Chapter 4

The Applicability of the Law of the WTO to Green Energy Security

1 Introduction

1.1 Aim and Contribution of the Chapter

The country case studies of Great Britain (GB) and Brazil have shown that two main discursive frames can be found in relation to the interplay between energy security and national law and policies on green energy development: (i) the positive frame, which points out the importance of developing green energy to ensure energy security, i.e. green energy security; and (ii) the negative frame, where green energy is seen as negatively affecting energy security, particularly as a result of its intermittent nature, costs and insufficiency to meet the energy demands of a growing economy.

Revealing these differences of approaches in relation to the interplay between energy security and green energy in the country case studies is relevant because this divergence of views, learnt in each country case study, may be at stake in legal disputes. In particular, legal disputes between countries concerning energy security and green energy development have already taken place within international trade law as encapsulated in the law of the World Trade Organisation (WTO), an international trade organisation which adjudicates between competing discursive claims and pronounces on their legal status.

The WTO, therefore, was selected as a third case study because it shows how this diversity of views raised in national contexts can lead to legal disputes in international forums when attempts are made to address the issue of the interplay between energy security and green energy development. Literature on international green energy trade disputes in the WTO, however, have predominantly focused on the consistency of green energy policies with WTO law and the balance between WTO obligations and domestic public policy space as a way to address environmental and climate change objectives (Rubini 2012; Cosbey and Mavroidis 2014; Lewis 2014; Cottier 2014; Kulovesi 2014; Lee 2016; Lai 2016). Although a few studies have mentioned the significance of green energy to energy security as a facet of public policy within the WTO (Leal-Arcas et al. 2014; Jayagovind 2016; Rutherford 2016), energy security

as a justification under WTO rules for trade restrictive measures to support green energy development is largely unexplored. Thus, the key contribution of this study to the existing academic literature on the law of the WTO is the analysis of WTO rules on green energy through the prism of energy security, based on data of the country case studies never published before.

As countries transition to a low carbon energy system, the participation of green energy in the energy mix will increase worldwide. Renewable energy, for example, is the fastest growing source of energy, accounting for around half of the increase in energy (BP 2019). Thus, countries' dependence on green energy as a dominant energy source may be greater in the future. In this sense, green energy will also increasingly play a larger role in ensuring energy security globally.

It is therefore important to analyse green energy security in the law of the WTO for a number of reasons. First, the WTO acts as the primary global trade governance body and plays a key role in settling interstate trade disputes through panels and the Appellate Body of its Dispute Settlement Body (DSB). Since the WTO DSB has come to act as a significant international forum to channel complaints related to trade restrictive measures supporting green energy development, it is therefore relevant to explore trends in energy security put forward to this specialised tribunal. Second, as the WTO DSB makes crucial jurisprudential moves that impact domestic law and policies, WTO Member States need to take WTO rules into account when shaping their domestic green energy law and policies. Therefore, a legal analysis of energy security in the green energy context within the WTO rules is needed, in particular, how a well-designed energy security policy promoting green energy could fail or succeed the various public policy exceptions provided in the law of the WTO. Third, with increasing green energy trade disputes under the WTO DSB over the years, more trade disputes might be heard at the WTO on the subject of green energy security as to the purpose of government support for green energy. This chapter, then, explores whether there is any flexibility within the current WTO rules and the interpretations given to them that permit trade restrictive measures that support national green energy development with a view of ensuring energy security, i.e. green energy security.

It is generally acknowledged in the literature that a successful transition to a low carbon energy system will require government support to develop new green energy sectors and technologies (Fay et al. 2015; Amrutha et al. 2018). Countries, therefore, have adopted trade restrictive measures, particularly local content requirements and subsidies, as instruments to develop a national green energy industry. These trade restrictive measures, however, have been challenged in green energy legal disputes under the WTO DSB. *Canada—Certain Measures Affecting the Renewable Energy Generation Sector* (WT/DS412), *Canada—Measures Relating to the Feed-in Tariff Programme* (WT/DS426) and *India—Certain Measures Relating to Solar Cells and Solar Modules* (WT/DS456) are examples here. The analysis of these cases in the literature focuses on justifying these trade restrictive measures on environmental and climate change grounds (Rubini 2012; Shadikhodjaev 2017; Karttunen and Moore 2018). However, these cases also raise issues surrounding energy security as a justification under WTO rules for trade restrictive measures to support green energy development, but this has been largely unexplored. The following sections,

therefore, will expand on the interaction between green energy and energy security within the law of the WTO.

