examples combining questions of sustainable public procurement and green manufacturing are discussed focusing, respectively, on the practice in the European Union (in the implementation of sustainable public procurement) and in the efforts of China to make its economy more circular and less wasteful.

3. Case-studies

3.1. Implementing Green Public Procurement in the EU¹¹

Green Public Procurement (**GPP**) is regarded as an important tool to achieve environmental policy goals in the EU. The EU has put in place various rules, regulations and incentives to enable and support countries to implement GPP. These include, for example, the **2014 Procurement Directives** that enable public authorities in EU countries to take environmental considerations into account in their procurement processes. On a sectoral level, EU legislation also creates mandatory obligations for the procurement of greener goods and services. An example is provided by the requirement for IT products purchased by public authorities to meet the latest EU minimum energy efficiency requirements. To assist public authorities in the identification of green products, the EU has developed environmental procurement criteria for a variety of product and service groups, which can be inserted directly into tender documents. Many EU member States have set their own national criteria, which are usually based on or guided by the EU criteria while taking into account a country's specific circumstances.

Most EU countries have established National Action Plans (**NAPs**) for green or sustainable procurement. These provide countries with a strategic direction for the implementation of GPP. An example is provided by the Flemish government, which has set itself an ambitious 100 per cent target of sustainable public purchasing. Steps for reaching this target are defined in a series of action plans. Each plan provides guidance, spells out sustainability criteria and establishes monitoring mechanisms to ensure that all government departments can meet this goal. Many EU-member states have advanced e-procurement systems in place, which may provide a valuable tool to support GPP implementation. E-procurement systems allow authorities to track the use of GPP criteria and to verify that suppliers have provided the information required to demonstrate their compliance.

EU member countries often make tools and manuals on GPP available on their websites and some also have national GPP helpdesks. To support capacity building, many EU countries and regions offer training programmes on GPP. One example is Ecosportelli, in Italy, which forms part of the Sardinia Regional Network for GPP. Ecosportelli supports provincial governments, municipalities and local businesses on sustainable public procurement. Workshops, so-called 'Technical Laboratories', are organised throughout the region to help participant entities to design and implement concrete actions towards green purchasing. Also, networking between local or regional GPP networks has proven useful to

11 This section is based on European Commission, *Buying Green. A handbook on green public procurement* (3rd edn 2016).

exchange ideas and share experiences. The European Procura+ Campaign, for example, allows for the sharing of GPP experiences across borders and the implementation of lessons learnt at the local level.

3.2. Circular economy policies in China¹²

In the past decades, China has risen to become the world's manufacturing powerhouse, producing 45 per cent of global aluminium, 50 per cent of steel and 60 per cent of the world's cement in 2011. It has also become the main consumer of raw materials and producer of waste: It consumed 25.2 billion tons of raw materials (as of 2011), more than the 34 countries of the OECD combined, and generated 3.2 billion tonnes of industrial waste (as of 2014).

To respond to these challenges and the domestic and geopolitical pressures accompanying them, China has put in place policies, targets, financial measures and legislation with the final goal to make China a 'circular economy'. By closing industrial loops, a circular economy transforms outputs from one manufacturer into inputs for another, thereby significantly reducing resource consumption and waste. While Western countries have struggled for decades to significantly advance their circular economies due to the challenge to make companies collaborate along the supply chain, China has used the concentration of its manufacturing activities in industrial parks and export processing zones and its close involvement with the economy to its advantage. One example is the Suzhou New District (SND), one of three national eco-park demonstration sites in 2008, that consists of about 16,000 enterprises and 4,000 manufacturing firms. In an effort to promote the circular economy, steps were taken to identify and target gaps along integrated supply chains and to address these. Between 2005 and 2010, the district reduced its energy intensity by 20 per cent and reached a utilisation rate of industrial solid wastes of 96%, in comparison to the national average of 69 per cent.

Targets for the circular economy were already formulated for China's 11th Five-Year Plan (2006-2010). In its 12th Five-Year Plan (2011-2015), China further stepped up targets and made the circular economy a national development strategy. In 2013, the State council released a national strategy for realizing the circular economy, becoming the first of its kind in the world. Action points under this strategy included, among others, the establishment of 100 demonstration cities, such as Suzhou and Guangzhou, and 1,000 demonstration enterprises or industrial parks nationwide. The National Bureau of Statistics has analysed progress on the achievement of key targets since 2005. By 2013, resource intensity and waste intensity had improved by 34.7 per cent and 46.5 per cent, respectively. The treatment rate of pollution had also increased by 74.6 per cent, whereas improvements in recycling and the reuse of waste were somewhat slower, with an increase of 8.2 per cent.

Summary table

<p>High-level vision setting and stakeholder consultation</p>	<p>UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 1</p>
<p>Stock-taking</p>	<p>Gathering information of socio-economic, environmental and existing policies to define a baseline, particularly as regards the following enabling conditions for trade-related green industrial policies:</p> <ul style="list-style-type: none"> • Appropriate resource endowment and political/social conditions • Public investment and access to credit • Adequate infrastructure • Domestic legal and regulatory framework • Integration into international agreements
<p>Prioritising intervention areas and goal-setting</p>	<p>Identifying policy rationales to be acted upon and sustainability goals to be reached.</p> <p>Policy rationales may include:</p> <ul style="list-style-type: none"> • Compensating positive externalities generated by certain sectors/industries • Facilitating access to finance • Reducing cost through increases of production scale • Addressing coordination problems • Unleashing latent comparative advantages • Generating efficiency gains both for producers and for governments (in a cross-sectoral perspective)
<p>Selecting the tools</p>	<p>Matching selected policy rationales with policy options. Policy options may include:</p> <p>Within the broad category of sustainable public procurement:</p> <ul style="list-style-type: none"> • Tendering processes • Contract specifications • Pre-selection of tenderers • Contract award criteria • Monitoring and implementation processes <p>Within the category of green manufacturing policies:</p> <ul style="list-style-type: none"> • Standards

Design and assessment	<p>Specific design of policy option. Selection within each variety of the tool of specific design features:</p> <p>For sustainable public procurement:</p> <ul style="list-style-type: none">• Type of tendering process (open tender, restricted tender, competitive procedure with negotiation and dialogue, innovation partnerships)• Contract specifications (different definitions of the object procured and different types of criteria)• Pre-selection techniques (depending on experience and/or environmental footprint of the tenderers)• Contract award criteria (quantitative scoring criteria, qualitative and more discretionary criteria)• Monitoring and implementation processes (requirements of regular monitoring, certification, penalties in case of default) <p>For green manufacturing:</p> <ul style="list-style-type: none">• Standards (of different nature, with different sources, targets, contents, verification methods, and consequences)• Assessment of consistency and impact:• Legal assessment• Integrated socio-economic and environmental impact assessment
Implementation	UNIDO Practitioner's Guide for Strategic Green Industrial Policy – Phase 6

Resources

NB: all links last visited on 15 September 2017

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- European Commission, *Buying Green. A Handbook on Green Public Procurement* (2nd edn. 2011).
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- Mathews, J. and H. Tan, 'Lessons from China' (2016) 531 *Nature* 440.
- OECD, Recommendation of the Council on Public Procurement (2015).
- Procura+, *The Procura+ Manual. A Guide to Implementing Sustainable Procurement* (3rd edn. 2016).
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- UN Environment, *Green Economy Report* (2011).
- UN Environment, *Sustainable Public Procurement Guidelines. Introducing UNEP's Approach* (2012).
- UN Environment, *The Impacts of Sustainable Public Procurement. Eight Illustrative Case Studies* (2013a).
- UN Environment, *Green Economy and Trade. Trends, Challenges and Opportunities* (2013b).
- UN Environment/CEGESTI, *Promoting the participation of Small and Medium Size Enterprises (SMEs) in Green Public Procurement* (2016).
- UN Environment, *Global Review of Sustainable Public Procurement* (2017).
- World Bank, *New Procurement Framework and Regulations for Projects After July 1, 2016*, (resources).

Chapter 6

Provisions in trade agreements reserving or promoting green industrial policy

Key contents of the chapter:

- 1 The consistency of green industrial policies with trade agreements can be seen as an enabling condition for the adoption of such policies but also as a tool in its own right, when the focus is on the types of provisions that can be used in trade agreements to promote or reserve policy space for green industrial policies.
 - 2 Provisions in trade agreements promoting or reserving policy space for green industrial policies are a sub-set of a broader category of provisions relating to environmental protection and sustainable development. Two main categories can be identified, namely provisions relevant to all green industrial policy tools (e.g. preambular references, reservations of environmental policy space, exceptions) and provisions relevant to specific types of green industrial policies, such as border measures (e.g. carve-outs for additional financial charges, provisions encouraging trade in environmental goods and services), subsidies (e.g. provisions aimed at removing distorting subsidies, carve-outs for specific subsidies), standards (e.g. general commitments to increase or not to lower environmental standards, presumptions of consistency, general references to international standards) and public procurement (specific carve-outs, references to sustainability criteria).
 - 3 A good illustration is the increasing space for renewable energy policy in the trade agreement practise of the EU and the US.
 - 4 A summary table placing the tools reviewed in this chapter within the overall methodology presented in Chapter 1 is provided at the end of the chapter.
-

1. Overview

The world trading system is still essentially based on the ideas of progressive trade liberalisation (increased access to foreign markets through a negotiated lowering of tariffs) and non-discrimination (levelling of the playing field across producers, irrespective of their nationality, which must only compete on cost and quality). However, over time, these two core ideas of international trade law have been adjusted to allow for sufficient space for other considerations, such as different degrees of development, human rights and environmental protection. The transition to an inclusive green economy is at the heart of the relations between these different objectives. Green industrial policies can, depending on their specific design, be **consistent or not with international trade law**. It is therefore important to understand the legal space that can be harnessed by countries considering the adoption of one of the policy instruments discussed in this manual.



