The Relevance of the Environmental Goods Agreement in Advancing the Paris Agreement Goals and SDGs

A Focus on Clean Energy and Costa Rica's Experience

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International Centre for Trade and Sustainable Development

Issue Paper

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LIST OF ABBREVIATIONS

AED	Association for Business Development [Costa Rica]
APEC	Asia-Pacific Economic Cooperation
CET	clean energy technology
CINDE	Costa Rican Coalition for Development Initiatives
EGA	Environmental Goods Agreement
FDI	foreign direct investment
G20	Group of Twenty
ICE	Instituto Costarricense de Electricidad / National Electricity Institute
INDC	intended nationally determined contribution
ITA	Information Technology Agreement
LDC	least developed country
MEIC	Ministerio de Economía, Industria y Comercio de la República de Costa Rica
OECD	Organisation for Economic Co-operation and Development
PROCOMER	Promotora de Comercio Exterior de Costa Rica
R&D	research & development
SDG	Sustainable Development Goal
SIDS	small island developing state
SME	small and medium-sized enterprise
UNDP	United Nations Development Program
WHO	World Health Organization
WTO	World Trade Organization

FOREWORD

The urgency of addressing climate change requires concerted global action cutting across a number of sectors and policy areas. At the United Nations Framework Convention on Climate Change (UNFCCC) Twenty First Conference of Parties (COP) in Paris in December 2015, UNFCCC members concluded a landmark agreement on climate change mitigation pledging to limit global warming to well below 2°C and pursue efforts to limit it to 1.5°C. The same year, UN members also adopted a set of Sustainable Development Goals (SDGs) as part of a new sustainable development agenda.

Well-designed sustainable development strategies and governance frameworks are indeed necessary to provide the supporting environment for effective climate action. The scale-up of clean energy and of energy efficiency technologies will be critical in moving the world away from carbon intensive growth trajectories, while simultaneously enabling countries to meet important sustainable development goals such as economic development and access to energy.

Trade policy can play a vital role in this regard, by addressing tariffs and non-tariff barriers to clean-energy technologies. It is therefore interesting to note that, building on previous efforts in the World Trade Organization (WTO) as well as by the Asia-Pacific Economic Cooperation (APEC), talks were launched in January 2014 by a group of countries to negotiate an Environmental Goods Agreement (EGA) at the WTO. Tariff concessions made by the 17 parties, including the EU member states, will be extended on a most-favoured-nation basis to all WTO members.

While restricted to tariffs, the EGA offers an important first step to address trade barriers in clean energy technologies. However, most of the world's developing countries have chosen not to join. This limits both the environmental potential of the agreement as well as its opportunities to support the integration of developing countries into global value chains in clean energy technologies.

Costa Rica is one of the few developing country members participating in EGA negotiations, and offers a good example of the need to balance diverse domestic policy considerations while pursuing clean energy related goals under the Paris Agreement and the SDGs. This paper illustrates the efforts Costa Rica is undertaking in this regard and discusses the potential role of the EGA in supporting Costa Rica's sustainable development objectives. While an interesting example per se, it also offers insights and lessons for other developing countries.

The author of the paper, Monica Araya, is the Founder and Executive Director of Nivela, a thought-leadership group devoted to clean development, and holds affiliations with the UK think tank E3G and with the Cambridge Institute for Sustainability Leadership. The paper was conceived by ICTSD and developed for ICTSD's Programme on Climate and Energy. As a valuable piece of research it intends to inform climate and energy as well as trade policymakers on how trade policy initiatives such as the EGA can be supportive of national climate, clean energy and green growth strategies. We hope that you will find the paper thought-provoking, stimulating, and informative.

Ricardo Meléndez-Ortiz
Chief Executive, ICTSD

EXECUTIVE SUMMARY

The purpose of this paper is to explore the potential role of the Environmental Goods Agreement (EGA) under the auspices of the World Trade Organization (WTO) in supporting the objectives of the Paris Agreement and the sustainable development goals of 2015, paying particular attention to potential benefits for developing countries. It analyses whether and how joining the EGA could bring benefits to developing countries that might be able to access clean energy technologies at a lower cost.

While the focus of the EGA is on removing tariff barriers, the paper recognises that non-tariff barriers also hurt clean energy technologies and must be tackled. It looks at the potential of the EGA to support the clean energy objectives underpinning the Paris climate targets—to date, nearly 100 countries have included energy objectives as part of their national efforts to reduce emissions. The paper considers the potential benefits of EGA liberalisation and the sustainable development goals that are related to energy, clean air and climate action. Next, the efforts to better integrate developing countries into global value chains are discussed to highlight the need for policies that help develop domestic capacities and attract private investment in domestic clean technologies and services.

What would these efforts look like in practice? The paper illustrates the ongoing efforts in Costa Rica. This country is one of few members from the developing world that joined the EGA negotiations. Recent developments on clean energy and climate policy are reviewed, as well as the attempts to promote green exports and attract green foreign direct investment (FDI).*

One of the conclusions of the paper is that the EGA has the potential to boost environmental goods, including clean energy and energy efficiency technologies, by lowering their costs and enhancing their supply and use in many countries. But the narrow focus of the EGA today limits its impact. Its sole emphasis on tariffs and the exclusion of environmental services has attracted a limited group of nations—17 countries as of November 2016 (counting the 28 members of the European Union as one).

Engaging a larger group of countries, especially developing ones, will be more feasible if the EGA has broader coverage. Including environmental services and non-tariff barriers could also amplify the benefits of the EGA in meeting the aims of the Paris Agreement and the 17 sustainable development goals agreed in 2015.

* A full-blown case study would fall outside the scope of this paper whose core objective is to discuss the EGA in the post-Paris context as countries seek to implement their sustainable development goals.

1. INTRODUCTION

In November 2016, the Paris Agreement entered into force in record time, given that it had been agreed less than a year earlier.[1] The backbone of the Paris Agreement is self-determined national plans to reduce emissions and adapt to climate impacts. Clean energy technologies will play a central role in the effort to reduce fossil fuel consumption and therefore carbon emissions to meet the national commitments under the Paris Agreement. At the climate summit in Marrakesh in November governments, companies and civil society reaffirmed their commitments to climate action.

Last year governments also approved national goals to end poverty, protect the environment and ensure prosperity as part of a new sustainable development agenda: 17 goals along with 169 targets must be achieved by 2030, as set out in *Transforming Our World: The 2030 Agenda for Sustainable Development* (UN 2015). Creating synergies between efforts to meet the Paris Agreement and these sustainable development goals (SDGs) is needed, and countries are debating how to achieve this in practice. For example, one of the 17 SDGs seeks to combat climate change and its impacts. Also, governments aim to secure access to affordable, reliable, sustainable and clean energy for all.

Exploring synergies between the pursuit of sustainable development objectives, on the one hand, and trade liberalisation, on the other, is underway. In July 2014, the negotiations for an Environmental Goods Agreement (EGA) started under the auspices of the World Trade Organization (WTO) with the aim to conclude them "as soon as possible" (European Union Chamber of Commerce in China 2016). Because the EGA includes clean energy technologies, the question underpinning this paper is: *Can the EGA support efforts towards the objectives of the Paris Agreement and sustainable development goals?* The paper looks at the potential benefits from EGA through several lenses with a focus on clean energy technologies and the potential benefits for developing countries.

In Section 2, the EGA negotiations are reviewed with a focus on potential benefits of removing trade barriers to environmental goals. It analyses whether and how joining the EGA could bring benefits to developing countries that might be able to access clean energy technologies at a lower cost. Non-tariff barriers fall outside the scope of the EGA, so this paper does not cover them in depth but recognises upfront that these barriers must also be tackled to boost clean energy. In Section 3, we look at the potential benefits of EGA liberalisation and the sustainable development goals with a focus on clean energy technologies. In Section 4, examples of how to better integrate developing countries into global value chains are discussed. That is, countries might choose to be part of the global value chain underpinning clean energy technologies (CETs). Trade reform will need to be part of a broader set of industrial policies to develop new domestic capacities and of efforts to encourage private investment in clean technologies. In Section 5, we consider one developing country in practice: Costa Rica. This country was chosen because it is one of the few members of the EGA negotiations from the developing world, and because of its track record on clean energy and climate policy. Its case illustrates how these debates are emerging in practice– the paper is not about Costa Rican energy or climate policies per se.[2]

1 The Agreement's entry into force required meeting a threshold: 55 countries representing 55% of global greenhouse emissions had to ratify it domestically.