1.2 Structure of the Chapter

The chapter begins with an overview of the nature of international trade in green energy, followed by an examination of green energy trade law under the WTO as a background for contextual purposes. The following section focuses on energy security in the law of the WTO. It reveals how energy security has been raised within the WTO green energy jurisprudence so far. Based on the findings of the case studies on GB and Brazil, it also analyses whether there is room for green energy security as a justification for trade restrictive measures. The final section elaborates on a proposal for policy space for green energy security in the law of the WTO.

1.3 Summary of Findings

Overall, this chapter will demonstrate that green energy development has increasingly come to be associated with energy security in the WTO jurisprudence. An analysis of the WTO green energy disputes involving energy security will also reveal that energy security concepts have been raised differently by respondents, and broader concepts of energy security found in the literature which include environmental, climate and social considerations have not reached the jurisprudence in the WTO system yet. The analyses of room for green energy security as a justification for trade restrictive measures will demonstrate that there might be some room for green energy security within the defences under Articles III:8(a), XX(a) and (j) and Article XXI. However, these defences have limited applicability and may also have undesirable outcomes. Finally, this chapter will argue that an evenly distributed market share of green energy technologies and equipment around the world is the best solution to ensure green energy security in the context of the just energy transition and propose a way forward to create the legal space within the WTO for trade restrictive measures aimed at ensuring green energy security.

2 The Nature of International Trade in Green Energy

Green energy technologies are made up of packages of goods, services and embedded intangibles (such as software) that come together as a result of multiple transactions involving the providers of supply chains operating across several jurisdictions. In this manner, the goods, services and intellectual property (IP) involved in any particular wind energy park or a solar photovoltaics (PV) installation, for example, have usually

crossed several borders to get there. Any such equipment would generally also include locally produced components and services (Hufbauer et al. 2016). For instance, solar firms in the US and the EU are linked with Chinese firms through global supply chains (Nahm 2017).

The emergence of global supply chains has enabled solar photovoltaics companies to specialise in specific stages of manufacturing, and to scale up global solar photovoltaics production capacity (Nahm and Steinfeld 2014). The photovoltaics industry consists of a long value chain from raw materials to photovoltaics system installation and maintenance. In general, when people talk about the PV industry, the main focus is on the solar-cell and module manufacturers. However, there is also the upstream industry (e.g. materials, polysilicon production, wafer production and equipment manufacturing) as well as the downstream industry (e.g. inverters, balance of system (BOS) components, system development, project development, financing, installations and integration into existing or future electricity infrastructure, plant operators, operation and maintenance) (Jäger-Waldau 2017). As a result of these developments, the nature of the green energy sector has resulted in increasing tradability of green energy goods and services, and internationalisation of green energy activities.

The trend towards privatisation and liberalisation of the energy sector has also accelerated green energy trade. Until the 1980s, it was a conventional wisdom of the post-war years that markets are hopelessly inadequate in providing appropriate energy supplies (Helm 2004), and governments worldwide have considered the energy sector too crucial to be left to market forces. Accordingly, monopoly was the norm (Kirschen and Strbac 2004). However, with the deregulation movement, there was a paradigm shift in the electricity industry across the world from a system of State ownership and centralised management to one that favours decentralised structures, competition, independent regulatory oversight, and private ownership (OECD 2000). As a result, trade in electricity is a new dimension of trade in energy, in which the green energy sector plays an important role. As such, industries in the green energy sector have not been dominated by State-owned vertically integrated utilities, who would typically have engaged in the production, transport and distribution of energy products. As a result, this has left ample margins for trade and competition.

3 Green Energy Trade and the Law of the WTO: An Overview

This section introduces some of the key rules of WTO law as well as examines how green energy has been addressed in the law of the WTO.

3.1 WTO Main Trade Obligations

The WTO was created in 1995 as the successor to, and incorporates within it, the General Agreement on Tariffs and Trade (GATT). As a forum for negotiation to reduce trade barriers, the GATT oversaw eight rounds of multilateral trade negotiations, culminating in the Uruguay Round that created the WTO (Stern 2013) with the WTO taking responsibility for establishing the rules governing the international trading system within a multilateral framework. Generally speaking, WTO rules are aimed at liberalising global trade and are based on agreements negotiated by Member States. As part of that, the GATT/WTO system provides a framework for conflict resolution in international trade relations.