The assessment of consistency with international policy frameworks is **part of the overall process** suggested in Chapter 1 and discussed in the more specific context of each policy tool in subsequent chapters. It is, at the same time, a **form of policy tool** in that it creates the basis, at the international level, for the adoption of a variety of measures to promote green industrial policy at the domestic level. This chapter adopts the second perspective and discusses different types of provisions in trade agreements providing space for green industrial policy. Significantly, in many cases, **these provisions remain untested in the case**

Green industrial policies can, depending on their specific design, be consistent or not with international trade law.

law, at least in the context of green industrial policies. Indeed, although several provisions of the General Agreement on Tariffs and Trade (GATT) and of other related agreements, such as the Agreement on Technical Barriers to Trade (TBT) and the

Agreement on Sanitary and Phytosanitary Measures (SPS) have been interpreted and applied in the case law, in most cases the measures at stake were not part of a green industrial policy strategy. Thus, the operation of the provisions discussed in this chapter in connection with the policy tools surveyed in this manual is still largely untested. It must also be noted that, as mentioned in previous chapters, the **litigation risk** presented by the adoption of a measure is a function of a variety of factors, which include consistency with trade disciplines but also a number of political and economic considerations.

However, as a general matter, it is important for States considering the adoption of trade-related green industrial policies to understand the policy space left in international agreements as well as to be aware of the tools that can be used to expand such space. Section 2 of this chapter introduces the spectrum of measures that can be adopted for this purpose, paying particular attention to those provisions that have a **general scope** (i.e. which can serve to shield or promote most green industrial policies) and those that have a **more specific scope** (i.e. which relate to a specific policy tool). Section 3 discusses a more focused case-study, namely the increasing integration of renewable energy considerations in US and EU trade agreements. Section 4 summarises the chapter and places this tool within the methodology presented in Chapter 1.

2. The tool-box

2.1. Spectrum of measures used in practice

Governments interested in selecting appropriate tools to reserve legal space in trade agreements or to promote through them the development of a green industrial policy have to take into account a number of considerations, of which three are particularly important.

First, international trade relations among some three quarters of the States of the World rest on a **global system** organised under the aegis of the World Trade Organisation (**WTO**). This system governs trade relations subject to more specific rules that can be established by a **special system** applicable between some members through a bilateral or multilateral free trade agreement (**FTA**), a generic name for a variety of more specific agreements including preferential trade agreements, economic integration agreements, bilateral and regional trade agreements, among others. At present, there are several hundred FTAs. A minority of them (124) were notified to the GATT Secretariat before the establishment of the WTO, but most (over 400) have been concluded and notified since 1995. As provisions leaving space for green industrial policy may be included in the global or the special systems, it is useful to understand broadly the **interactions between these two layers**. This is addressed in Article XXIV of the GATT (as well as by paragraph 2(c) of the so-called Enabling Clause for developing countries, and by Article V of the General Agreement on Trade in Services – **GATS** – for services). This provision allows for a better treatment given to FTA partners under some specific consistency conditions. Yet, the system envisioned in this clause has not worked as planned, with hundreds of FTAs notified and none having completed the WTO consistency examination process. In practice, this means that in a litigation context, the WTO Member invoking provisions of an FTA would have to establish that the FTA meets the conditions of Article XXIV of the GATT (or paragraph 2(c) of the Enabling clause or Article V of the GATS).

Second, there are **different approaches to creating space for environmental regulation** in both the global and the special systems. There is a wealth of commentary and work done in this area, including a tool-kit recently developed by UN Environment and the International Institute for Sustainable Development (IISD) that compiles treaty practice in this area.¹³

The third consideration concerns legal operation. One important distinction that negotiators and government officials must keep in mind is the one between, on the one hand, 'derogations' or 'carve-outs' and, on the other hand, 'exceptions'.

In the general system, most of the attention has focused on the use of so-called **general exception** clauses that can justify measures that are other-wise in breach of a trade discipline. In the special systems, there are a variety of approaches ranging from the conclusion of an **environmental side agreement**, to the inclusion of a **sustainable development chapter** in the FTA, to more limited approaches based on the inclusion of **some provisions** or an **interpretive letter**, or both, joined to the

agreement. This spectrum of options concerns environmental protection or sustainable development in general, although some provisions focus more specifically on green industrial policy measures. Negotiators and other government officials may refer to this spectrum for reference, but they must keep in mind that, in many cases, the actual operation of different types of approaches or clauses has not been tested in litigation. Moreover, the organisation of the materials in the available resource platforms is mostly concerned with user-friendliness and does not necessarily reflect the sometimes very important legal differences in the operation of some tools.

The third consideration concerns precisely such **legal operation**. One important distinction that negotiators and government officials must keep in mind is the one between, on the one hand, '**derogations**' or '**carve-outs**' and, on the other hand, '**exceptions**'. A derogation or carve-out means that a matter simply does not fall under the trade standard in question or the agreement as a whole (which means that the agreement does not apply to this subject matter). An example is provided by the public procurement

13 This resource is available at the following link (retrieved on 15 September 2017): http://www.scpclearinghouse.org/sites/default/files/globalreview_web_final.pdf

clause in Article III:8(a) of the GATT.¹⁴ If a measure falls under this clause, then the national treatment standard of Article III of the GATT is not applicable. By contrast, exceptions (e.g. Article XX of the GATT) assume that the relevant trade standards are indeed applicable and that they have in fact been violated. The effect of the exception is only to justify the violation. In practice, this has important consequences relating to the burden of proof (which is on the party asking for the exception) and the scrutiny of the conditions (which is more demanding for exceptions)(Viñuales (2016)). This is but one example of the legal and practical considerations governments must keep in mind when selecting the different tools discussed in this chapter.

In the following sections, the chapter addresses two types of provisions, namely general provisions that could be relevant for all (or most) of the green industrial policy tools discussed in this manual (section 2.2) and narrower provisions that are relevant only to some specific policy tool (section 2.3). For ease of reference, the material is organised on the basis of both the type of provision and the type of policy tool that can be enabled through it.

2.2. General provisions relevant to all policy tools

Preambles

General provisions aimed at preserving space for environmental protection and thereby for green industrial policy may take different forms. A basic yet potentially very important form is the inclusion of a reference to sustainable development or environmental protection in the **preamble** of a trade agreement. The effects of preambles have often been misunderstood. Much in the same way as a norm of customary international law, of another treaty or even of the same treaty, a reference to sustainable development in the preamble can be used to interpret trade (as well as investment) provisions in a manner that creates space for environmental measures, including green industrial policy measures. Significantly, a reference to sustainable development in the preamble may be **more easily obtained** in a tight negotiation context than more specific clauses, and its effect should not be underestimated. Box 1 provides a prominent example, namely the preamble of the Marrakesh Agreement establishing the WTO and its use to interpret Article XX of the GATT in the famous *Shrimp – Turtle* case.

14 Article III.8(a) of the GATT states the following: ‘The provisions of this Article shall not apply to laws, regulations or requirements governing the procurement by governmental agencies of products purchased for governmental purposes and not with a view to commercial resale or with a view to use in the production of goods for commercial sale.’

Box 1: The legal relevance of the WTO Agreement's preamble

In the opening paragraph of the Marrakesh Agreement establishing the WTO, the contracting Parties recognised that:

'their relations in the field of trade and economic endeavour should be conducted with a view to raising standards of living, ensuring full employment and a large and steadily growing volume of real income and effective demand, and expanding the production of and trade in goods and services, while allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development'

In the prominent *Shrimp-Turtle* case, this reference to sustainable development and environmental protection provided the basis for the WTO Appellate Body to interpret the terms 'exhaustible natural resources' in Article XX(g) of the GATT as encompassing endangered turtles straddling the jurisdictional water of the United States. Although the measure at stake (which was a standard broadly understood, requiring the use of certain techniques to harvest shrimps so as to avoid damage to certain species of turtles) was found to be in breach of the GATT disciplines and not justified (for failure to meet the additional requirements of the chapeau of Article XX), it is significant that the Appellate Body expanded the interpretation of letter (g) of Article XX by reading it in the light of the preamble of the WTO Agreement:

'Given the recent acknowledgement by the international community of the importance of concerted bilateral or multilateral action to protect living natural resources, and recalling the explicit recognition by WTO Members of the objective of sustainable development in the preamble of the WTO Agreement, we believe it is too late in the day to suppose that Article XX(g) of the GATT 1994 may be read as referring only to the conservation of exhaustible mineral or other non-living natural resources.'

Source: United States – Import Prohibition of Certain Shrimp and Shrimp Products, Report of the Appellate Body, 12 October 1998, WT/DS58/AB/R, para. 131.

Clauses that affirm environmental policy space

Different clauses can be used to reserve environmental policy space in a trade agreement. Some may specifically refer to the **relations between the trade agreement and other treaties** aimed to protect the environment (often called ‘multilateral environmental agreements’ or **MEAs**) whereas some others may formulate a **commitment not to lower environmental standards or to apply high levels of environmental protection**. The second type of commitment serves also to level the playing field among producers in different countries (in order to avoid anticompetitive practices that consist of lowering costs for producers by reducing stringency of standards or environmental norms). Finally, some broader clauses can be used that simply state that the obligations arising from a trade (or an investment) agreement must not be interpreted as limiting the **ability of a State to adopt regulations in pursuance of certain public interests**, including national security or environmental protection. Box 2 offers one example of each of these different types of clauses.

These and other similar clauses appear rather frequently in FTAs. It must be noted that these provisions **concern not only trade but also investment matters**, as suggested by the express wording of Article 24.5 of CETA and Article 10.10 of the Oman-US Bilateral Investment Treaty (**BIT**). Moreover, even when the provision is not located in an investment chapter, it may be relevant for both trade and investment disputes, as suggested by the analysis of Article 104 of the NAFTA in an early investment dispute relating to a trade ban imposed by Canada on transboundary movements of hazardous waste (*S.D. Myers v. Canada*, Partial Award (2000)). Also of note is the fact that **very few of these provisions have been effectively tested in litigation**. Aside from Article 104 of the NAFTA, which was deemed not to be applicable in the end, one can refer to the application of Article 10.10 of the Oman-US BIT in another investment dispute (*Al Tamimi v. Oman*, Award (2015)), where the tribunal referred to this provision as well as to the environmental chapter in the treaty to interpret a basic investment provision (the fair and equitable treatment standard) in a manner protective of the environment. The measure adopted by the State on environmental grounds, among others, was thus deemed to be consistent with the FTA. Although investment dispute settlement is different in many significant ways from trade dispute settlement, these cases offer some guidance as to how such provisions could operate in practice to shield green industrial policy measures.