2 A full-blown case study would fall outside the scope of this paper whose core objective is to discuss the EGA in the post-Paris context as countries seek to implement their sustainable development goals.

2. THE ENVIRONMENTAL GOODS AGREEMENT IN THE POST–PARIS CONTEXT

Seventeen WTO members—counting the 28-nation European Union as one—are in the process of negotiating tariff cuts on environmental goods, and they want this plurilateral agreement to be ready for a ministerial meeting in early December 2016. In order to understand the emergence of these negotiations it is necessary to go back to 2010, when 21 countries in the Asia-Pacific Economic Cooperation (APEC) agreed to boost environmental goods and services, reducing trade and investment barriers and enhancing their capacities to develop these sectors. The pursuit of a joint arrangement to reduce tariffs on environmental goods was set in motion in 2011 (APEC 2011).

APEC includes the world's largest producers and consumers of energy, and, as a group, it also pledged to advance measures to double the share of renewable energy in the region within 15 years and to lower their energy intensity (energy per unit of GDP) by 45 percent by 2035 (APEC 2016). APEC set a precedent when it agreed to reduce applied tariff rates to 5 percent or less on environmental goods contained within a list of 54 product 'baskets' or tariff sub-headings by the end of 2015. The list was agreed in 2012, and the products covered include solar panels, renewable bamboo-based products, parts for biomass boilers, industrial air pollution control plants and crushing machines used for waste treatment or recycling. In 2014, this list became the initial basis for the EGA negotiations at the World Trade Organization.

APEC members see capacity building as critical in carrying out a commitment to freer trade of environmental goods. In 2014, Australia, Hong Kong, Indonesia, Malaysia, Thailand and the United States supported China in their proposal to carry out capacity building activities for all the members in APEC. Prior to the implementation of the APEC tariff commitment, average tariffs on many of the environmental goods on the APEC list were already below or close to the 5 percent target, while some selected goods such as solar water heaters face high tariffs according to the APEC Policy Support Unit (APEC 2014).

Prior to the Paris summit, APEC leaders reaffirmed their commitment to reduce tariffs on environmental goods (APEC 2015). The tariff reductions on the APEC list of environmental goods will promote trade worth around US$300 billion within the region and US$500 billion worldwide, although these statistics include trade in goods used for non-environmental purposes due to the difficulty, in many cases, of distinguishing environmental from non-environmental goods (ICTSD 2016a). Each APEC economy has put forward an implementation plan detailing the progress of work to cut tariffs on environmental goods within the region's list of 54 product "baskets" (APEC 2016).

2.1 The EGA Negotiations in the WTO

The WTO negotiations of the Environmental Goods Agreement (EGA) started in July 2014 with 14 members; three additional countries have since joined. This 17-member group comprises the member states of the European Union (negotiating as a block) and Australia, Canada, China, Costa Rica, Hong Kong, Iceland, Israel, Japan, Korea, New Zealand, Norway, Singapore, Switzerland, Chinese Taipei, Turkey and the United States.

The EGA will apply the principle of "Most Favoured Nation", meaning that the tariff concessions implemented by the signatories will be extended to all WTO members. The Agreement will enter into force when "critical mass" is reached. This requires that a significant majority of global trade for the products under discussion be covered. For example, in the case of the International Technology Agreement this happened when the goods represented in the Agreement covered 90 percent of the global trade.

The rationale of those who support freer trade in environmental goods is that by reducing tariff and non-tariff barriers, trade in these goods will increase and help meet environmental goals such as the reduction of carbon emissions. In practice, there is no universally accepted definition of "environmental goods" so grey areas have emerged. The OECD has defined as environmental goods those that "measure, prevent, limit, minimize, or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems" (OECD 2005, 22).

Some have criticised the EGA negotiations because of the inclusion of goods with questionable environmental benefits, including those with dual use, which shows a possible weak environmental impact. For example, from the 650 environmental goods on the initial list, the Brussels-based organisation Transport & Environment has identified around 120 for which lowering trade tariffs cannot be justified on environmental grounds such as, they argue, products containing asbestos, aviation engines, biodiesel and equipment to burn this fuel (Transport & Environment 2015).

The negotiations have made gradual progress and the list of 650 tariff lines has gradually been brought down 300 tariff lines as of November 2016. Delegations have proposed to proceed by stages depending on the type of environmental goods: i) items on which they can support immediate elimination of tariffs, ii) items for which tariff elimination might be delayed, and iii) items that are considered "sensitive" and might be excluded from the final EGA list (SETI Alliance 2016).

The goal is to have the EGA finalized by the ministerial meeting in December. In September, the leaders of the G20 economies endorsed this calendar, a target also supported by non-G20 EGA participants. While the focus is on what negotiators call the landing zone or "L-list" (the 300 tariff lines), some key issues remain unresolved such as the inclusion or exclusion of some sensitive products,[3] finalising a text with adequate modalities and institutional arrangements, and the definition of "critical mass" participation for the EGA to enter into force.[4]

Keeping the environmental integrity of the EGA is essential, so rather than pursue a global definition that all countries endorse, it might be more helpful to agree on basic criteria for identifying whether a good is environmentally beneficial (see Knudson et al. 2015). While disagreement on environmental goods can lead to convoluted discussions, countries might benefit from joining the negotiations—and having their say—rather than derailing them or ignoring the EGA altogether.

Most goods on the EGA list help provide an environmental service such as reducing air or water pollution but they lack inherent environmental attributes themselves (for example a filter or pump). Less emphasis has gone on the so-called environmentally preferable goods whose life cycles have a smaller environmental footprint (for example chlorine-free paper and energy-efficient lighting), according to Knudson et al. (2015).

The same 2015 Norwegian study of environmental goods by Knudson et al. shows that some are particularly relevant for developing countries, and are classified in four categories: 1) sanitation and waste management, 2) drinking water delivery and storage, 3) cleaner and renewable energy and 4) environmentally preferable goods (for example sustainable natural materials). Many of these products, the study claims, can help developing countries' households and communities achieve development while reducing pollution and health problems.

3 Some 15 groups of products are sensitive, either from a commercial perspective or because of the perception among some participants of limited environmental credibility; see ICTSD (2016a).

4 For the latest summary of the negotiations see ICTSD (2016b).

The University of Copenhagen conducted a study to assess the impacts of liberalisation of green goods on least developed countries (LDC) which found that the EGA will neither benefit nor harm LDCs (see Baltzer and Friis 2015). LDCs export only about US$1 billion of environmental goods (about half a percent of their total exports) and just a third of these are destined for countries negotiating the EGA. So EGA will hardly affect LDCs exports. LDCs already access the markets of most EGA-negotiating countries tariff free due to preferential trading arrangements. The environmental goods to be liberalised are too high-tech to be produced by LDCs either as finished products or as components. Yet the study also concludes that "the EGA might evolve over time and if it does, it may become more relevant to the LDCs." It suggests that, if the regulation of non-tariff barriers is included in EGA, LDCs may be interested in joining the EGA. The United Nations Development Program (UNDP) had reached a similar conclusion in its 2010 study (Khatun 2010).

2.2 Can EGA Support Climate Action? A Focus on Clean Energy

The nexus between clean energy and climate action is strong. Because burning fossil fuels is the main cause of climate change, the shift to renewables is critical to the implementation of the Paris Agreement on climate change. The growth of clean energy investments is happening in both developed and developing markets. 2015 set a new record for global investment in clean energy: US$285.9 billion, exceeding the previous record of US$278.5 billion achieved in 2011 (this amount excludes large hydro-electric projects), according to the Frankfurt School-UNEP Centre/BNEF (2016). Another record was set in 2015: for the first time, investments in clean energy in the developing world were greater than those of developed countries. The developing world including China, India and Brazil committed a total of US$156 billion, up 19 percent on 2014, while developed countries invested US$130 billion, down 8 percent. China captured much of the record-breaking investments outside industrialised nations with around US$102.9 billion, but India, South Africa, Mexico and Chile also received significant investments. In 2016, a record was broken in Chile when its solar energy price became "the cheapest to date for any kind of renewable energy" and almost half the price of coal power sold in the bidding process (Dezen 2016).