The principle of non-discrimination constitutes a cornerstone in international trade relations. WTO law requires States to abide by the non-discrimination obligations of most-favoured nation and national treatment. The Most Favoured Nation (MFN) obligation is reflected in several WTO Agreements, including GATT Article I. The MFN obligation under GATT Article I requires WTO Members to grant any ‘advantage, favour, privilege or immunity’ given to one WTO Member to ‘like products’ originating from all other WTO Members. The WTO members are obliged to grant MFN treatment immediately and unconditionally. Thus, according to the MFN obligation, discrimination between trading partners is prohibited under WTO law. The National Treatment obligation under GATT Article III:4 implies non-discrimination between domestic and imported goods. The basic concept is that imported products shall be accorded treatment ‘no less favourable’ than that accorded to domestic products. While MFN applies to both imports and exports, the national treatment is applicable only to non-discrimination of imports, and not exports (Selivanova 2014).

The GATT recognises that derogations from international trade obligations are sometimes necessary to protect legitimate non-trade policy interests. This is possible, for example, by virtue of GATT Article XX entitled ‘general exceptions’ and Article XXI entitled ‘security exceptions’. In Sect. 4 below, these exceptions will be analysed in the context of green energy security.

3.2 Green Energy Trade and the Law of the WTO

The world is currently going through a period of legal, economic and political quarrelling around the evolution of green energy technologies (Hufbauer et al. 2016), particularly with respect to trade. As governments put in place policies to stimulate the green energy sector, trade tensions arise that test the limits of existing trade rules. Several disputes on related policies have been brought to the dispute settlement system of the WTO.

Given the ongoing disputes at an international level, there is increased acknowledgement of the interaction between trade and energy, and regulating green energy trade has been recognised as one of the WTO’s key challenges (WTO 2007). Energy

is not specifically addressed in the law of the WTO and has not been singled out as a specific sector of trade under the WTO system. When the original GATT was drafted in 1947, energy was not contemplated. The former WTO Director-General Pascal Lamy explained the absence of energy as a distinct sector by stating that ‘[w]hen the rules of the GATT—which preceded the WTO—were negotiated 60 years ago, opening trade in energy was not a political priority. World energy demand was a fraction of today’s and you could buy a barrel of crude oil for USD20 at current prices’ (Lamy 2007). Cross-border trade for grid-linked energy was not very developed at the time of the GATT negotiations either (Selivanova 2014). In addition, at that time, green energy was neither on the agenda of the institutions of global governance nor the domestic policy agenda of member countries. Thus, interest in green energy was not a major concern. The emphasis was on economic reconstruction following the destruction of World War II, and avoiding a depression like that which took place after World War I.

Nevertheless, although the rules of the WTO were not directly negotiated with energy in mind, many scholars have argued that WTO rules are applicable to trade in energy and energy products (Marceau 2010; Yanovich 2011; Meyer 2016). This implies that the non-discrimination principles of WTO law form an integral part of the legal framework that applies to international trade in energy. In practice, WTO rules have been treated as applicable to green energy trade disputes and the first cases on green energy decided by the WTO DSB made it clear that green energy falls under the disciplines of the GATT and its related agreements. The fact that many of the main green energy producing and exporting countries as well as suppliers and importers of green energy generation equipment in the world, such as China, the US and the EU, are WTO members who have subscribed to its dispute settlement system, may have contributed to the emergence of the WTO as a forum for green energy trade-related disputes.