Box 2: Examples of provisions reserving environmental regulatory space

NAFTA - North-American Free Trade Agreement (Canada, Mexico, US), Article 104 and Annex 104:

'In the event of any inconsistency between this Agreement and the specific trade obligations set out in: (CITES, Montreal, Basel, or the agreements set out in annex 104.1, such obligations shall prevail to the extent of the inconsistency, provided that where a Party has a choice among equally effective and reasonably available means of complying with such obligations, the Party chooses the alternative that is the least inconsistent with the other provisions of this Agreement'

CETA - Comprehensive Economic and Trade Agreement (Canada, EU), Article 24.5:

'The Parties recognise that it is inappropriate to encourage trade or investment by weakening or reducing the levels of protection afforded in their environmental law.

A Party shall not waive or otherwise derogate from, or offer to waive or otherwise derogate from, its environmental law, to encourage trade or the establishment, acquisition, expansion or retention of an investment in its territory.

A Party shall not, through a sustained or recurring course of action or inaction, fail to effectively enforce its environmental law to encourage trade or investment'

Free Trade Agreement (Morocco, US), Article 17.1:

'[E]ach Party shall ensure that its own environmental laws and policies provide for and encourage high levels of environmental protection and shall strive to continue to improve those laws and policies'

Free Trade Agreement (Oman, US), Article 10.10:

'Nothing in this Chapter shall be construed to prevent a Party from adopting, maintaining, or enforcing any measure otherwise consistent with this Chapter that it considers appropriate to ensure that investment activity in its territory is undertaken in a manner sensitive to environmental concerns'

General exception clauses

The main example of general exception clauses is provided by Article XX of the GATT, which has been copied with some adjustments in numerous other treaties, whether applicable to all WTO members (e.g. Article XIV GATS),

only some of them (e.g. Article III(2) of the revised Agreement on Government Procurement, see below section 2.3), or to members of an FTA irrespective of WTO membership (e.g. Article 28.3 CETA). Given the wide reliance of governments on this approach and the fact that Article XX of the GATT has been widely tested in litigation, it is important to clarify three aspects of its operation.

The first aspect has already been mentioned, namely that **'exceptions'** are not an ideal way of providing policy space for environmental regulation because they assume that there has been a violation of a trade (or investment) standard that may exceptionally be justified. In practice, that carries difficult consequences for litigation, including the fact that the burden of proof rests on the respondent State, that scrutiny of the defence tends to be more demanding and less deferent to States as well as some other potential effects (Viñuales (2016)).

The second aspect is that the **focus of the cases as well as of legal commentary** has been on provisions that may afford some room for environmental protection (Article XX, letters (b) and (g), which concern respectively measures 'necessary to protect human, animal or plant life or health' and measures 'relating to the conservation of exhaustible natural resources') but which are not the only possible ones, as suggested by cases relating to standards broadly understood (looking at Article XX, letter (a), which concerns measures 'necessary to protect public morals') or to specific green industrial policy measures (looking at Article XX, letter (d), which concerns measures 'necessary to secure compliance with laws or regulations which are not inconsistent with the provisions of this Agreement'). Box 3 recalls the relevant text of Article XX and some of its exceptions.

The third aspect is the **actual operation of Article XX exceptions**, as interpreted by the WTO Appellate Body. As shown in Box 3, the exception clause has two components. The analysis must start, according to the Appellate Body, at the level of one of the letters of Article XX. If the measure falls under one or more of these letters, then the analysis moves to 'how' the measure has been implemented (although this has been disputed, see Bartels (2015)). By way of illustration, a measure that is necessary to protect public morals or human, animal or plant life or health may have been applied in a manner that is inconsistent with the requirements of the chapeau of Article XX. In practice, limitations in the availability of Article XX exceptions have resulted either from the first assessment (e.g. *India – Solar*

Box 3: GATT Article XX - General Exceptions

(Chapeau) Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:

(a) necessary to protect public morals;

(b) necessary to protect human, animal or plant life or health; [...]

(d) necessary to secure compliance with laws or regulations which are not inconsistent with the provisions of this Agreement, including those relating to customs enforcement, the enforcement of monopolies operated under paragraph 4 of Article II and Article XVII, the protection of patents, trade-marks and copyrights, and the prevention of deceptive practices; [...]

(g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption; [...]

Cells case (2016), where India invoked unsuccessfully letter (d) to shield a feed-in-tariff scheme with local content requirements) or from the second one (e.g. *Shrimp – Turtle* case (1998), where the United States invoked letter (g) but the Appellate Body found that, although the measure fell under the scope of this letter, it had been applied in a manner inconsistent with the chapeau). A further challenge concerns the availability of Article XX in general, as shown by a case against China where certain measures adopted by China to restrain the exports of raw materials (an export quota) were deemed to be in violation of its Protocol of Accession to the WTO, a breach for which Article XX (even if all the conditions had been met) could not provide justification (*China – Raw Materials* (2012)). These different levels of analysis call for specific scrutiny of a measure during the process of its design, as highlighted in the over-arching methodology proposed in this manual.

2.3. Provisions relevant to specific policy tools

Border measures

The broader context governing the lawfulness of a variety of border measures has been provided in Chapter 2 of this manual. Here we focus specifically on the types of provisions and wording within provisions to shield or promote border measures as green industrial policy tools. Different forms of border measures may rely on different provisions. In Chapter 2 we referred to both unilateral and coordinated green industrial policy.

Increasing import tariffs in order to protect an infant green industry is lawful if the tariffs are non-discriminatory and remain within the bound (maximum) level of tariff for the State in question appearing in its Schedule of Concessions (Article II:1(a) and (b) of the GATT). Moreover, provisions such as Article II:2 of the GATT allow States to go beyond the limits of measures allowed by Article II:1(a) and (b) and to impose, under certain conditions, **additional financial charges** if they meet certain requirements. Given the potential relevance of such allowance for the introduction of so-called carbon equalisation measures, Box 4 states the wording of Article II:2(a) of the GATT in full:

Box 4: Article II:2(a) of the GATT

2. Nothing in this Article shall prevent any contracting party from imposing at any time on the importation of any product:

(a) a charge equivalent to an internal tax imposed consistently with the provisions of paragraph 2 of Article III [non-discrimination between domestic and foreign products] in respect of the like domestic product or in respect of an article from which the imported product has been manufactured or produced in whole or in part.

Significantly, a measure that falls within Article II:2(a) of the GATT is not merely justified, as it would be through the operation of Article XX (i.e. violation of a trade clause but exceptionally justified under certain conditions). It is, more precisely, not in breach of Article II:1(b)'s prohibition of additional measures and, as a result, the complainant has the burden of establishing *prima facie* that Article II:2(a) is not available (*India – Additional Import Duties* (2008), paragraph 160). This highlights the difference between resorting to provisions that operate as 'derogations' or 'carve-outs' and resorting to the more common 'exceptions'.

Regarding **coordinated green industrial policy**, a variety of measures can be adopted to promote trade in environmental goods and services. The Doha round sought to promote such trade through the conclusion of a multilateral agreement that would have reduced or eliminated 'tariff and non-tariff barriers on environmental goods and services', but these efforts have been unsuccessful so far. A more limited attempt to craft a plurilateral **Environmental Goods Agreement** (among some WTO members), modelled on a regional initiative by APEC countries (see Chapter 2), was pursued between 2014 and 2016 but its conclusion is for the time being uncertain. Yet another possibility is to include clauses in FTAs such as those reproduced in Box 5:

Box 5: Provisions in FTAs relating to trade in environmental goods and services

CETA - Comprehensive Economic and Trade Agreement (Canada, EU), Article 24.9(1):

'The Parties are resolved to make efforts to facilitate and promote trade and investment in environmental goods and services, including through addressing the reduction of non-tariff barriers related to these goods and services'

Agreement between New Zealand and the Separate Customs Territory of Taiwan, Penghu, Kinmen, and Matsu on Economic Cooperation, chapter 17, Article 3.2(a):

'[T]he Parties shall eliminate all tariffs on environmental goods upon entry into force of this Agreement.

For the purposes of this Agreement, environmental goods are those which positively contribute to the green growth and sustainable development objectives of the Parties. A list of environmental goods is attached as Annex 7'

Source: IISD Toolkit for trade negotiators

Subsidies

In Chapter 3, we discussed a wide variety of support schemes and their role in green industrial policy. The discussion covered **two aspects**. On the one hand, support schemes may prevent the transition to an inclusive green economy particularly when they create massive distortions in the price and thereby the consumption of certain goods, such as fossil fuels, and products of conventional agricultural products and of marine-capture fishing, with important negative implications for the environment. On the other hand, support schemes may specifically target certain sectors or producers through local content requirements in order to realise latent comparative advantages or align openness to trade with diversification of the domestic industry. Treaty provisions can be used to address these two aspects. Box 6 provides examples of provisions targeting these two issues derived from the draft Trans-Pacific Partnership (**TPP**) Agreement.

In addition, a key area of government support for green industries is public procurement. Given its importance and its different legal treatment, trade agreements typically address this question specifically. The relevant provisions are further discussed later in this section.

Box 6: TPP provisions relating to support schemes

Article 20.16(5):

'[...] no Party shall grant or maintain any of the following subsidies [...]:

- (a) Subsidies for fishing that negatively affect fish stocks that are in an overfished condition; and
- (b) Subsidies provided to any fishing vessel while listed by the flag State or a relevant Regional Fisheries Management Organisation or Arrangement for IUU [illegal, unregulated or unreported] fishing'

Article 9.9(3)(a) and (d):

'(a) Nothing in paragraph 2 [a detailed prohibition of local content requirements] shall be construed to prevent a Party from conditioning the receipt or continued receipt of an advantage, in connection with an investment of an investor of a Party or of a non-Party in its territory, on compliance with a requirement to locate production, supply a service, train or employ workers, construct or expand particular facilities, or carry out research and development, in its territory [...]