Analysis of the indicative nationally determined contributions (INDCs) shows that 108 countries have included renewable energy in their Paris climate pledges to 2030 (Stephan et al. 2016). Seventy-five countries set quantified targets for the share of renewables in their energy or electricity mix or provide information on the amount of renewable energy they are planning on installing.

Given their large economies, how China and India meet these energy targets matters. They promise the world´s largest increase in installed renewable capacity: China plans to install more than 104GW of wind and 72GW of solar by 2020, and India plans to install more than 36GW of wind and 96 GW of solar by 2022 (Stephan et al. 2016). India´s and China's climate and energy pledges alone could double the current global capacity of wind and solar over the next fifteen years (ECIU 2015).

In addition to developing national plans leading up to 2030, the Paris Agreement invites all countries to design and communicate plans up to 2050 within the next four years (King 2016). These decarbonisation plans to 2050 will set a direction of travel toward net-zero carbon economies, which in practice means a transition from fossil-based economies to economies powered by renewable energy and cleaner engines of growth (see Araya and Amorim 2016). Germany has published a new version of its "Climate Action Plan 2050" (German Ministry of Environment 2016). Canada, Mexico and the US have also launched their mid-century plans for decarbonization in November (UNFCCC 2016).

Six islands (Cabo Verde, Cook Islands, Fiji, Samoa, Tuvalu and Vanuatu) already plan on

fully decarbonising their power generation and reach a target of 100 percent renewable electricity. Papua New Guinea, an APEC member, and Costa Rica, participating in the EGA negotiation, also aim to generate 100 percent of power from renewable energy. Uruguay and Ecuador aim to achieve a share of 95 percent and 90 percent, respectively, in their electricity mix by 2017 (Stephan, Schurig, and Leidreiter 2016). At the UN climate conference in Marrakesh, this December, the 48 nations of the Climate Vulnerability Forum, announced their commitment to 100% renewable energy targets (World Future Council 2016).

Efforts to lower the prices for these technologies could boost demand for them and help countries cut their carbon reductions further. Technological breakthroughs, economies of scale, improved manufacturing capacity, smarter policy design and lower investment risk have all contributed to lowering the prices of CETs thus far (ECIU 2015).

Removing trade tariffs could further lower these prices. The tariffs on clean energy goods in many cases tend to be low, in developed countries, but some tariff peaks remain. For example, until recently China imposed a 35 percent tariff on solar water heaters and an 8 percent tariff on wind power generators (Brun 2014). These tariffs have since been reduced voluntarily following the APEC deal on environmental goods.

And advocates of the EGA see further benefits in the full elimination of tariffs through this agreement (ICTSD 2011). The argument is this: CETs involve a range of components, many of them crossing borders before final assembly, and eliminating lower or "nuisance" tariffs[5] would decrease the final equipment costs and make clean energy even more competitive compared to fossil fuels.

Capital costs also affect the uptake of clean energy. They are usually higher for clean energy projects than for fossil fuel projects (e.g. the cost of producing energy with solar is around 80 percent capital cost and 20 percent operating cost, with the proportions reversed for fossil fuel energy). Anything that can be done to reduce the upfront capital cost will help renewable energy be more competitive than its dirty alternatives.

In some specific cases, import tariffs on clean energy goods are still relatively high, especially in developing countries. Often their function is to generate fiscal revenues, which is understandable for some countries, but as a result these tariffs make imports more expensive, even when the domestic manufacturing capacity for similar technologies is low. Therefore, trade reform could help developing countries shift faster to a clean energy economy.

There at least two additional reasons why trade reform could help. First, tariffs may hinder imports of clean technologies, making climate action more expensive and thus delaying goals such as affordable and sustainable energy access. Secondly, these tariffs may even hurt the insertion of developing countries in global value chains that deliver CETs, thus reducing the potential for leveraging business around these technologies and for advancing clean development at home (see ICTSD 2011).

A study of 30 cases was carried out to conduct a trade sustainability impact assessment of the EGA. It concluded that the EGA would increase trade, reduce the price of environmental goods, and lead to a reduction of carbon emissions (Development Solutions 2016). It included studies of the deployment of CET (including energy efficiency technologies) in specific countries in Africa, Asia, Latin America and the EU.

5 That is, "tariff so low that it costs the government more to collect it than the revenue it generates" (WTO Glossary online, accessed 13 November 2016, https://www.wto.org/english/thewto_e/glossary_e/nuisance_tariff_e.htm).

Box 1: South-South trade of clean energy growing faster than global trade: A UNEP case study

According to UNEP, the trade in environmental goods and services is expected to grow to US$1.9 trillion by 2020. Their 2014 study focuses on the role of trade among developing countries and makes a central point: clean energy trade among developing countries is growing *faster* than overall global trade as well as north–south trade. China is the game changer given its advantages in terms of economies of scale which lower manufacturing costs, the increased investment it receives and the falling costs of clean energy generation around the world that this contributes to.

African countries imported US$342 million in wind-powered generating sets from other developing countries in the period 2009 to 2013. The largest importers were South Africa (US$238 million in 2013), Ethiopia (US$19 million in 2011–12) and Egypt (US$14 million in 2009). China exported US$869 million worth of PV cells and modules to African countries in the period from 2009 to 2013, mostly to South Africa. During 2013, China's exports of PV cells and modules to other developing countries increased 145 percent to a record of US$2.3 billion (72 percent above the value of 2011 exports). It is largely trade in solar PV cells and panels that has driven developing countries' graduation from net importers to net exporters of renewable energy goods.

Source: UNEP (2014).

2.3 A Critical Obstacle to Clean Energy Technologies: Non-Tariff Barriers

The exclusive focus of the EGA is the removal of tariff barriers for environmental goods. While this is a first step in the right direction, freer trade of CETs requires targeting non-tariff barriers because of their harmful effect on the trade of environmental technologies. The EGA might need to cover non-tariff barriers in the future. The SETI Alliance, for example, has argued that the most severe trade barriers include local content requirements, cumbersome and uncoordinated standards certification as well as trade remedies. According to experts, the national local content requirements that favour local companies might slice the supply chain into smaller volumes, and this will have a negative consequence on the overall cost of these green technologies. For example, the E15Initiative (Expert Group on Clean Energy Technologies and the Trade System convened by ICTSD, Friedrich Ebert Stiftung, Chatham House and the World Economic Forum) has highlighted the "uncoordinated policies and inconsistent rules" that hold back the development of clean energy technologies (ICTSD 2016c). Also, as trade in CETs has increased, so have the trade remedies applied to these imports. The E15 points out that between 2008 and 2012 "these trade remedies affected US$32 billion worth of trade in green products, thus causing an annual reduction in trade of about US$14 billion and a trade loss of US$68 billion over a five-year period (the duration of trade remedies is five years)" (ICTSD 2016c, 14).

According to analysis by Zheng Nie, protectionism is "the largest threat in preventing fair trade in the global renewable energy market" because countries protect local energy companies through their feed-in tariffs programs. For e.g. Ontario's original solar subsidy policy mandated that a large percentage of solar components must be manufactured in Ontario in order to benefit from FIT (In response to a ruling by the WTO Dispute Settlement Body, Canada agreed to change this scheme). In India, renewable energy components are levied a 7.5 percent tariff and Brazil imposes a 14 percent tariff on wind power components (Zheng Nie 2014).

The debate continues: do countries want to encourage cheaper CET regardless of their origin in order to favour consumers? Do they prefer to protect their domestic renewables industry to provide their own technologies and

services? A distinction is helpful: industries that manufacture equipment and industries that generate clean energy will take different positions as far as trade protection in goods is concerned. Some incentives for clean energy generation may be required until grid-parity is achieved (that is, when the cost of renewable power is equivalent to the cost of that from traditional sources). This support would be different in nature from support to local suppliers of clean energy equipment and services—this second type will respond more to the domestic context and priorities of each country. An open debate about the trade of CETs is therefore needed that raises the relevant arguments and counterarguments.

Mark Wu (2014) argues that the EGA's sole focus on tariff barriers lowers the stakes for most developing countries in these negotiations: they stand to gain little from the negotiations as most are not environmental goods exporters; secondly, exporters of environmental goods may already have reaped benefits through negotiations in other fora; thirdly, free riding is easy;[6] and, finally, the study argues, intra-developing country trade minimises gains from an EGA that is dominated by advanced economies. The study concludes that the participation of developing countries will increase if the EGA increases its scope to include environmental services as well as non-tariff barriers.