Due to the multifaceted character of green energy trade, which encompasses a wide range of matters ranging from, for instance, trade in goods to trade in services, various agreements covered under the WTO system are relevant to green energy matters. As demonstrated by Cottier (2014), tariffs on hardware, such as photovoltaic equipment, fall under Articles II and XXVIII GATT. Import and export restrictions on green energy are dealt with under Articles XI and XX GATT. Local content rules and government procurement are addressed by Article III GATT, the Agreement on Trade-Related Investment Measures (TRIMs), and the Government Procurement Agreement (GPA). Trade remedies (safeguards, anti-dumping, subsidies and countervailing measures) extend to energy and are subject to the disciplines of Articles VI, XVI, XIX GATT, as well as to the Anti-Dumping Agreement (ADA), the Agreement on Subsidies and Countervailing Measures (ASCM) and the Agreement on Safeguards (SG). Biofuels partially fall under the Agreement on Agriculture (AoA), with the application of its regime to bioethanol. Furthermore, the green energy sector is strongly based upon services, such as metering, scoping, scouting, engineering and maintenance of installations and finance, and thus fall under the General Agreement on Trade in Services (GATS). Technical standards, which are of crucial importance for safety as well as for achieving high productivity, fall under the Agreement on

Technical Barriers to Trade (TBT). Finally, green energy may touch upon intellectual property rights, transfer of technology and competition under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs).

An important issue in ongoing international debates on energy is how it should be defined for WTO purposes. For instance, should energy be defined in terms of products or in terms of their use? Marceau (2010) suggests that energy should be defined as the action (product and process) through which energy-containing natural resources are transformed and consumed in response to a series of societal and individual human requirements for heat and power. However, the author notes that such a definition is not sufficient for WTO purposes as it does not fall neatly within the goods/services parameters of the WTO (Marceau 2010). There is no agreement, for instance, on whether electricity qualifies as a good or a service under WTO rules. This impacts upon electricity produced from green energy sources because WTO rules are based on a distinction between goods and services and, depending on the classification, different WTO rules apply. However, whilst classificatory ambiguities should certainly be noted in terms of their legal relevance, it is not the purpose of this chapter to provide a detailed analysis with regards to this matter. Rather, the emphasis is on the policy space for green energy security in the law of the WTO, an issue that will, in all likelihood, have to be addressed as a result of increasing links between energy security and green energy development, and as this body of law continues to be elaborated.

When it comes to the development of case law, environmental and climate change concerns have been the central issue with regards to green energy in the context of WTO law. Many of the main contemporary green energy goods and services, such as wind turbines, solar panels and solar water heaters, geothermal energy sensors and storage technologies like batteries, have been negotiated as environmental goods and services in the Doha Round, the latest round of trade negotiations among the WTO's membership. While there is a lack of specific rules on green energy and related products under the WTO system, there is reference to sustainable development in the 1994 WTO agreement's preamble. The preamble covers the need for the Contracting Parties to make 'optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment', and this element has been widely associated with green energy in the literature as well as in WTO case law. What is lacking is an analysis of green energy security within the WTO, an issue which will be examined in the following section.

4 Energy Security and Green Energy in the WTO Jurisprudence

An examination of room for national policy space for green energy security in the law of the WTO only makes sense if it is first acknowledged that green energy plays a role in ensuring energy security. Evidence from the case studies of GB and Brazil

highlights the importance of green energy to energy security in a variety of ways. As green energy deployment in countries' energy mixes increases and may become the dominant energy source, it is likely that national law and policies on green energy development will come to be associated with energy security more widely. This section, therefore, will investigate how energy security has been construed within the WTO green energy jurisprudence so far.

The case study on Brazil demonstrated the evolving concept of energy security within a specific country, while the case study on GB showed the dynamic and controversial concept of energy security within different sectors of the economy in a specific country. The WTO deals with different Member States, which will have different contexts and will, therefore, have a multiplicity of ways of understanding what energy security is.

The differences in concepts of energy security and their uses have already come to be seen as a cause of controversy and debate, generating significant deadlock in international negotiations. As one participant to the G8 Summit in St Petersburg put it: '[i]n preparing the St. Petersburg Summit's final documents, the most stubborn arguments up to the last day concerned the interpretation of the very idea of "energy security"' (Simonia 2010). The recent WTO case on conventional energy between Russia and the European Union (EU), *European Union and its member States—Certain Measures relating to the Energy Sector* (WT/DS476/R) is another example of how a lack of agreed definition on security of energy supply can create controversy. In this case, Russia submitted that "neither the Directive nor any other EU authority on the record identifies a clear and consistent definition of security of supply" and in Russia's view, this was "deliberate" and meant to "maximize [the European Union's] discretion to define security of supply in the manner most advantageous to its overall objectives, to include reducing reliance on Russian pipeline transport services and natural gas imports." Therefore, an analysis of how energy security has been configured through WTO case law is important and timely. The definitions and interpretations of energy security in the WTO shape the term's role in legal texts and negotiations. Its interpretation can not only shape the outcome of individual disputes but also determine future trends in national policymaking.