'(d) Provided that such measures are not applied in an arbitrary or unjustifiable manner, or do not constitute a disguised restriction on international trade or investment, paragraphs 1(b) [prohibition of requiring a percentage of domestic content], 1(c) [prohibition of requirement to purchase, use or accord preference to goods and persons in the territory], 1(f) [prohibition of requiring the transfer of a technology, production process or proprietary knowledge to a person in the territory], 2(a) [prohibition of requiring a percentage of domestic content] and 2(b) [prohibition of requirement to purchase, use or accord preference to goods and persons in the territory] shall not be construed to prevent a Party from adopting or maintaining measures, including environmental measures:

- I. necessary to secure compliance with laws and regulations that are not inconsistent with this Agreement;
- ii. necessary to protect human, animal or plant life or health; or
- iii. related to the conservation of living or non-living exhaustible natural resources

Standards

Provisions addressing standards, broadly understood as encompassing mandatory technical regulations (including those for sanitary and phytosanitary purposes), voluntary standards, and conformity assessment procedures, are **often of a general nature**. Some of these general provisions have been discussed in section 2.2 in connection with reservations of

environmental policy space. Thus, provisions in FTAs requiring States not to lower standards as a way of attracting investment or of providing a competitive advantage to exporters are a tool to endorse the need for high environmental standards. Similarly, provisions – often of an aspirational nature – encouraging States to promote high environmental standards are also relevant to assess the consistency of environmental standards with international trade law, although they have not been tested in litigation so far.

Some other provisions found in trade agreements **refer to corporate social responsibility standards**. Chapter 4 discusses the governance of technical regulations and standards under the Agreement on Technical Barriers to Trade (**TBT**) and the Agreement on Sanitary and Phytosanitary Measures (**SPS**). As noted in Chapter 4, policy-makers considering the adoption of technical regulations and standards are encouraged to make them consistent with international standards, as characterised in TBT and SPS, because that creates a presumption that the domestic measure is necessary (proportionate to the public purpose it pursues) or even in conformity with trade disciplines. These types of provisions can be very useful to shield green industrial policy measures, particularly when they require domestic and foreign producers to abide by well recognised standards, either to protect the domestic industry against foreign goods that are more polluting or of lower environmental quality or to promote the realisation of a comparative advantage. In addition, some provisions in FTAs increasingly refer to a variety of **private standards** that are to be promoted by States parties. Such provisions are also of an aspirational nature, but they could be very useful to interpret trade provisions in a manner that makes room for green industrial policy measures. Box 7 provides examples from these two types of provisions specifically referring to standards.

Box 7: Provisions specifically referring to standards

TBT – Agreement on Technical Barriers to Trade, Article 2(5):

'[...] Whenever a technical regulation is prepared, adopted or applied for one of the legitimate objectives explicitly mentioned in paragraph 2 [... protection of human health or safety, animal or plant life or health, or the environment], and is in accordance with relevant international standards, it shall be rebuttably presumed not to create an unnecessary obstacle to international trade'

SPS – Agreement on Sanitary and Phytosanitary Measures, Article 3(2):

'Sanitary or phytosanitary measures which conform to international standards, guidelines or recommendations shall be deemed to be necessary to protect human, animal or plant life or health, and presumed to be consistent with the relevant provisions of this Agreement and of GATT 1994'

Free Trade Agreement (EU, Vietnam), chapter 15, Article 9(e):

'The Parties, in accordance with their domestic policies, agree to promote corporate social responsibility (CSR), provided that CSR-related measures are not applied in a manner that would constitute a means of arbitrary or unjustifiable discrimination between the Parties or a disguised restriction to trade. Promotion of CSR includes among others exchange of information and best practices, education and training activities and technical advice. In this regard, each Party takes into account relevant internationally accepted and agreed instruments, that have been endorsed or are supported by the Party, such as the OECD Guidelines for Multinational Enterprises, the UN Global Compact, the ILO Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy'

Public procurement

Due to its importance, public procurement is often specifically addressed in both the global and the special trade systems, whether through specific agreements (e.g. the revised plurilateral Agreement on Government Procurement) or specific provisions. Such provisions are structured as 'derogations' (or 'carve-outs') or as interpretive clarifications included in the text of a provision or, still, as exceptions. The general context of how sustainable public procurement is governed in international trade law was discussed in Chapter 5.

Box 8 provides examples of **three types of clauses**: (1) public procurement derogations, (2) provisions clarifying that sustainability criteria at different stages of the procurement process are consistent with trade provisions, and (3) public procurement specific exceptions similar to Article XX of the GATT. The order of the clauses reflects the larger or narrower scope left for sustainable public procurement in these different tools. Hence, trade

negotiators and government officials should prefer, when possible, to use general carve-outs and move down to less ambitious options as the need arises.

Box 8: Examples of provisions reserving environmental regulatory space

1. Public procurement derogation

GATT – General Agreement on Tariffs and Trade, Article III:8(a):

‘The provisions of this Article shall not apply to laws, regulations or requirements governing the procurement by governmental agencies of products purchased for governmental purposes and not with a view to commercial resale or with a view to use in the production of goods for commercial sale’

2. Sustainability criteria

Free Trade Agreement (Australia, Korea), Article 12.8(6):

‘For greater certainty, a procuring entity may prepare, adopt or apply technical specifications to promote the conservation of natural resources or protect the environment’

Free Trade Agreement (EU, Singapore), chapter 10, Article 10.9(11):

‘The evaluation criteria set out in the notice of intended procurement or in another notice used as a notice of intended procurement or tender documentation may include, among others, price and other cost factors, quality, technical merit, environmental characteristics, and terms of delivery’

3. Specific exception

Revised Agreement on Government Procurement, Article III:2(a)-(b):

‘Subject to the requirements that such measures are not applied in a manner that would constitute a means of arbitrary or unjustifiable discrimination between Parties where the same conditions prevail or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent any Party from imposing or enforcing measures:

(a) Necessary to protect public morals, order or safety;

(b) Necessary to protect human, animal or plant life or health’

Source: IISD Toolkit for trade negotiators

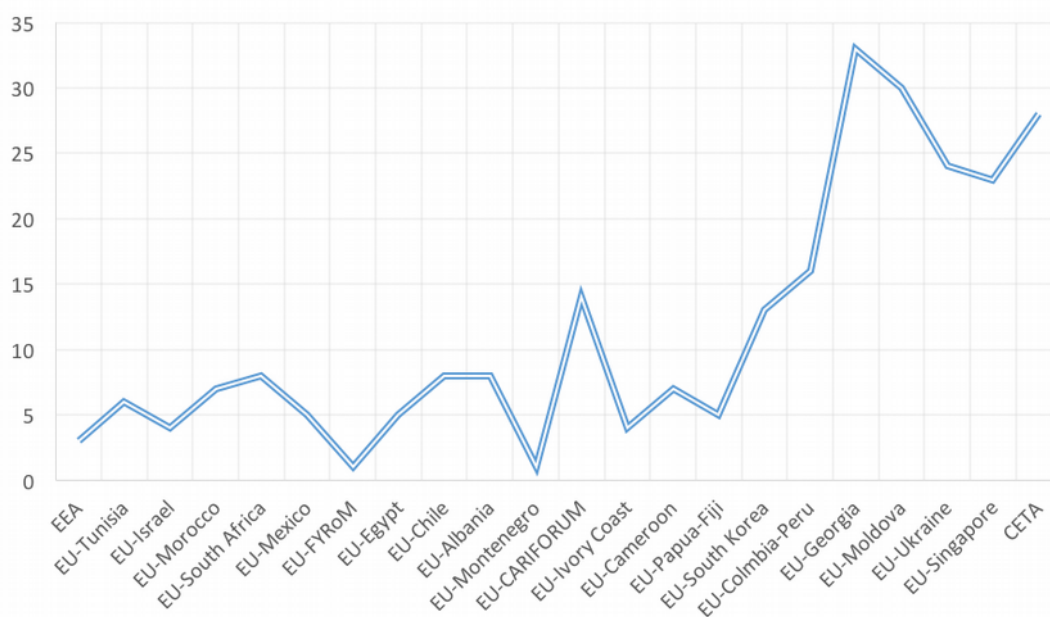
The public procurement derogation in Article III:8(a) of the GATT was **unsuccessfully invoked by both Canada and India** in two cases concerning green industrial policy and, more specifically, feed-in-tariff schemes involving local content requirements (*Canada – Renewables* (2012) and *India – Solar Cells* (2016)). A major difficulty in the operation of such clauses in the specific context of these cases was that the product being procured through the feed-in-tariff scheme (electricity) was different from the product being promoted through the local content requirement (domestic equipment). As a result, the public procurement clause in Article III:8(a) could not be used for the latter.

3. Case-study: the integration of renewable energy in FTAs

Although the WTO system governs fuels and equipment used to produce or transform energy (including renewable energy), it does not target it specifically. However, in a growing number of FTAs, provisions specifically addressing renewable energy or bearing a close relationship with it (e.g. removal of subsidies to fossil fuels or green public procurement) are being introduced.

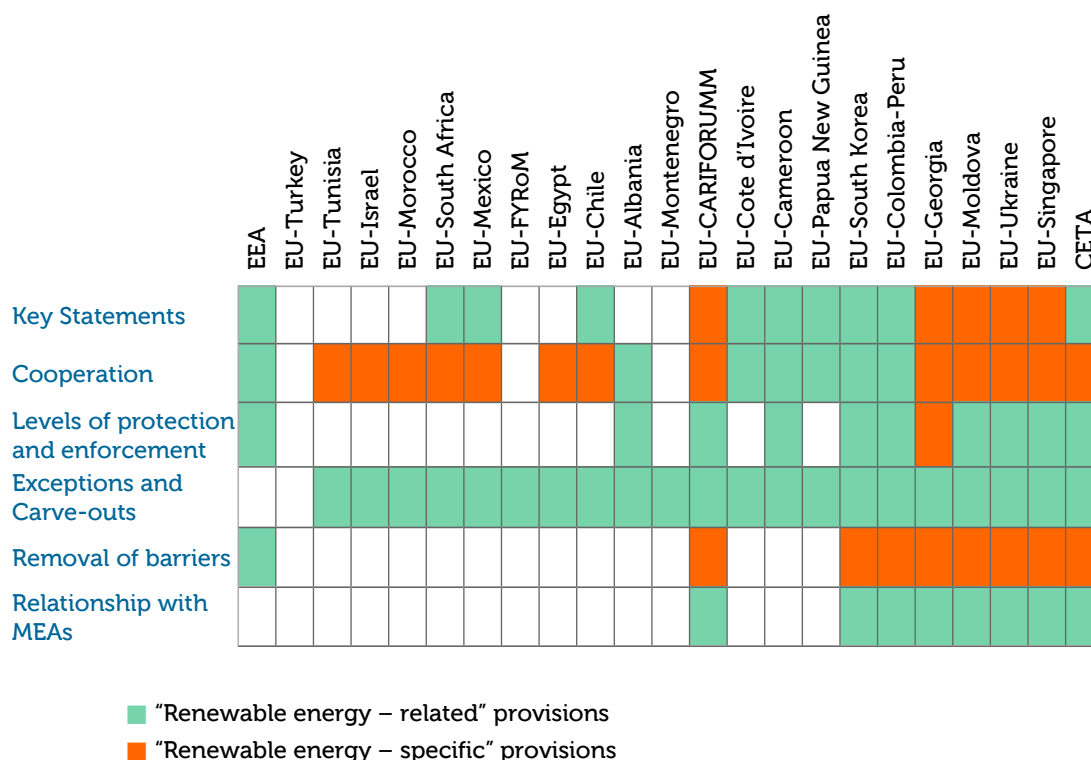
A recent study focusing on these provisions (Cima (2016)) offers a **panorama of the treaty practice of the United States and the European Union** in this regard. It makes a distinction between provisions which are renewable energy-specific (i.e. provisions expressly referring to renewable energy or renewable energy goods or services) and renewable energy-related (i.e. broader provisions relating to the environment or sustainable development, which were discussed in previous sections of this chapter). The latter are more frequently used than the former, although the treaties signed by the EU tend to include renewable energy-specific provisions more and more frequently. Figure 1 shows this trend in the context of the EU FTA practice:

Figure 1: Trends in the use of renewable energy provisions in EU FTAs (ordered chronologically from 1992 (EEA) to 2016 (CETA))



Source: Cima (2016)

Figure 2: Renewable energy provisions in EU FTAs



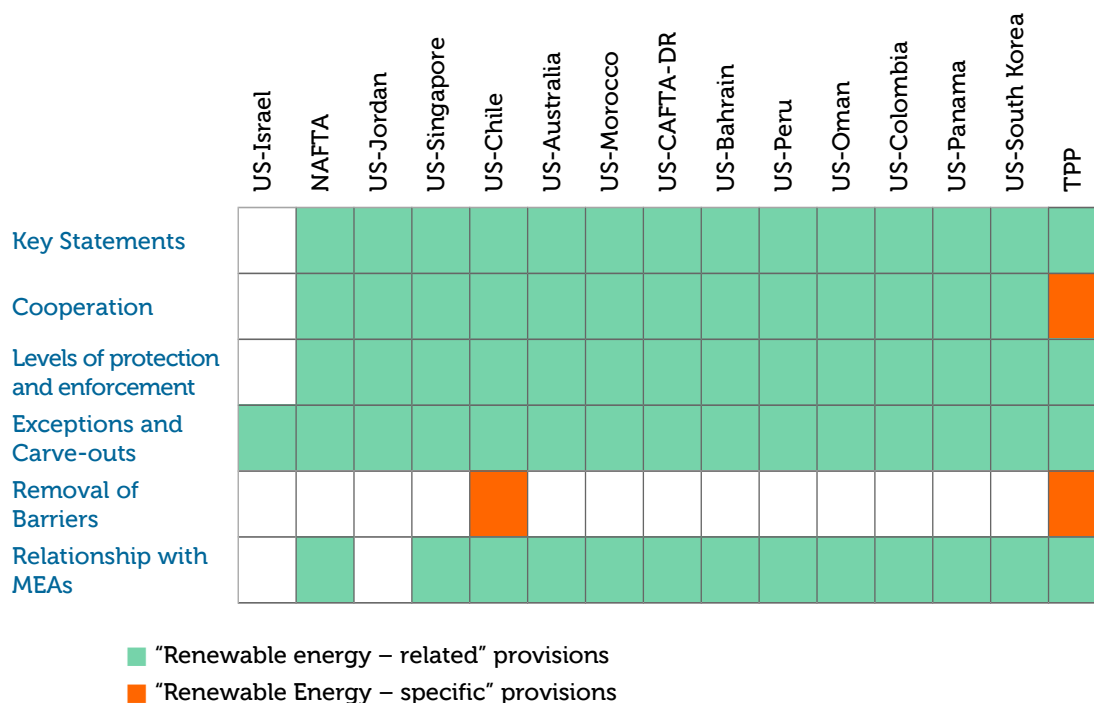
Note: the presence of 'renewable energy-specific' provisions is not alternative but rather cumulative to the existence of 'renewable energy-related' ones.

Source: Cima (2016)

Figures 2 and 3 provide a finer-grained picture of this trend, summarising the **relative frequency** of renewable energy-related and renewable energy-specific provisions, respectively in the EU and the US treaty practice. They also provide some detail regarding the contents of such provisions, which are further discussed below.

From a government's perspective, the main question is what specific types of provisions are being used to promote renewable energy. Interestingly, according to the study reviewed, these provisions seem to be moving the system from a situation in which green industrial policies promoting renewable energy are admitted (e.g. through exceptions) to one in which they are actively encouraged. The **tools used for such promotion are essentially of three types**, namely provisions relating to: (a) the removal of barriers, (b) the possibility of support for renewable energy, and (c) general cooperation provisions. Each type is discussed in turn, with reference to some selected examples.

Figure 3: Renewable energy provisions in US FTAs



Note: see Figure 2.

Source: Cima (2016)

A number of FTAs include provisions **specifically targeting barriers to goods and related services used for renewable energy**. These provisions are of two main types. Some concern trade liberalisation in green goods and services or, as discussed earlier in this chapter and in Chapter 2, provide more room for a coordinated green industrial policy. An example is provided by Article 24.9 of CETA according to which the parties shall 'pay special attention to facilitating the removal of obstacles to trade or investment in goods and services of particular relevance for climate change mitigation and in particular trade or investment in renewable energy goods and related services'. Of particular note is the specific mention of renewable energy in this provision. Other examples of such provisions include Article 275 of the EU-Colombia FTA (according to which the parties are to 'promote trade and investment measures that promote and facilitate access, dissemination and use of best available technologies for clean energy production and use, and for mitigation of and adaptation to climate change') and Article 7.1 of the EU-Singapore FTA (which includes, in a specific chapter devoted to the removal of barriers for trade and investment in renewable energy, the objective of 'developing and increasing the generation of energy from

renewable and sustainable non-fossil sources'). The EU-Singapore FTA, which is not yet in force, also provides an example of the second type of barrier-removal provision, which is far less frequent, namely a specific reference to a shared goal of progressively reducing fossil fuel subsidies. More fully, Article 13.11, which is located in the Trade and Sustainable Development chapter of the Agreement, states that:

'[t]he Parties recognise the need to ensure that, when developing public support systems for fossil fuels, proper account is taken of the need to reduce greenhouse gas emissions and to limit distortions of trade as much as possible. While subparagraph (2)(b) of Article 12.7 (Prohibited Subsidies) does not apply to subsidies to the coal industry, the Parties share the goal of progressively reducing subsidies for fossil fuels. Such a reduction may be accompanied by measures to alleviate the social consequences associated with the transition to low carbon fuels. In addition, both Parties will actively promote the development of a sustainable and safe low-carbon economy, such as investment in renewable energies and energy efficient solutions.'

Of note is the link between the removal of fossil fuel subsidies and the need to address the social consequences (including unemployment) of this transition, an issue which is discussed in Chapter 7 of this manual.

Another set of provisions focus on **support, specifically subsidies, to renewable energy**. The EU-Singapore FTA provides, again, a good illustration of the state of the art. Article 12.8, read together with Annex 12-A(e), introduces a carve-out to the general clause discouraging 'other subsidies' (i.e. subsidies other than those prohibited under Article 12.7) according to which:

'[...] the following subsidies may be granted by a Party when they are necessary to achieve an objective of public interest, and when the amounts of the subsidies involved are limited to the minimum needed to achieve this objective and their effect on trade of the other Party is limited: [...] (e) subsidies to facilitate the development of certain economic activities or of certain economic areas, where such aid does not affect conditions of trade of either Party and competition between the Parties'.

The scope of the carve-out is highly circumscribed. A footnote to letter (e) adds that:

'[t]his category [the subsidies in letter (e)] may include but is not limited to, subsidies for clearly defined research, development and innovation purposes, subsidies for training or for the creation of employment, subsidies for environmental purposes, and subsidies in favour of small and medium-sized companies, defined as companies employing fewer than 250 persons'.

This provision could provide some space for a wide number of trade-related green industrial policy measures.

The third type of provisions are **more general in nature and relate to cooperation on renewable energy matters**. The provisions characterising the cooperation envisaged range from general references (e.g. Article 57 of the EU-Tunisia Association Agreement; and Article 13.10(e) of the EU-Singapore FTA), to the information exchange provisions (e.g. Articles 23 and 34(2) of the EU-Mexico Global Agreement; Article 13.10(d) of the EU-Singapore FTA; Article 24.12 of CETA; Article 18.6 of the US-Singapore FTA; and Article 19.5 of the US-Singapore FTA) to deeper forms of cooperation to be arranged through instruments such as memoranda of understanding (e.g. Article 18.6 of the US-Singapore FTA; Article 19.5 of the US-Chile FTA; Article 17.9 of the US-CAFTA-DR).

The most advanced form of cooperation is through the conclusion of a side environmental cooperation agreement identifying areas of environmental cooperation. By way of illustration, according to Article 19.5(1) of the US-Chile FTA:

[...] the Parties agree to undertake cooperative environmental activities, in particular through: [...] (b) promptly negotiating a United States-Chile Environmental Cooperation Agreement to establish priorities for further cooperative environmental activities, as elaborated in Annex 19.3’.

This Annex sets out in some detail the areas where cooperation will be promoted as well as the channels through which it will happen. Renewable energy is implicit in a number of provisions, including the reference in Annex 19.3(1)(h) to the use of cleaner fuels, which may encompass the development of biofuels.