Another study from 2014, by the ITC, points to the fast-paced growth in demand for environmental goods and technologies in developing countries across the world and to the local growth of greener industries in the same countries; one expects that the role of developing countries (as both exporters and importers of environmental goods) will continue to grow. The growth in export value of these goods has been notable since 2001. Malaysian and Thai exports, for example, increased from below US$2 billion in joint value during 2001 to just over US$7 billion and US$6 billion, respectively, in 2012. Developing countries have strong export potential in non-infrastructure environmental goods and services such as in consulting services which require less capital and are often supplied by small- and medium-sized enterprises (SMEs). This service market segment has been estimated, according to EBI (2012) globally at US$54.8 billion in 2011 (see table 4 in report). Countries with a well-educated workforce and a strong higher education sector, particularly in sciences and engineering, can develop a capacity for export in this sector.

6 For example, free riding of benefits will be easy, as the benefits of an EGA will be extended to all WTO members irrespective of participation in an EGA. Thus, even if some non-participating countries are not major exporters now they could benefit once their environmental goods industries develop and they become competitive exporters in future.

3. THE EGA IN THE CONTEXT OF THE SUSTAINABLE DEVELOPMENT GOALS

Trade reform in CETs could help achieve other development objectives. Potential benefits include energy access, cleaner air and health, as well as decreased fossil fuel imports which all relate to different sustainable development goals. In the following sections, the link to the SDGs is made for each of these.[7]

3.1 Clean Energy Access—SDG 7

One of the sustainable development goals—number 7—calls upon countries *"to ensure access to affordable, reliable, sustainable and modern energy for all"*. Between 1990 and 2010, the number of people with access to electricity has increased by 1.7 billion (UNDP 2015a). Meeting this goal means investing in solar, wind and geothermal, which are abundant in developing countries. The EGA could support this by reducing tariffs on solar cooking stoves or mini grids, making energy access easier for poor populations. By securing access to clean energy, a positive cycle can be started if it creates economic activities such as new jobs. Complementing this with energy efficiency efforts (for example in kitchens) is important to meet development objectives. Examples of such efforts include energy-efficient cooking stoves and heating systems that reduce the need for deforestation and land degradation, helping avert landslides and floods (ICTSD 2013).

The Africa Renewable Energy Initiative was one of the most positive developments on the road to Paris. It aims to bring 10GW of additional renewable generation capacity online by 2020, possibly 300GW by 2030, and will help the region meet the objectives of the Paris Agreement as well as some of the Agenda 2030's sustainable development goals (AfDB 2015). Moving on the African effort to access clean energy will be easier if obstacles to clean energy technologies—trade tariffs and non-trade barriers—are removed. In the post-Paris context, it might be necessary to bring some African nations to the EGA negotiations so that the eventual agreement integrates their perspectives on energy access.

3.2 Healthy Societies—SDG 3

Sustainable development goal number three aspires *"to ensure health and well-being for all"*. One of the targets is to substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination by 2030. The link between air pollution, climate action and clean energy is receiving renewed attention; it is critical to build a linkage between the clean energy agenda and the pursuit of healthy societies.

According to the World Health Organization (WHO), air pollution causes 7 million premature deaths worldwide, most of them occurring in developing countries (see Vidal 2016). About 98 percent of cities in low- and middle-income countries with more than 100,000 inhabitants do not meet WHO air quality guidelines. *Outdoor* air pollution is now the biggest single killer in the world, causing more than three million deaths a year—more than malaria and HIV/Aids. India, for example, home of one of the world´s largest populations, has 16 of the world's 30 most polluted cities. According to the director of public health at the WHO (Vidal 2016), "Urban air pollution continues to rise at an alarming rate, wreaking havoc on human health. It's dramatic, one of the biggest problems we are facing globally, with terrible future costs to society."[8]

7 Given the previous section focus on climate action, SDG 13 is not covered here. For a discussion of the linkages between the Paris Agreement Objectives, SDG 13 and other related goals see UNEP 2016.

8 The real figure for the growth in global air pollution is likely to be worse because only a handful of African cities monitor their levels as per the WHO study.

One way to tackle this problem is by investing in cleaner transportation fleets—private and public —that are powered with electricity from clean sources instead of fossil fuels. In fact, considering the urban pollution challenge, the WHO recommends policies and investments to support cleaner transport, energy-efficient housing, power generation, industry and better municipal waste management. Among the examples it provides are clean technologies that reduce industrial smokestack emissions and improved management of urban and agricultural waste, including capture of methane gas emitted from waste sites as an alternative to incineration (for use as biogas). Given the role that these environmental goods could play in improving public health, an open debate is needed to find out the reasons why developing countries are not participating in the EGA negotiations: Why not pursue lower tariffs and advance environmental goods that can help improve air quality in their countries? One potential reason is that clean air has not been a top political priority in these countries. Another reason is that countries are always free to lower applied tariffs on environmental goods autonomously while retaining the ability to raise those tariffs again if required (up to the maximum ceiling levels permitted) if required. Such flexibility would likely not be enjoyed under a binding EGA.

A few years ago, the United Nations launched a "Decade of Sustainable Energy for All 2014-2024", and the UN General Assembly chose to focus on women, children and *health* during the first two years. This highlights the stronger links that are made between clean energy and health benefits. At the Paris climate summit, the President of the African Development Bank pointed to the 640 million Africans who lack access to clean energy and the majority who use charcoal and kerosene: "This always leads to deaths. We must stop this." Africa loses 4 percent of its GDP due to lack of clean energy. Lowering the cost of clean energy technologies can help minimise this loss and at the same time improve indoor air quality and assist developing countries in meeting their health objectives (AfDB 2015).

3.3 Resilient Energy Systems—SDG 13

The objective to provide energy access to people requires coordination with efforts to build resilience in the energy system. Goal 13 of the Sustainable Development Agenda is about taking *"urgent action to combat climate change and its impacts"*. One of the targets is to strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. Lowering barriers to CET could help the spread of decentralised energy systems to tackle the problem of intermittent energy access. According to the UNDP (2015b), decentralised energy systems can contribute to limiting risks to the energy sector, such as those resulting from disasters. It finds that centralised energy systems are more prone to failure, potentially leading to weeks or months without energy—crippling relief efforts and delaying recovery of developing countries hit by disasters. Furthermore, the diversification of sources of energy and the mix of large and small, centralised and decentralised systems is key to building resilience in countries that are vulnerable to the impacts of climate change on traditional sources of energy, for example hydropower.

3.4 Reducing Fossil Fuel Dependence—SDG 17

One goal from the Sustainable Development Agenda, number 17, is to revitalise global partnerships for sustainable development. One of the targets of the goal is *"to enhance policy coherence for sustainable development"*. Using trade policy to foster a scaling-up of domestic clean energy supply would also help reduce dependence on imports of energy, often at volatile prices.

The need for such partnerships in Small Island Developing States (SIDS) is particularly great: they are highly dependent on fossil fuels for transport and power generation, which is a major cause of economic volatility so they would benefit the most from breaking their dependence on fossil fuel imports. By switching to clean energy sources, they can free up to 30 percent of their gross domestic product,

which is otherwise expended on imports of oil and refined petroleum products (UNDP 2012). The savings can be then invested in jobs in areas such as clean energy, improved health care and education, and stronger safety nets for people whose livelihoods will be affected by the phasing out of fossil fuels. During a SIDS summit in Barbados that dealt with this issue, countries insisted on the need for these CET technologies to be made "accessible, affordable and adaptable" to the particular circumstances of SIDS. Since then many of them have adopted ambitious climate targets that aim to decarbonise their power sector; the role of reducing tariffs and non-tariff barriers to the trade of CETs needs to receive stronger attention in developing countries along with elements of international cooperation and capacity building. Taking action along these lines would increase policy coherence, one of the targets of the overall goal of global partnerships (SDG 17). The link between building partnerships for policy coherence, on the one hand, and trade in CET, on the other, might not be readily evident. However, these are precisely the kind of linkages that must be built in order to make the SDGs relevant in practice and especially in order to break the trade and energy silos.