WTO law does not provide a definition of energy security. Strictly speaking, there is no official definition of energy security in existing, legally binding instruments of international law. This complicates the process of clarifying the 'ordinary meaning' with reference to the term's context. The WTO has been acting as a forum for energy disputes, particularly green energy, for some time. Since its creation in 1995, 17 cases involving energy have been initiated under the WTO DSB and, among those cases, 15 cases involved green energy as of 20 February 2020. In total, three green energy cases make reference to energy security matters: *Canada—Renewable Energy*, *Canada—Feed-In Tariff Programme* and *India—Solar Cells*. These cases, which will be subsequently analysed, provide an indication of how energy security has been raised and dealt with in the WTO green energy jurisprudence so far.

4.1 *Canada—Renewable Energy and Canada—Feed-In Tariff Programme*

4.1.1 Facts

In *Canada—Renewable Energy and Canada—Feed-In Tariff Programme*, the terms ‘energy security’ or ‘security of energy supply’ were not expressly used. However, concerns around energy availability and reliability—constitutive elements that form part of the energy security concept as shown in the previous chapters—were expressly raised. The case *Canada—Renewable Energy* initiated by Japan in 2010, and prompted the WTO Dispute Settlement Body to decide, for the first time, on matters relating to trade in green energy, specifically the legal status of renewable energy and measures of support to enhance its contribution to a specific nation’s energy matrix. Almost a year later, the EU also started a dispute under *Canada—Feed-In Tariff Programme* with regards to the same issue.

The central complaint in these two cases related to the domestic content requirements for certain wind and solar photovoltaic electricity generation projects in the feed-in tariff programme (the ‘FIT Programme’), established by the Canadian Province of Ontario, and the discriminatory treatment affecting imports of renewable energy generation equipment this led to. Generally, a feed-in tariff (FIT) scheme is designed to promote investment in the development of the green energy industry. A FIT typically provides for a fixed price for green electricity per kilowatt-hour fed into the grid on a common basis via long-term contracts (Mendonça et al. 2010). Ontario linked eligibility for its FIT to a local content requirement, as an instrument to promote green industries (Charnovitz and Fischer 2015).

Under the Government of Ontario’s FIT Programme, generators of electricity, producing from certain forms of renewable energy (wind, solar PV, renewable biomass, biogas, landfill gas, and waterpower), were paid a guaranteed price per kilowatt hour of electricity delivered into the Ontario electricity system under 20-year or 40-year contracts. In the case of wind power projects having a capacity to produce electricity greater than 10 kW, and solar projects with a capacity of up to 10 MW, some minimum level of domestic content had to be satisfied in the development and construction of the qualifying electricity generation facility.

Japan and the EU argued that Ontario’s FIT Programme granted and maintained prohibited subsidies that were contingent upon the use of domestic over imported renewable energy equipment from other WTO Members and accorded less favourable treatment to like products of Japanese and EU origin, contrary to the national treatment principle. On this basis, Japan and the EU submitted that the FIT programme was not compatible with Canada’s obligations under: (i) Articles 3.1(b) and 3.2 of the ASCM; (ii) Article III:4 of the GATT 1994; and (iii) Article 2.1 of the TRIMS Agreement. Thus, the complainants requested the elimination of the domestic content requirement.

In response, Canada argued that the procurement of electricity through the FIT Programme fell within the scope of the government procurement exception under

Article III:8(a) of GATT and as a consequence, was not subject to Article III of GATT and could not be inconsistent with Article 2.1 of the TRIMS Agreement as a result. Both the Panel and the Appellate Body found that the domestic content requirements under the FIT Programme were inconsistent with Article III:4 of GATT and Article 2.1 of the TRIMs Agreement. In relation to the subsidy claim, the question of whether FITs qualify as a subsidy under the ASCM remained unanswered because neither the Panel nor the Appellate Body reached a final conclusion as to whether FIT confers a benefit within the meaning of Article 1.1(b).