Summary table

<p>High-level vision setting and stakeholder consultation</p>	<p>UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 1</p>
<p>Stock-taking</p>	<p>Gathering information of socio-economic, environmental and existing policies to define a baseline, particularly as regards the following enabling conditions for trade-related green industrial policies:</p> <ul style="list-style-type: none"> • Appropriate resource endowment and political/social conditions • Public investment and access to credit • Adequate infrastructure • Domestic legal and regulatory framework • Integration into international agreements
<p>Prioritising intervention areas and goal-setting</p>	<p>Identifying policy rationales to be acted upon and sustainability goals to be reached. Policy rationales to be addressed include all those reviewed in previous chapters for which provisions in trade agreements may create legal space or that may be proactively promoted by such provisions.</p>
<p>Selecting the tools</p>	<p>Matching selected policy rationales with policy options. Policy options within the broad category of provisions in trade agreements:</p> <ul style="list-style-type: none"> • General approaches: • Environmental side agreements • Environmental or sustainable development chapters • Interpretive letters • Provisions <p>Provisions relevant to all green industrial policies:</p> <ul style="list-style-type: none"> • Preambular references • Reservations of environmental policy space • Exceptions <p>Provisions relevant to specific green industrial policies (typically for hard green industrial policy):</p> <ul style="list-style-type: none"> • Border measures • Subsidies • Standards • Public procurement

<p>Design and assessment</p>	<p>Specific design of policy option. Selection within each tool of specific design features:</p> <p>For provisions relevant to all green industrial policies:</p> <ul style="list-style-type: none"> • Preambular language (more or less clear and fit for interpretation purposes) • Reservations of environmental policy space (relationships with multilateral environmental agreements, commitments not to lower environmental standards, commitment or allowance to raise environmental standards) • Exceptions (GATT-like, other wording) <p>Provisions relevant to specific green industrial policies (typically for hard green industrial policy):</p> <ul style="list-style-type: none"> • Border measures (carve-outs for additional financial charges, provisions encouraging trade in environmental goods or services) • Subsidies (provisions aimed at removing distorting subsidies, carve-outs for specific subsidies) • Standards (general commitments not to lower or to increase environmental standards, presumptions of consistency, general references to international standards) • Public procurement (specific carve-outs, references to sustainability criteria) <p>Assessment of consistency and impact:</p> <ul style="list-style-type: none"> • Legal assessment • Integrated socio-economic and environmental impact assessment
<p>Implementation</p>	<p>UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 6</p>

Resources

NB: all links last visited on 15 September 2017

- Bartels, L., 'The Chapeau of the General Exceptions in the WTO GATT and GATS Agreements: A Reconstruction' (2015) 109 *American Journal of International Law* 95.
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- Bourgeois, J. et al, *A Comparative Analysis of Selected Provisions in Free Trade Agreements* (2007).
- Cima, E., 'Promoting renewables through free trade agreements? An assessment of the relevant Provisions', *C-EENRG Working Papers*, 2016-7 (2016), pp.1-50.
- George, G., 'Environment and Regional Trade Agreements: Emerging Trends and Policy Drivers', *OECD Trade and Environment Working Papers*, 2014/02.
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- UNCTAD, *World Investment Report. Towards a New Generation of Investment Policies* (2012), chapter IV (Investment Policy Framework for Sustainable Development).
- UNCTAD, *World Investment Report 2014. Investing in the SDGs* (2014).
- UNCTAD, *Investment Policy Framework for Sustainable Development* (2015).
- UN Environment/IISD, *Sustainability tool-kit for trade negotiators*.
- Viñuales, J. E., *Foreign Investment and the Environment in International Law* (Cambridge University Press, 2012).
- Viñuales, J. E., 'Seven Ways of Escaping a Rule: Of Exceptions and their Avatars in International Law', in L. Bartels, F. Paddeu (eds), *Exceptions in International Law* (Oxford University Press, forthcoming 2017).
- Zvelc, R., 'Environmental integration in EU trade policy: the Generalised System of Preferences, trade Sustainability Impact Assessments and Free Trade Agreements', in E. Morgera (ed.), *The External Environmental Policy of the European Union EU and International Law Perspectives* (Cambridge University Press, 2012), pp. 174-203.

Chapter 7

Employment-related schemes

Key contents of the chapter:

- 1 Employment-related schemes are important to respond to the structural adjustments arising from trade and from the transition to a green economy, particularly for workers and enterprises in 'brown sectors', but also to promote the emergence of a workforce with green skills and avoid skill shortages in green industries.
 - 2 The notion of "just transition" embodies the policy objectives of ensuring that job creation opportunities are maximised and potential negative impacts are identified and addressed, so that no one is left behind.
 - 3 Green jobs are decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency. Green jobs can be considered through three scales (efficiency, green products/services, decency). Each scale has different degrees. A significant part of green job promotion consists of upgrading skills and retraining the workforce active in other sectors, but also of training workers for entirely new green jobs.
 - 4 The types of policies and measures that can be adopted to tackle challenges arising from structural adjustment and promote green jobs include (a) information gathering and assessment, (b) social dialogue, participation and coordination measures, (c) social protection and structural adjustment policies, and (d) education and training measures.
 - 5 Two representative illustrations of work in this area are the ILO's Green Jobs Assessment methodology and South Africa's partnering with the ILO's International Training Centre to provide green skills training supported by South Africa's Green Fund.
 - 6 A summary table placing the tools reviewed in this chapter within the overall methodology presented in Chapter 1 is provided at the end of the chapter.
-

1. Overview

Employment-related schemes may appear, at first sight, to be insufficiently related to the trade policies that can be adopted to transition to a green economy. However, they are of critical importance to ensure that the transition is sensitive to not only prosperity and environmental protection but also to considerations of inclusiveness. Three inter-related reasons for this will be discussed in the following paragraphs.

First, green industrial policy requires the **availability of an appropriately trained workforce to avoid mismatches** between industry support policies and the availability of skilled-workers. In some sectors such as renewable energies and energy efficiency, such skill shortages have been severe, creating so-called 'skill bottlenecks'. In addition, green industries (e.g. waste treatment) may entail significant occupational hazards that require further knowledge and training as a matter of risk management.

For the green industrial policy tools discussed in previous chapters to be effective and for the transition to a green economy to be genuinely inclusive, appropriate employment-related schemes must be put in place.

Second, although trade is correlated with more growth both in developed and developing countries, it may also **increase inequalities within and across States**, with less developed countries concentrating on lower value-added and potentially more polluting sectors (raw materials and natural resources). Moreover, the opening (or further liberalisation) of trade is normally followed by a **restructuring of production and employment**. This can lead to significant opportunities for workers. However, it might also lead smaller, uncompetitive industries and low-skill workers to be driven out of the market

or pushed into the informal sector (Altintzis/Busser (2014)). It is therefore critical to anticipate the effects of opening to trade on different sectors of the workforce.

Third, in the context of a transition to a green economy, the structural change prompted by opening to trade could be amplified by the **adjustment resulting from the transition from brown to green sectors**. Thus, for this

transition to be inclusive, it must take into account job losses in sectors such as forestry and agriculture, mining, fossil fuel-based energy generation and some manufacturing industries (e.g. automobiles) (ILO (2013b)).

Therefore, for the green industrial policy tools discussed in previous chapters to be effective and for the transition to a green economy to be genuinely inclusive, appropriate employment-related schemes must be put in place. Such schemes must take into account the three considerations identified above and their possible effects on employment. Box 1 summarises the specific impacts that can be expected from the transition to a green economy.

Box 1: Job impact of the transition to a green economy

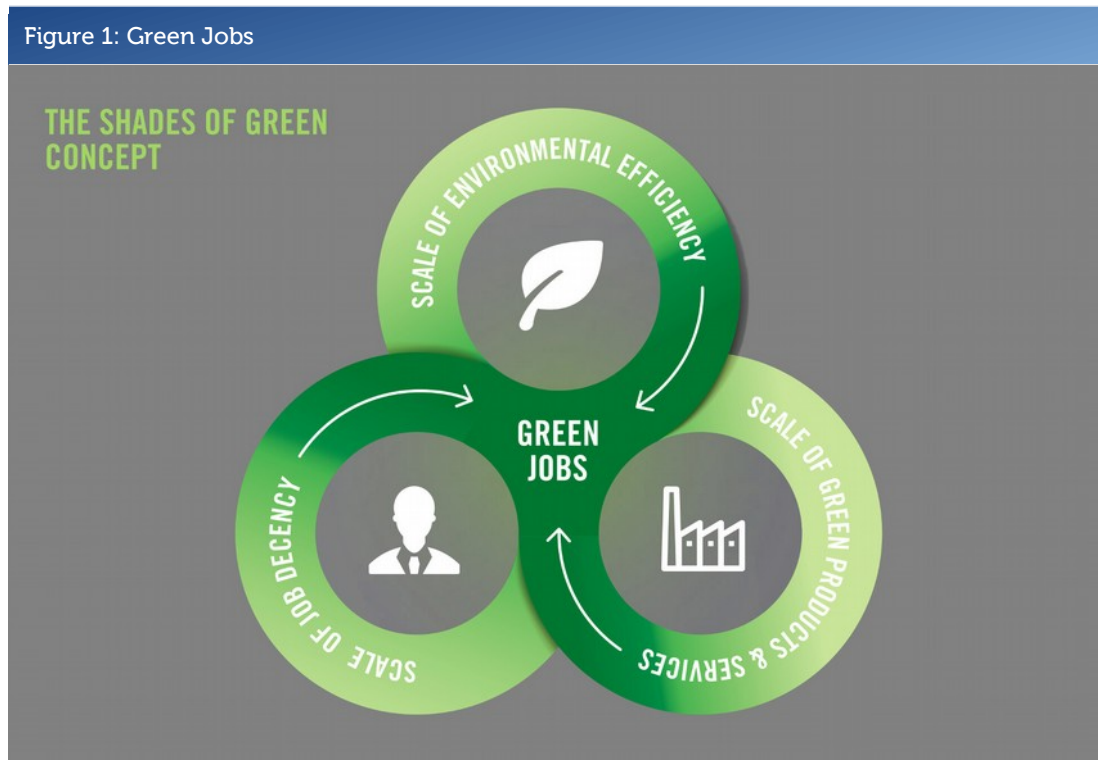
- Creation of additional jobs in environmental sectors (e.g. the manufacturing of pollution control devices)
- Substitution of some jobs (e.g. those in fossil fuel-based electricity production are likely to be redirected toward greener industries)
- Elimination of some jobs without direct replacement (e.g. elimination of environmentally harmful packaging)
- Jobs that will be transformed and redefined to account for new greener skill-sets, work methods and profiles (environmental updating and upgrading).