4. INTEGRATION INTO GLOBAL VALUE CHAINS

Trade reform alone will not be enough to deliver on the climate and clean energy objectives. As the low-carbon economy moves forward, a new debate around green industrial policy has come alive: Can developing countries be part of as well as climb-up global value chains for clean technologies? The approach needs to be pragmatic, given the high concentration of providers of clean technologies in a few countries (and usually in large companies). Joining these global chains will mean identifying opportunities to manufacture specific components and services.

Countries could start with successful clusters and integrate a green growth dimension therein—rather than starting new green clusters altogether that have little connection to existing productive ecosystems (Víctor Umaña, Director of the Center for Latin American Competitiveness and Sustainable Development (CLACSD) at INCAE Business School, pers. comm., 10 May 2016). Ideally, green clusters will not be seen as *separate* clusters but a clean energy and climate dimension will be included or mainstreamed into the real economy (that is the production of goods and services). In other cases, the guiding vision could be about *re-orienting* existing clusters to capture new opportunities linked to the US$1 trillion-market for environmental goods and services.

Thus far, barriers to *importing* CETs have been highlighted. Climate action also creates new export opportunities for countries that want to join global value chains. New market forces, consumer expectations and industrial value-chain requirements and controls are reshaping the market for environmental goods. Companies seeking to take part in international value chains are finding that having more sustainable operations and more efficient resource management adds value to products and services. In some markets, especially in the energy sector, companies run the risk of losing their "license to operate" if they don´t meet expectations regarding their environmental and social performance, for example, Shell in the Niger Delta and BP in the Gulf of Mexico (see Morrison 2014).

Green products and services open up new market opportunities by changing the requirements and priorities of traditional value chains and by creating completely new value chains. For example, the chemicals, materials and energy industries are shifting from fossil fuel sources to renewable resources based on sustainably sourced biomass (Bjørn Utgård, founding partner ESCOIA, pers. comm., 15 June 2016). Food and consumer goods industries are actively seeking to reduce emissions and negative impacts on human health, ecosystems and climate change, throughout their supply chains. For example, buyers of tropical fruits are pushing producers to come up with improved residue management practices. And tourism and other services industries are finding opportunities to meet consumer demand for sustainable services by moving beyond waste recycling and ecosystem conservation to "zero-footprint from door-to-door." Examples of new value chains are: climate change services (e.g. offsetting, carbon credits), distributed, micro-manufacturing (e.g. chemical process intensification and 3D printing that make new locations for manufacturing and distribution possible), e-presence technology powered by online service provision (consumers do not have to be in situ to receive a service) and new products and value chains based on agricultural and forestry residues (Bjørn Utgård, founding partner ESCOIA, pers. comm., 15 June 2016). Such opportunities are expected to grow, and developing countries could benefit from developing industrial policies that make them not only receivers of technology but also *providers* of goods and services that are part of these greener global chains (see Sustainability Consortium 2016).

Some of the actions they can undertake to promote specific skills are to develop

national education, research and innovation capabilities with strong connections to international technology developments. They can create synergies for upgrading skills, investment, innovation, and diversified domestic production structures by developing new public–private partnerships. They can enhance their access to commercial opportunities globally through trade and investment by developing stronger links with international markets and with leading firms in global value chains. It will be critical to align qualification and certification processes to international standards. Developing countries could create facilitating operational systems to enable easier conformity and certification of standards, and the incremental establishment of green infrastructure. Finally, they need to link to global value chains incorporating both goods and services. That calls for efforts to diversify sectorial strategies and to increase productivity. A list of success cases and possible collaborative efforts amongst different countries and those who have successfully implemented requisite projects, would contribute positively to this effort. The main effort should be to improve supply side *capacities* that lead to cost-efficiency and product quality improvements, rather than cost increases. By this criterion, reliance on local content requirement seems to be less pertinent, unless the scheme has an inherent capacity augmentation element with a phase-out of any policy that leads to cost increases. There is also an inherent competitiveness element that may depend on market dynamics which means that there is no guarantee these local content requirements by themselves will build sustainable industries unless the underlying competitiveness factors are addressed (Mahesh Sugathan, Senior Research Fellow, ICTSD, pers. comm., 25 October 2016).

5. CASE STUDY: COSTA RICA´S CLIMATE AND CLEAN ENERGY OBJECTIVES

Costa Rica is the only country from Latin America that has joined the EGA. In January 2014, it stated its support at the World Economic Forum in Davos (América Economía 2014) and joined the EGA negotiations the following July. By supporting the EGA, it aims to boost green technologies and the same way that the WTO Information Technology Agreement helped boost its information technology sector in the past (Amb. Solano, 2015 quoted in Development Solutions 2016). Reducing trade barriers for environmental goods, the argument goes, will bring economic, developmental and environmental benefits. It would allow developing countries to get adequate tools to meet their environmental goals as part of their medium- and long-term development strategies.

5.1 Drivers

Costa Rica is proactive on climate, clean energy and trade issues. One motivation underpinning its proactivity is *differentiation*. For a long time, political leaders, diplomats, negotiators and companies have sought to differentiate Costa Rica from other developing countries. Costa Rica cannot compete against China, India or Brazil based on market size. But it can differentiate itself based on its progressive social and environmental policies and its good human development. Because it is an upper middle-income country, technical support for projects from developed countries has become harder to obtain. Official development assistance is flowing mostly to the poorest nations. Instead, the country has sought to focus on proactive projects seeking to implement sustainable development objectives. For that reason, the country emphasises unique domestic attributes: abolishing the army in 1948 and turning military spending into in social spending, investing in national parks since the 1970s, opening the economy in the 1990s while pioneering a system for ecosystem services that curbed deforestation and helped the country boost its eco-tourism industry—a key engine of growth today (Araya 2016a).

Because of this drive to differentiate itself, the country has taken a proactive stance in global negotiations, particularly in the context of the UN climate talks and in the WTO. In the UN negotiations, Costa Rica became one of the first developing countries to voluntarily set a target in 2008 to become carbon neutral by 2021, at a time when developing countries opposed any commitments to reduce carbon emissions.

Since the 1990s Costa Rica has pursued a successful export-oriented model and has signed multiple bilateral trade agreements. It has played an active role in the WTO negotiations. For example, it was one of the 74 members of the plurilateral negotiations of the Information Technologies Agreement (ITA) of 1996, representing 97 percent of world trade in IT products. ITA eliminates duties on information technology products. In 2012, Costa Rica was one of the six ITA participants that launched the negotiations for the expansion of the product coverage of the ITA.

Costa Rican experts have been tasked with international roles. For example, Christiana Figueres, a former Costa Rican climate negotiator, was a defining figure in the negotiations of the Paris Agreement as the UN climate chief. Anabel Gonzales, the former Costa Rica minister of trade, is now Senior Director of the World Bank's Trade and Competitiveness Global Practice.

As part of its differentiation strategy, the country is also seeking to become an OECD member. In April 2015, the OECD Council opened the accession discussions with Costa Rica, and a roadmap for membership was agreed later in July, establishing the terms, conditions, and process for its accession. There is no deadline for completing the accession processes, and the final accession will depend on Costa Rica's capacity to adapt and adjust to meet the OECD standards (OECD 2015).

The government's official export promotion agency describes the country as "a world-class location for high-tech multinational companies focused on life sciences, *clean technologies*, and services." (PROCOMER 2016a, added emphasis). PROCOMER emphasises sustainability as a Costa Rican value and points out that "our tourist attractions and our investment opportunities resonate with those who share our vision and our sense of responsibility for the future of our planet." (PROCOMER 2016b)

Joining the EGA was a natural fit for Costa Rica, given its long-standing tradition in environmental protection. The two pillars of the "green country" story are i) protection of biodiversity and ii) clean energy. Around 25 percent of its territory is protected because of the investments in national parks since the 1970s. Although it occupies only 0.3 percent of the world´s territory (52,000 square metres), it is home to 5 percent of the world´s biological diversity. It pioneered payments for ecosystem services in the 1990s partly by setting up a tax on petrol. This scheme helped curb deforestation and boosted eco-tourism services which are a key engine of growth today. For a country with nearly US$11,000 of GDP per capita, it is an outlier in terms of translating this GDP into social progress (Social Progress Imperative 2016). The Chairman of the Advisory Board to the Social Progress Index has pointed out that "Costa Rica has achieved a higher level of social progress than Italy, with barely a third of Italy's per capita GDP." (Porter 2015)

In 2015, nearly 100 percent of electricity was generated from renewable energy sources: hydropower (75.53 percent), geothermal (12.88 percent), wind (9.81 percent), biomass (0.72 percent) and solar (0.01 percent); power generation from fossil fuels was limited to 1.05 percent.[9] That year, on 299 days no fossil fuels were used to generate power (CENCE website).