4.1.2 Energy Security Concepts

Canada made it clear that the FIT programme had two important contributions to make: (i) in helping secure the supply of electricity, and (ii) in helping protect the environment as it reduced Ontario's reliance on electricity from coal, thus reducing the production of greenhouse gases. Throughout its arguments, Canada emphasised that 'FIT Programmes play an important role in securing clean electricity supply'. Although the wording 'energy security' or 'security of energy supply' was not explicitly used, the role played by the Government of Ontario in ensuring an adequate, reliable and secure supply of electricity, including from green sources, was highlighted throughout Canada's arguments. Canada, therefore, focused on energy security in the sense of availability and reliability of energy supply. These are similar elements to those raised by the majority of participants in the case study on GB. The temporary shutdown of several nuclear facilities for maintenance, phasing out of coal-fired generation by 2014 and subsequent reduction in generation capacity, as well as the increase of Ontario's population by 28% by 2030 and the subsequent increases in energy demand were all invoked to express concerns about energy security.

What is interesting in these cases is also how the Panel and the Appellate Body presented the link between energy security and green energy. While the Panel presented only a negative frame where green energy does not support energy security because of the intermittency of wind and solar energy sources, the Appellate Body advanced a positive frame where green energy does play a role in ensuring energy security in the long-term by reducing reliance on fossil energy resources. Therefore, in these cases, the Panel and the Appellate Body presented two different approaches in regard to framing green energy and energy security. From a legal perspective, this divergence in frames has implications for the interplay between energy security and green energy under WTO law, because the frame adopted can impact the applicability and interpretation of WTO provisions. The negative frame, for instance, reduces the room for energy security as a legal justification for trade restrictive measures adopted to promote green energy.

4.2 *India—Solar Cells*

4.2.1 Facts

India—Solar Cells is the first case in the history of the WTO case law where the wording ‘energy security’ and ‘security of energy supply’ have been expressly used in connection with green energy development. This case was brought by the United States (US) against India concerning local content requirements imposed under the Jawaharlal Nehru National Solar Mission (National Solar Mission) for solar cells and solar modules. According to India, the National Solar Mission was a major initiative of the Government of India to promote ecologically sustainable growth while addressing India’s energy security challenge, as well as to contribute to the global effort to meet the challenges of climate change. It was launched by the Government of India in 2010, with the aim of generating 20,000 megawatts (MW) of grid-connected solar power capacity by 2022. India subsequently increased that target to 100,000 MW of grid-connected solar power capacity by 2022. In order to meet this target, the scheme provided that the Government of India would enter into long-term Power Purchase Agreements (PPAs) with private solar power developers (SPDs).

The US alleged that India required SPDs to purchase and use solar cells and solar modules of domestic origin to enter into and maintain PPAs with the Government of India. In addition, SPDs received certain benefits and advantages, such as long-term tariffs for electricity, contingent on the purchase and use of solar cells and solar modules of domestic origin. The US claimed violations of the National Treatment obligation under GATT Article III:4 and Article 2.1 of the TRIMs Agreement. India used the government procurement derogation under Article III:8(a) of GATT 1994, the ‘general or local short supply’ exception under GATT article XX(j) and the need to ‘secure compliance’ exception under GATT article XX(d).

4.2.2 Energy Security Concepts

Although ecological sustainability and climate change were also presented as driving forces for the National Solar Mission, India not only directly and explicitly associated green energy development with energy security, but also presented energy security as one of the priority drivers for the promotion of green energy. India asserted that its procurement of solar power was an act pursuant to the government purpose of promoting ecologically sustainable growth while addressing India’s energy security challenge. India’s focus on energy security is clearly discernible in its repeated invocation of ‘energy security’ or ‘security of supply’ 23 times in its summaries of the arguments included in the Panel Report.

In elucidating the meaning of energy security, India referred to definitions in which availability, reliability and affordability were emphasised as the main aspects of energy security. For instance, India mentioned the International Energy Agency

(IAE) definition of ‘the uninterrupted availability of energy sources at an affordable price’, a report by the United Nations Development Programme, which similarly defines energy security as ‘the continuous availability of energy in varied forms in sufficient quantities at reasonable prices’, and its own *Integrated Energy Policy*, which affirms the need to ‘supply lifeline energy to all our citizens irrespective of their ability to pay for it as well as meet their effective demand for safe and convenient energy to satisfy their various needs at competitive prices, at all times and with a prescribed confidence level considering shocks and disruptions that can be reasonably expected’. Availability, reliability and affordability are similar energy security elements to those found in the current legal framework in Brazil, as shown in Chap. 3.