Source: UN Environment/ILO (2008)

In this context, Figure 1 presents the definition of **green jobs** developed by the International Labour Organisation's (ILO) Green Job Programme, which focuses on three scales.

The scales reflect the realities on the ground. The **efficiency** scale targets products and services that are widely used in the brown economy but that can be made much more efficient and hence greener. Most of the greening of the job markets will involve upgrading the skills of the workforce to carry out their activities more efficiently. The **green product/service** scale reflects new products and sectors and hence new jobs specifically in green markets, such as renewable energy equipment and generation. The **decency scale** targets a variety of considerations relating to the four dimensions of decent work, i.e. productive employment, including the availability of jobs that are fair, stable and sufficiently rewarding, rights at work, social protection, and social dialogue.

Figure 1: Green Jobs



Source: ILO - Green Jobs Program.

In what follows, the chapter discusses four types of policies that aim to tackle both the risks involved in structural change for workers in the brown sector and the potential for green jobs entailed by a transition to an inclusive green economy (section 2). Two main illustrations are then provided focusing on an international programme (managed by the ILO) and a domestic one (the case of South Africa) (section 3). As in the previous chapters, section 4 summarises the chapter and places this tool within the methodology presented in Chapter 1.

2. The tool-box

2.1. Spectrum of measures used in practice

The spectrum of policy measures that can be used to tackle the employment challenges raised by a green industrial policy relying on trade related instruments ranges from information gathering and assessment, to better coordination and participation, social protection, education and training measures. Some of these measures are very specific (e.g. integrating environmental components in national education curricula or making continuing education tax deductible) whereas others are very general (e.g. improving coordination between employer organisations, trade unions and government or providing appropriate unemployment benefits). But they must all be seen as components of a package that may only work if several of these policies are combined. The ILO *Guidelines for a just transition towards environmentally sustainable economies and societies for all* (ILO (2015)) present a range of key principles, policy measures and institutional mechanisms that need to be put together in a coherent manner to manage the transition to an inclusive green economy while addressing labour market implication. The following sections briefly discuss information gathering and impact assessment (section 2.2), social dialogue, participation and coordination measures (section 2.3), social protection and structural adjustment policies (section 2.4), and education and training measures (section 2.5).

2.2. Information gathering and impact assessment

One of the main challenges in assessing the potential of green jobs and communicating this potential to the population is the lack of clear information available about them. It is not only difficult to define 'green jobs' but, in many cases, even when some reasonably satisfactory definitions are available, the statistical information systems used domestically stick to general information about employment. Information gathering is important to conduct assessments of the impact of a variety of green industrial policy measures (including trade-related measures) on employment.

During an inter-agency workshop held in 2013, three main methodologies were discussed, relying on case-studies of several States, including India, Malaysia, Mauritius, Mexico, Kenya, Philippines and South Africa. The first methodology is that of UN Environment's **Green Economy Scoping Studies**, which relies on a country-customised integrated assessment model estimating the impact of certain policies in terms of avoided costs (e.g. the job losses avoided as a result of a more sustainable management of fisheries) and environmental benefits (e.g. higher biodiversity, production of non-timber products, ecotourism income, and employment in forest conservation).

The second approach is **ILO's Green Jobs Assessment Methodology**, which may include a range of methodologies, such as inventories and surveys, input-output analysis and social accounting matrices, and computable general equilibrium models, depending on the country's focus and practical considerations, notably the available budget and the type and quality of data available. To undertake a Green Jobs Assessment in a given country, the ILO proposes a combined five-step approach:

- Review of the overall structure of the economy and the employment structure;
- An estimation of environment-related employment;
- An estimation of core environment-related jobs and green jobs;
- An assessment of the multiplier effect of direct, indirect and induced jobs for the economy; and
- An analysis of scenarios arising from possible policies and their implications.

Furthermore, labour statisticians have adopted guidelines for a statistical definition of employment in the environmental sector, allowing for the integration of green jobs in labour force surveys and the collection of relevant information (ILO (2013a)).

The third approach, developed by the **Organisation for Economic Cooperation and Development (OECD)**, focuses on the impact of climate change policies on employment. It uses a computable general equilibrium model that represents the entire world (divided into 15 regions, each with 22 sectors and 7 electricity technologies) and that, over the period between 2013-2050, estimates a reduction by 50 per cent of greenhouse gases in OECD countries. On this basis, it assesses the implications for the labour markets.

The approaches of these organisations rely on different techniques (quantitative – with simulation models – or qualitative – with surveys) and have different targets (country-specific or the world at large). Box 2 discusses the insights derived from the use of these methodologies into the situation of India (Gujarat), Kenya, and Mexico.

Box 2 : Country assessments

India (Gujarat)

The ILO Green Jobs Assessment for India showed that the wind energy sector has significant direct and, above all, indirect employment effects (e.g. employment creation in other sectors). Indirect employment effects are indeed higher than those generated by the conventional electricity sector, but also by other sectors such as construction and services.

Kenya

The Green Economy scoping study for Kenya showed that a rapid green economy transition offers great opportunities, but it also creates challenges where there are shortcomings in the enabling conditions, such as a robust regulatory framework, access to finance, insertion in international institutional frameworks, and education and outreach. Significantly, short-term costs arise as positive investments returns from green investments need at least 7-10 years to come to fruition.

Mexico

The ILO Green Jobs Assessment for Mexico identified a total of 1.8 million existing environmental jobs in Mexico (approximately 5% of the total national population). The study also measured 'decent' jobs (based on payment, hours worked, employment security, and social protection). Sustainable forestry and renewable energy were identified as the sectors showing the highest score along both environmental and social criteria.

Source: ILO/ITC (2013)

2.3. Social dialogue, participation and coordination measures

Aside from the more general measures to allow for workers participation in domestic collective bargaining processes, two types of participation and coordination measures are particularly important for trade-related green industrial policies.

First, the **coordination of worker associations, employment associations, government and training institutions** is important to understand the types of skills that are most urgently required to upgrade the workforce skills, to seize new green opportunities, and to help workers in the brown economy transition to other greener jobs. Indeed, to avoid skill shortages it is important for all the parties that may be affected by structural change in the employment and productive sectors to share their views and make their specific needs explicit so that training schemes can be tailored to such needs and put in place as promptly as possible.

Secondly, the **participation of worker representatives in the delegations negotiating trade agreements** can both add input on the views of workers and legitimacy to the end result. In some countries, trade unions have regular meetings with trade negotiators. In both the EU and Brazil, trade union leaders are furthermore part of the official country delegations to major trade gatherings, including WTO Ministerial Conferences.

2.4. Social protection and structural adjustment policies

Social protection policies are general tools of macroeconomic and social policy. Indeed, collective bargaining rights, minimum wages, protection against arbitrary layoffs, unemployment benefits, and unemployment and replacement services, are not specific to green industrial policy or to trade policy. But the double pressure that may arise from green transition policies and opening to trade makes the use of such social protection policies very important. Box 3 briefly contrasts the cases of Germany and China as regards the transition in coal mining areas.

Box 3: Transitions in coal mining

Germany

The German transition was greatly facilitated through worker co-determination as part of a cooperative tripartite structure, offering early retirement and transition periods as well as re-training programmes for younger workers. Furthermore, investments in higher education built the foundation for a knowledge-based economy in the coal-mining region.

China

In 2013, to address both overcapacity and climate change, the Chinese government announced a plan to close thousands of coal mines, which will lead to an estimated 1.3 million job losses in the coal sector. While this will affect about a fifth of the total workforce in the coal sector, a strategy towards enabling a just transition still remains to be clarified. This case emphasises the need for a carefully designed strategy to deal with the social effects of the structural adjustment arising from a transition to a green economy.

Source: ILO (2016)

This section discusses two policy instruments, selected because of their wide use or their potential relevance for trade-related green industrial policy.

The first policy instrument has been discussed in some detail in Chapter 4 and consists of the adoption of **employment-related local content requirements in green industrial policy**. Such an approach can take several forms. Companies (domestic or foreign) can be required to hire a certain volume of their workforce (e.g. represented by a portion of total employment costs) from the country or the national subdivision (e.g. a federated State, a province, a municipality, etc.) where they operate. Alternatively, the requirement may be to indicate in the bidding process of certain support schemes the contribution of the proposed project to the development of local employment. This, in turn, will be one of the criteria used to give a score to the project and, depending on the overall score, to grant certain benefits. Local content requirements can also contribute to green jobs by requiring a certain volume of services or certain products/ inputs to be sourced locally.

The double pressure that may arise from green transition policies and opening to trade makes the use of social protection policies very important.

In such a case, the definition of what is 'local' must be carefully assessed to ensure that the companies providing such services, products and inputs employ local workers. In all these cases, there may be complex considerations regarding the consistency of the scheme with the State's trade and investment obligations. The reader is referred to Chapter 4 for further detail.

The second policy instrument consists of specific **structural adjustment programmes managed by employment services** in order to facilitate the transition from brown to green jobs. Such programmes have been developed in major markets to tackle structural adjustment arising from the opening to trade. By way of illustration, the United States Trade Adjustment Assistance and the European Union Globalization Adjustment Fund offer a variety of re-orientation services including job search utilities, free counselling, CV writing and job interview workshops, wage subsidies, relocation allowances and public employment services to workers displaced by import competition (Altintzis/Busser (2014)). The same approach can be applied to structural adjustment arising from the transition from brown to green, particularly when such transition also combines structural adjustments arising from coordinated green industrial policies that may help some domestic champion industries to export more but may put great pressure on other industries, particularly brown and uncompetitive industries.

Employment-related local content requirements and structural adjustment programmes may be **complementary** because the increasing demand arising from the first policy instrument may be satisfied by facilitated re-orientation and retraining policies. A key component for this complementarity to work is a sufficient supply of educational and training services in the relevant green techniques, particularly those identified as necessary by the domestic industry within the context of coordination measures (see section 2.2).