Electricity in Costa Rica is considered "reliable and good quality" (OECD 2013). Costa Rica ranks well in the World Economic Forum´s 2014 Global Energy Architecture Performance Index Report which assesses 124 countries on their economic growth, environmental sustainability and energy security performance. While European Union and Nordic countries top the rankings, Costa Rica was one of only two upper middle-income countries to rank within the top 10 (the other is Colombia). The 2014 World Economic Forum report highlights the role of government strategy driving the transformation of an energy system where around 99 percent of the electricity output now comes from renewable energy sources.

The World Bank´s "Doing Business 2016" ranks the country 24 out of 185 for "getting electricity" (it has gone up 21 positions in the ranking since 2013; World Bank 2016a). Environmental and energy policy are managed in a single ministry—an unusual feature, which oversees the formulation and implementation of energy policy. A sub-sectoral council on energy helps the ministry with the implementation of the energy plan 2015–2030. Through a concession, the state-owned electricity company, Instituto Costarricense de Electricidad (ICE), generates most of the country's electricity, operates power transmission and distribution grids and supplies electricity to consumers. It has the de facto monopoly of energy provision by law (OECD 2013). Rural electrification cooperatives, distribution companies and private generation companies can also generate electricity for the grid, but this is capped at 15 percent of installed capacity. Energy consumers (citizens for example) may also generate electricity for their own consumption, as long as installed capacity does not exceed 20MW.

Private companies are allowed to invest in power plants that do not exceed 50MW capacity on condition that they sell the electricity produced to ICE. Another condition is that the power generated by all such private power plants does not exceed 30 percent of the electricity produced by all public and

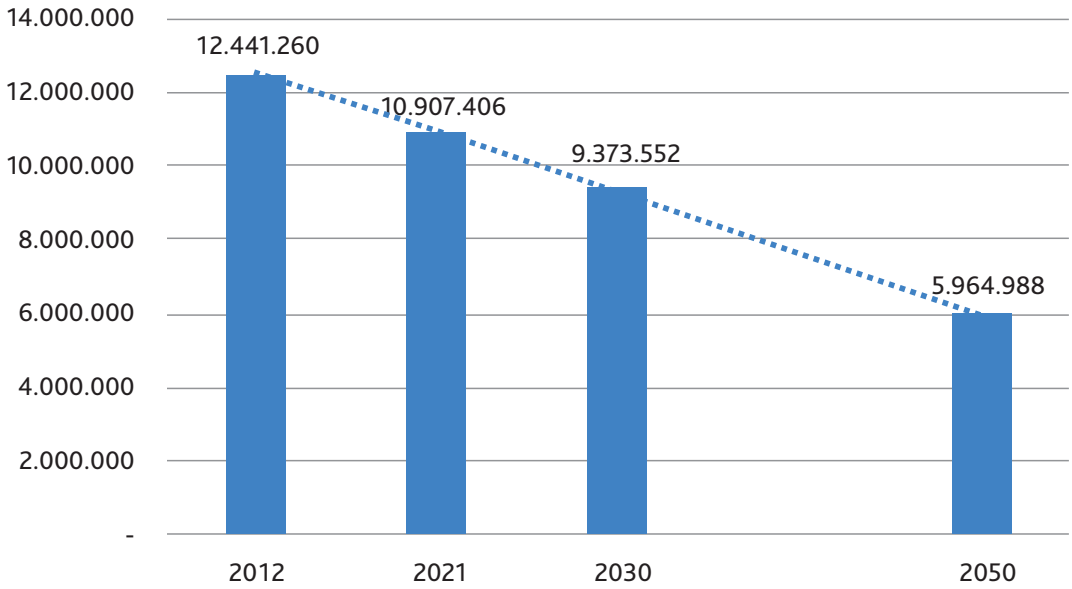
9 CENCE website http://appcenter.grupoice.com/CenceWeb/CenceMain.jsf

private plants in the national electric system. A key point is that Costa Rican nationals must own 35 percent of the capital stock of the company. No restriction in power generation applies to foreign investors if the electricity produced is for their own consumption (OECD 2013). Bills in the Costa Rican Congress that have aimed to enhance private-sector electricity generation since 2010 have proved controversial.

5.1.1Paris targets and the SDGs

Costa Rica ratified the Paris Agreement in October 2016. The Paris target seeks to reduce net carbon emissions by 25 percent in 2030 compared to 2012 (this represents a reduction of 44 percent in greenhouse gas emission compared to a business as usual trajectory to 2030). To achieve this goal, the country must reduce emissions by 170,500 tons of greenhouse gases per year until the year 2030. The country commits to a maximum of 9,374,000 tons of carbon dioxide equivalent net emissions by 2030, with proposed emissions per capita of 1.73 net tones by 2030, 1.19 by 2050 and –0.027 by 2100. Contrary to most countries that set up only a relative target (with respect to business as usual emissions up to 2030), Costa Rica set *absolute* carbon reduction targets.

Figure 1: Total net emissions of greenhouse effect gases projected for Costa Rica from 2012 to 2030 and 2050 (in T C02e)



Source: Government of Costa Rica (2015).

Climate Action Tracker has labeled this national contribution as "sufficient" (along with those from Bhutan, Morocco and Ethiopia); the rest of the Paris targets by other countries are considered unambitious or inadequate (Climate Action Tracker 2015).

What role could the EGA play in helping Costa Rica reduce its emissions? It could help to the extent in which it increases trade in, and lowers the prices of, the technologies that can be used to meet the climate and energy objectives set. A key driver for seeking new technologies and know-how is the need to tackle Costa Rica´s main source of emissions from fossil fuels: transportation. The paradox is that despite having nearly 100 percent renewable energy power generation, nearly 66 percent of the energy matrix in Costa Rica is still petroleum (per the national energy plan 2015-2050). This is because of the transportation system—insufficient public and shared transport has led to a dramatic increase in private fleets of cars. The Paris targets will not be achieved unless clean technologies - for example electric vehicles -- are applied in the transportation sector.

Discussions within and outside government on the societal benefits of electrification

of transportation are underway, and a bill to grant incentives for electric transport is under discussion. This will also entail a deeper understanding of the global value chains of electric cars and buses, including the technologies used to charge them (e.g. smart charging stations and the software applications that can help make these technologies attractive to consumers).

For now, the formal route to tackle the emissions from the transportation sector problem is through Costa Rica's seventh national energy plan from 2015 to 2030. This plan seeks to achieve seven types of goals. Four of them are energy objectives: 1) improving energy efficiency; 2) optimal distributed electricity generation; 3) sustainability of the electricity grid; and 4) sustainable electricity generation development. Renewables and efficiency are present throughout the plan and not limited to one isolated section as has been the case in traditional energy plans. What is noteworthy is that the plan now includes a transport dimension in three additional objectives: 5) more environmentally friendly vehicle fleet, 6) sustainable public transport and 7) cleaner fuels. This is the first time that the silo between energy and transport is being addressed. Since 2015, the Costa Rican Congress has been debating a bill to promote electric mobility—battery electric cars and plug-in hybrids (and spare parts) would receive benefits such as tax breaks, free parking and no registration fees for several years. This would complement previous efforts to decrease the consumption tax burden on cleaner and more efficient cars which went down from 30 to 10 percent in 2013.

In terms of clean energy targets, the main goal is to ensure the country runs on 100 percent renewable power by 2030. This means expanding renewable energy projects to reach 731.9 MW of generating capacity by 2018, with an additional 470 MW over 2019 to 2023 and a further 910 MW between 2024 and 2030, subject to revision. By 2018 the distribution grid would be expanded by 1,921 km. By 2030, all houses that are not connected to the grid should have individual photovoltaic solar systems.

The Ministry of Environment and Energy is also designing a programme to turn Costa Rica into a "decarbonisation laboratory".[10] The Ministry´s Climate Change Directorate envisions a programme organised around three pillars: knowledge sharing, R&D and added value (see Box 2 for details).

10 This subsection is based on an interview by the author with Andrea Meza, Director of the Costa Rican Ministry of Environment´s Climate Change Directorate, on 11 July 2016.

Box 2: Decarbonisation laboratory

Knowledge Sharing. This is seen as a mechanism to spur cooperation between developed and developing counties, but also within the developing world. Costa Rica believes that as a middle-income economy with a track record on environmental issues it can transfer knowledge systematically to other developing countries. The two areas where successful experiences could be shared are forestry and eco-tourism.

Research & Development (R&D). The country needs to invest in R&D related to urbanisation, in particular, electric transport infrastructure, urban regeneration and innovation. The country's size of nearly 5 million people in 51,100 square km is an advantage because this presents a manageable scale for deploying solutions. Other assets are a high level of education by developing country standards and political stability which offer a good context for R&D related to urban issues. Having built leadership in relation to power generation (with 100 percent renewable electricity), forest management and ecotourism, the country now has to sustain leadership by fostering urban innovation—where innovation to date has been minimal.

Added value. The goal is to consolidate and host a cluster of renewable energies and electric mobility. The country could attract foreign direct investment in this field, from companies that supply environmental goods and services linked to energy and transport. The aim is to attract private capital to complement cooperation funds from developed countries. A proposal by the Ministry of Environment has been submitted to the Costa Rican Investment Promotion Agency (CINDE), a private, non-profit and non-political organisation that provides investment services for free.

Source: Interview by the author with Andrea Meza, Director of the Costa Rican Ministry of Environment´s Climate Change Directorate, on 11 July 2016

In terms of the SDGs, the government launched a "national pact" involving ministries and governmental agencies, congress, judicial system, companies and NGOs and acting as a network to encourage participation in the implementation of the goals.[11] The President's office launched the pact on 9 September 2016 (Araya 2016b). The Ministry of Economic Planning will oversee monitoring and reporting. The Association for Business Development (AED) leads private sector engagement. AED's Executive Director has called for corporate engagement, in "creating cities and sustainable communities, marine issues and the promotion of peace and justice." (Fallas 2016) The local office of Habitat for Humanity has taken the lead in the convening of NGOs around the pact and the identification of priority actions in Costa Rica. The latest rounds of talks with key stakeholders took place in November 2016.

5.1.2 Entering global value chains

According to the OECD (2013) Investment policy review, "Costa Rica has a well-designed trade policy that is well articulated with investment policy which reflects the country´s broader economic objective of integrating global value chains." In the World Bank's 2016 *Doing Business*, Costa Rica ranks 58th out of 189 economies, having improved 21 positions since 2015. It ranks 67th for the indicator on "trading across borders". In terms of documents and hours needed to export and import, Costa Rica performs better than the Latin American average but does not yet meet the OECD average (World Bank 2016a).

The pursuit of clean technology objectives has also reached the institutions dealing with trade and investment. Both agencies are considering the creation of a "green cluster" as part of their

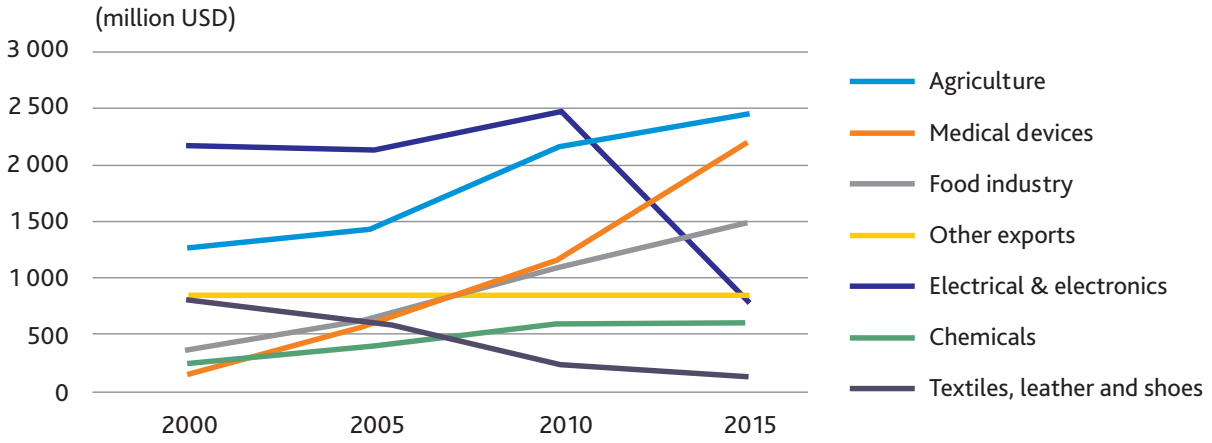
11 The official page of the SDGs in Costa Rica is http://www.ods.cr/

efforts to conquer foreign markets, so as to attract foreign direct investment that can boost production of components as part of global value chains in the clean-tech economy. For example, a "green cluster" around components of clean technologies could be an opportunity for increasing exports and FDI benefits, and for differentiating Costa Rica from competitors.

The Ministry of Trade´s export promotion agency, PROCOMER, promotes both Costa Rican goods and services. They simplify and facilitate export procedures, help create export chains, register exports statistics and perform market studies. Costa Rica has 2,441 exporting companies and 156 country destinations. The value of goods exported reached US$9.6 billion in 2015 (excluding US$6 billion coming from services).

The export sector has gone through several waves of diversification. Today the main exports are a combination of products from traditional sectors (fruits and vegetables) and non-traditional industries (food industry, medical devices, aeronautic industry, TV, video games, apps and software). A marked difference between 2015 and 2000 has been the departure of Intel from Costa Rica—between 1998 and 2014, it had helped diversify exports by becoming the largest domestic exporter of microchips. Medical devices industries are one of the most important sources of growth as seen in the Figure 2.

Figure 2: Evolution of Costa Rican Exports 2000-2015



Source: PROCOMER (2016).

PROCOMER seeks new opportunities, and its research team is mapping "green" export opportunities (Pedro Beirute, Head of PROCOMER, pers. comm., 10 June 2016). It has identified four potential areas and is building a database of companies operating in Costa Rica that export or might export these green products. The goal is to support them in these endeavours and to grow the cluster over time. A digital catalogue will provide information about each exporter and its offer. For now, the clusters are: i) clean energy technologies, ii) waste and water management, iii) environmental management and planning services, iv) sustainable buildings, v) eco-innovation (green product design), according to Beirute.

The agency in charge of investment promotion, Costa Rican Coalition for Development Initiatives (CINDE) is a private, non-political, non-profit organisation that has operated for over 30 years, attracting more than 250 high-tech companies. Its priority sectors are life sciences (e.g. radio frequency electro medical devices), services (e.g. shared services, entertainment, engineering and call centres) and advanced manufacturing (electronics automotive and aerospace components and design).

Like PROCOMER, CINDE are also assessing potential opportunities for attracting foreign investors that can manufacture environmental goods in Costa Rica—or at least components of green technologies. Because the country hosts companies with expertise in engineering, product design and R&D for electronics and aerospace, including R&D for new microchip tech design,[12] the prospects of attracting clean technology companies are very good. CINDE´s internal think tank is identifying potential green investment opportunities that could enable the establishment of a green FDI cluster. The team is attending trade fairs to identify those niche areas where Costa Rica can leverage its unique attributes and know-how. It is also analysing some of the global value chains in the green economy such as clean energy technologies as well as electric mobility.

Moreover, CINDE seeks to attract FDI to rural areas, and the preference is to attract FDI that can help develop clusters that are supportive of sustainable development objectives. Foreign clean energy investors are interested in operating in Costa Rica in view of the country´s leadership on clean power generation. One challenge facing investors, however, is that they also want to become energy providers, and Costa Rica has a state-owned enterprise, the National Electricity Institute (ICE) which produces the majority of power—by law. ICE can buy clean electricity (around 15 percent) from private producers, but in practice this quota has already been taken up. A debate about the costs and benefits of this electricity model is under discussion with the private sector insisting on playing a stronger role in the generation of renewable energy power.