2.5. Education and training

Education and training measures are important not only from the perspective of employment but also from that of consumption. Integrating **environmental education in the curriculum of primary and secondary schools** is critical for a transition to an inclusive green economy but also to make consumers sensitive to the implications of purchasing certain goods (green goods) rather than others (brown goods). Education policies are fully consistent with trade law and they provide the basis for other policies, such as standards (labels and disclosures), to fully deploy their effects. They are, moreover, the groundwork of any policy aimed at promoting green industries and to make green jobs more appealing. Within the broad category of

Coordination among workers associations, employer associations, government institutions, and training providers is very important to understand the specific needs of the industry and the workers at any point in time.

educational policies one finds not only the integration of environmental awareness in national curricula but also **the promotion of education and research at the university level**, including the provision of directed research grants that can lead to green technologies and entrepreneurship (see Chapter 3). More fundamentally, an inclusive green economy requires an education system that incorporates the idea of **continuous life-learning** and focuses on a variety of **transferable skills**. It is in-

deed by ingraining the idea that learning continues through life and by building skills (statistical, communicational, entrepreneurial, etc.) that are transferable from one activity to another that a solid basis for more targeted training relevant for the green economy can be promoted.

Among such more targeted training measures, the **organisation and valorisation of quality apprenticeships** may be key to orient young people towards green industries. Apprenticeships usually start after a period of general formal education at an age between 15-16 years old and they allow the apprentice to gain immediate hands-on experience to certain activities. At the same time, they provide lower-cost labour input for small and medium enterprises, as well as a useful integration approach for young migrants. Apprenticeships may thereby strengthen the small business sector, particularly small and medium enterprises, and they often lead to the creation of new enterprises.

Continuing learning and retraining opportunities are also key because a large part of the impact of a green transition on employment consists of skill upgrading needs and retraining (for workers formerly active in brown economy sectors). As noted earlier, coordination among workers associations, employer associations, government institutions, and training providers is very important to understand the specific needs of the industry and the workers at any point in time. It allows the training services industry to react more promptly and accurately with the provision of training programmes. Governments can support the process by providing tax deduction or even subsidies to encourage individuals to upgrade their skills or retrain themselves. Employment services can also participate in this process by encouraging unemployed people to consider retraining opportunities in the green sectors. The target of such training must be matched with the target of the broader green industrial policy. Specifically, it is important to avoid skill shortages in supported green domestic industries as well as to ensure that a sufficiently trained workforce is made available in conjunction with employment-related local content requirements, including the provision of green services.

In the following sections, two case studies look in more detail into the experience of the ILO and South Africa in promoting green jobs and an inclusive transition to a green economy.

3. Case-studies

3.1. The ILO's Green Jobs Assessments methodology

The perceived effect of a policy on the job market is often one, if not the main, decisive argument for or against its adoption. This makes the ability to estimate the employment potential of green policies very important. In its effort to support a just transition and green jobs, the ILO has developed guidelines on how to undertake **Green Jobs Assessments** and compiled methodologies¹⁵ towards assessing the employment potential offered by green policies. It furthermore supports the development of national-level Green Jobs Assessments.¹⁶ The **ILO's Practitioner's Guide**¹⁷ provides a comprehensive assessment tool along a combined five-step approach, as also outlined in section 2 of this chapter. The ILO draws attention to several factors that policy makers will need to consider when conducting Green Jobs Assessments, including a clear definition of green jobs and a decision on what they want to measure (e.g. direct, indirect or induced jobs).¹⁸ It must furthermore be decided, whether gross or net employment effects shall be calculated. While gross employment effects only take into consideration new green jobs created, net employment effects are calculated by taking into account new jobs generated, as well as potential job losses. The kind of employment effects that may be measured depend on the data availability and the methodologies chosen. Different methodologies may be applied to assess different dimensions of green jobs. Methodologies may offer a way to identify and quantify existing jobs, or they may project the effect of policies and investment programmes on new, green employment.

The **ILO Green Jobs Assessment in Lebanon** may serve as an illustrative example. The study assesses the green jobs potential of four sectors, i.e. energy, building and construction, agriculture and waste management. The assessment first provides a general overview over the four sectors, related policies and legislations and the available and planned financing and

15 See for example: Methodologies for assessing green jobs. Policy brief. Geneva, International Labour Office, 2013.

16 For more on ILO's national level assessments see here:
http://www.ilo.org/global/topics/green-jobs/publications/WCMS_190963/lang-en/index.htm

17 Assessing green jobs potential in developing countries: A practitioner's guide. Geneva, International Labour Office, 2011.

18 Direct jobs are those that have resulted from investment in sustainable sectors and thus an expansion of production. Indirect jobs are created in supplier industries through a higher demand for inputs. Induced jobs are created through increased consumer spending linked to the direct and indirect jobs created.

investment. On this basis, it offers an estimation of the number of green jobs that can be created if green policies relevant to these sectors are implemented. Sectoral assessments were based on an extensive literature review and meetings and interviews with policymakers and other stakeholders. Due to the lack of availability of input-output tables, the study on Lebanon relies on a number of assessments and quantified only direct jobs, excluding indirect and induced jobs. The report evaluates the need for occupational skills and re-training needs required for the creation of green jobs or greening of existing jobs. Additionally, the assessment identifies obstacles to the implementation of policies related to green job creation and finally presents recommendations to address the challenges identified. Overall, the assessment found considerable job creation potential in going green in Lebanon. The study also demonstrates the importance to work with data constraints and use a variety of methods to assess the potential of green jobs.

3.2. Green jobs training in South Africa¹⁹

To promote green jobs and decent work in the context of the transition to a green economy in South Africa, the International Training Centre of the ILO (ILO-ITC) and the **Green Fund of South Africa** collaborated to devise a two-year training programme. The Green Fund is a government-wide initiative, established by the Department of Environmental Affairs of South Africa and implemented by the Development Bank of Southern Africa, to support the South African transition towards a low-carbon, resource efficient and climate-resilient growth path.

The green jobs trainings aimed to develop the capacity of key stakeholders to realize the job creation potential of a green economy and to ensure that the labour market is well-equipped to respond to changing skill-sets demanded by a green economy. The programme consisted of two overarching training sessions on the topic 'Green jobs for sustainable development: concepts and practises', followed by two sector-level trainings. The two overarching training sessions aimed to provide participants with the knowledge and tools (i) to assess the green jobs potential in South Africa, (ii) to strengthen their ability to build upon these findings with appropriate policies and strategies, and (iii) to understand investments and technology options and evaluate progress.

In a first workshop in November 2014, a group of about 30 representatives of key national departments and institutions came together with experts from the ILO's Green Jobs programme, the ILO-ITC in Turin, the ILO Decent Work Support Team for Eastern and Southern Africa and specialists from

the Department of Environmental Affairs and the Industrial Development Corporation (**IDC**) of South Africa. In addition to national-level policies, sectoral approaches were discussed and illustrated by a site visit to the new green building of the Department of Environmental Affairs in Pretoria. In March 2015, a second course followed comprising about 50 participants. The course provided delegates with the opportunity to learn about the job creation potential in a South African green economy, discuss challenges and opportunities, and how to realise these at a local level. Methods included training sessions, panel discussions, group work and a one-day knowledge fair that sought to map existing policies, illustrate investment options, existing skill-gaps, sectoral approaches and share good practise across the nine provinces of South Africa. As part of the training, nine consolidated action plans were developed which were then followed up on in the months following the conference through an online community of practise. Finally, two additional courses were organised around the topic of ‘Green Jobs in the Waste Sector’ and ‘Green Jobs in the Natural Resources Sector’ that set to introduce the concept of green jobs to key stakeholders in those particular sectors.

Summary table

High-level vision setting and stakeholder consultation	UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 1
Stock-taking	<p>Gathering information of socio-economic, environmental and existing policies to define a baseline, particularly as regards the following enabling conditions for trade-related green industrial policies:</p> <ul style="list-style-type: none"> • Appropriate resource endowment and political/social conditions • Public investment and access to credit • Adequate infrastructure • Domestic legal and regulatory framework • Integration into international agreements
Prioritising intervention areas and goal-setting	<p>Identifying policy rationales to be acted upon and sustainability goals to be reached. Specifically:</p> <ul style="list-style-type: none"> • Softening and accompanying structural adjustment arising from both the opening to trade and the transition to a green economy (particularly for workers in the brown economy) • Promoting the emergence of a workforce for green sectors • Avoiding skill shortages and coordination problems in green sectors
Selecting the tools	<p>Matching selected policy rationales with policy options. Policy options within the broad category of employment-related schemes:</p> <ul style="list-style-type: none"> • Information gathering and assessment programmes • Participation and coordination measures • Social protection measures • Education and training measures
Design and assessment	<p>Specific design of policy option. Selection within each variety of the tool of specific design features:</p> <ul style="list-style-type: none"> • Information gathering and assessment programmes (methodologies include UN Environment’s green economy scoping studies, ILO’s green jobs assessment methodology, OECD’s computable general equilibrium model) • Participation and coordination measures (coordination across workers-, employers- organisations, government and training entities regarding skills needs, participation of workers representatives in delegations negotiating trade agreements) • Social protection (minimal wages, unemployment benefits, employment-related local content requirements, structural adjustment services) • Education and training (integration of environmental components in national curricula, support for training and research, quality apprenticeships, continuing education and retraining programmes) <p>Assessment of consistency and impact:</p> <ul style="list-style-type: none"> • Legal assessment • Integrated socio-economic and environmental impact assessment
Implementation	UNIDO Practitioner’s Guide for Strategic Green Industrial Policy – Phase 6

Resources

NB: all links last visited on 15 September 2017

- Altintzis, G. and E. Busser, 'The lessons from trade agreements for just transition policies' (2014) 6 *International Journal of Labour Research* 269.
- ILO, *Assessing Green Jobs Potential in Developing Countries: A Practitioner's Guide* (2011).
- ILO/CEDEFOP, *Skills for Green Jobs. A global View. Synthesis report based on 20 country studies* (2011).
- ILO, *Guidelines concerning a statistical definition of employment in the environmental sector* (2013a).
- ILO, *Meeting skill needs for green jobs. Policy recommendations* (2013b).
- ILO, *Methodologies for assessing green jobs. Policy brief* (2013c).
- ILO/ITC, *Inter-Agency Workshop. Employment and Social Inclusion in a Green Economy* (2013d).
- ILO, *Green Jobs. Progress Report* (2014-2015).
- ILO, *Guidelines for a just transition towards environmentally sustainable economies and societies for all* (2015).
- ILO, *A just transition to climate-resilient economies and societies. Perspectives for the world of work* (December 2016).
- UN Environment/ILO, *Green Jobs. Towards decent work in a sustainable, low-carbon world* (2008).

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