The ministry dealing with domestic economic affairs, industry and commerce (Ministerio de Economía, Industria y Comercio de la República de Costa Rica, MEIC) has responsibility for small and medium-sized enterprises. Since 2014, MEIC has been conducting an extensive review of public policies to identify key interventions to boost local production of goods and services, which includes green economy elements. MEIC launched a formal consultation in 2016 with 400 individual parties, including economists, industry experts, companies, academics and relevant stakeholders, to design a long-term policy for industry (encompassing manufacturing and service companies). A first week of discussions took place in April 2016 seeking feedback on the vision of the economy up to 2050, followed by a second one with sectoral round tables in June (MEIC 2016a) and a third round in July. In August 2016, two days of "Future Scenarios"-building took place with the participation of 20- to 35-year olds. The goal of this intensive process is to define a national roadmap for local industry and services as part of long-term policy package with milestones up to 2050 (MEIC 2016b).

While these exploratory efforts are underway with workshops, mapping exercises and interviews with local experts, they have not yet been condensed into a single public-policy document. Moreover, the literature on Costa Rica´s green growth is limited. Thus, the purpose of this section was to illustrate how a middle-income economy is tackling clean energy and climate objectives in practice in the context of the EGA negotiations. A full-blown case study of Costa Rica's energy and climate policy falls out of the scope of this paper (Granoff et al. 2015).

5.2 Challenges

Since 2012, the country has been signed up to the OECD's Green Growth Declaration of 2009 (OECD 2009). Literature on Costa Rica's green growth prospects is limited. The main independent analysis of its green growth highlights that the country has been successful in both environmental protection and economic growth, having looked for opportunities to boost both rather than treating them as opposite goals. And yet,

12 See CINDE's website http://www.cinde.org/en/sectors/advanced-manufacturing/opportunities.

two areas need to be tackled to secure improvements in both its environmental and economic performance: a step change in the investment and delivery of infrastructure tackling public transit—the country needs to invest in "transport oriented development"—and waste-water treatment infrastructure (Granoff et al. 2015)

Two key governance challenges facing Costa Rica are the need to break through policy silos and to engage the domestic financial sector in supporting the development of a green hub attracting Costa Rican companies—from transport companies to current and potential exporters of environmental goods and services.

Traditionally, policy work has been organised by sectors in isolation from each other. Staying within such silos works against policy integration. Some progress has been made—for example, the collaboration between the energy and transport experts has started, but broadly speaking trade and climate policies are not yet integrated. The potential creation of a "green hub" could lead to collaboration between the ministry of environment and energy (MINAE) and the ministry of trade (COMEX).

The concept of "green growth" is still understood as a stand-alone cluster of environmentally friendly companies and investors. The challenge going forward is to embed this concept in trade and FDI policy to ensure that most exports and investments are environmentally friendly. The need for integration is recognised in policy circles, and progress is underway (as seen above) but more has to be done in practice. Nowhere is this more evident than in transport technologies: given the track record in generating electricity from renewable sources, Costa Rica could become one of the first countries to decarbonise its transportation sector and become a what the Ministry calls a "decarbonisation lab" to show how decarbonization works in real life in the developing world.

The financing of green technologies and projects is still a foreign concept in the local banking industry. Public and private banks have resources for isolated green initiatives, for example, financing solar panels for a house or an office. However, they lack a low-carbon vision to align their strategies and portfolios with objectives of the Paris Agreement such as decarbonisation (for example, credit lines to finance the electrification of bus systems) or with resilience goals (financing for climate-proofing buildings to ensure they can cope with future climate impacts). This gap could become one of the most fundamental barriers to faster progress in meeting climate and clean energy objectives in the context of the Paris Agreement and the SDGs.

An investment roadmap is required to help define the scale of investment needed to deploy clean transportation, green jobs and a strategy to foster green exports. The roadmap should also specify the long-term vision and target sectors for attracting green FDI attraction. Unless such a roadmap exists, the tendency will be to continue making progress on a project by project basis. Often such projects are funded with cooperation funds with pre-defined expiration dates. In the absence of linkages to the local banking sector—and to a broader financial roadmap—many of these initiatives may not continue once the external funding is gone.

Going forward, it will likely require a far stronger effort to quantify the economic and social benefits of climate friendly technologies and clean energies (for example electrification of transportation). This evidence helps explain why a policy shift is needed to reap the benefits of greener trade, by removing barriers to environmental goods and services. It will be critical to start a debate about the benefits of clean technologies—foreign and local—in increasing productivity and efficiency in the economy, and in protecting air and water quality. Given the narrow focus of EGA on tariff barriers, there is a risk is that the Agreement will be portrayed as too disconnected from domestic priorities.

5.3. Potential for Replication

Three things could be replicated from Costa Rica´s experience: first, having a long-term national framework for energy policy (as its plan covers at least 15 years), thus setting a clear direction of travel; secondly, creating explicit links between climate targets and transportation policies (most developing countries are suffering from air pollution and traffic congestion which could be solved with good policy and clean technologies that the EGA could promote); and finally, building a link between green opportunities and a country's export promoting agency, as PROCOMER´s effort could be replicated in other nations seeking to translate green growth into business opportunities.

The most concrete example of Latin American countries seeking to pursue green growth and business opportunities is from April 2016: 26 Latin American companies supported the effort by governments to create the Pacific Alliance Green Growth Platform. Companies from across Alliance members (Chile, Colombia, Mexico and Peru) stated their commitment to encouraging greater public–private partnerships to spur interest in building clean, innovative and resilient infrastructure. Chile, Mexico and Peru are members of APEC and have therefore agreed to voluntarily liberalise tariffs on environmental goods down to 5 percent as discussed earlier. Their joint work within the Pacific Alliance could also start to explore ways to integrate green goods, exports and FDI. (Cambridge Institute for Sustainability Leadership 2016)

6. CONCLUSIONS AND RECOMMENDATIONS

The EGA can help boost environmental goods, including clean energy and energy efficiency technologies, by lowering their costs and enhancing their supply and use in many countries.

The EGA at this point has a narrow focus—tariffs on environmental goods—(presently excluding negotiations on non-tariff barriers and on liberalising environmental services) and involves an important yet limited group, the EU plus 16 other WTO members (as of November 2016). The scale of the benefits of the EGA must therefore be understood in the context of this narrow thematic coverage and geographical reach.

Engaging a larger group of countries will strengthen the impact of the agreement, and this might be more feasible with a broader coverage of issues and sectors. Including environmental services as well as non-tariff barriers could help amplify the benefits of the EGA in meeting climate targets set in the Paris Agreement and the sustainable development goals.

Developing countries could reap several sustainable development benefits from engaging in the EGA, as well as in other trade policy efforts that seek to expand their clean energy sector. Cheaper access to clean energy technologies can help them meet their emission reduction targets, reduce air pollution (and hence improve public health) and strengthen energy security. Moreover, developing countries could tap into opportunities to take part in global value chains of environmental goods in the energy sector. Binding tariffs through an EGA will also offer policy predictability to investors that autonomous liberalisation efforts themselves may find it difficult to achieve.

Engaging in trade in clean energy technologies can make economic sense, and does not have to be in contradiction with national growth objectives. Rather, it can be a vehicle for growth, while at the same time supporting national targets set in the context of the Paris Agreement and the SDGs.

Removing trade barriers and putting in place trade policies will need to be complemented by appropriate domestic policies, for example industrial policies to spur green technology clusters. These policies will vary depending on domestic objectives. For example, in the case of Costa Rica a new focus is on the electric mobility industry.

Going forward, countries will need to develop actions between now and 2020 but also clear roadmaps to 2050 as part of the Paris Agreement commitments. The design of these mid-century decarbonisation maps would increase the prominence of environmental goods and services and may open a stronger debate about the role of trade policy in promoting clean energy technologies. Some countries have published such plans this year—Canada, Germany, Mexico and the US.

This paper has considered one country that is pursuing green growth objectives as part of its national development plan, Costa Rica, which is also a member of the EGA negotiations. Its experience provides insights for other countries that may also wish to pursue similar objectives. One lesson is the challenge to break through traditional policy silos (transport and energy) in response to a formal decarbonisation target as part of the national contribution to the Paris Agreement and the including of green growth elements in its trade and investment-attraction strategies. Another one is the need to engage the domestic financial sector in supporting the implementation of climate and clean energy targets and SDGs. For now, these objectives remain peripheral to Costa Rica's banking sector. More determined efforts are needed to boost a local industry of environmental goods and services that would create local business opportunities, on the one hand, and contribute to cleaner growth at home, on the other.

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