India pointed out that the Government of India was currently being challenged by crippling electricity shortages, the rising price of electricity, and the gradual shift towards imported coal to meet its energy demand, which India stated that in turn would only lead to further increase in electricity prices. In India’s arguments, energy security issues were triggered by energy deficit, increasing demands for energy, and India’s dependence on fossil fuels and imported materials for its energy requirements. Solar energy development would lead to energy security through displacement of coal and petroleum. Here, India can be seen associating energy security and solar energy through a positive frame highlighting the reduction of fossil fuel dependency, just like the official discourse in Brazil positively associated energy security and biofuels, as shown in Chap. 3. By associating energy security with solar energy, India aimed to justify the adoption of national law and policies supporting solar energy, whilst having a restrictive effect on international trade.

According to India, an essential corollary to the energy security objective was the need to ensure control over the country’s energy destiny. This would require security of supply of energy products, such as solar cells and modules. These were, from India’s point of view, critical components intrinsic to solar power development and were currently being heavily imported, and, as a result, exposed India to the risks of market fluctuations in international supply. Thus, in pursuance of energy security, government intervention was necessary in order to ensure domestic resilience in addressing any supply side disruptions since any dependence on imports brought with it risks associated with supply side vulnerabilities and fluctuations. As such, from India’s perspective, the domestic content requirement measures disputed by the US did not seek to maximise self-sufficiency by reducing imports of solar cells and modules; instead they aimed to ensure the existence of an adequate domestic manufacturing capacity and human skills in order to reduce the risks linked to dependence solely on imports of solar cells and modules which were intrinsic to solar power generation. Interestingly, some participants in the case study on GB in Chap. 2 also highlighted the link between energy security and the importation of energy equipment, technology and expertise as well as maintenance of human resources in the country and their energy skills and capabilities. The question here then – which will be subsequently examined – is whether green energy equipment import dependence is a green energy security issue.

4.2.3 Is Green Energy Equipment Import Dependence a Green Energy Security Issue?

In the literature, trade appears as an indicator for energy security (Sovacool and Mukherjee 2011). In this approach, reducing barriers to trade fosters energy security, so the goal is to keep energy markets open and fight protectionism. Liberalisation of international trade is advanced by complainants in the WTO green energy disputes as a way to have access to the best available technology from the global marketplace at competitive prices. Countries which depend profoundly on energy equipment and technology imports have to rely on the secure and smooth-functioning of international trade in energy in order to ensure security of energy supply. Participants in the case study on GB also presented the argument that restrictions in access to green energy technology markets would affect energy security as some green energy equipment is not produced in the country. One can, therefore, conclude that green energy technology and equipment import dependence can entail green energy security issues, particularly for green energy import dependent countries, if trade is not available.

Although green energy equipment can be easily traded or transported short and long distances, situations of supply constraints, such as pandemics, political unrest, conflicts and trade embargoes, can occur. These trade disruptions usually happen without much warning and do not allow time for countries to plan different energy strategies to ensure green energy security. One of the goals of the transition to a low carbon energy system is to increase the participation of green energy in the energy mix. As a consequence, countries dependent on solar and wind energy as a dominant energy source, for example, may be more common in the future. In these cases, if a country's energy mix is designed to be dependent on solar and wind energies, trade restrictions on equipment in this area without advance warning would not realistically allow countries to plan their energy supply from other energy sources and produce the necessary green energy equipment while the trade restrictions issues are solved.

While a globally integrated and liberalised trade environment is presented as a solution for energy security issues, realistically, we currently do not live in a world where international trade is one hundred percent guaranteed. The COVID-19 pandemic is an example here. Political unrest, conflicts and trade embargoes can also happen and cause supply constraints. It is wise, therefore, that countries ensure domestic resilience against disruptions in supplies of green energy technologies and equipment, by developing a local green energy technology manufacturing industry.

The debate here, then, is about importing countries choosing to adopt some temporary trade restrictive measures non-compliant with WTO law in order to develop their national green energy industry and ensure long-term green energy security in the event of supply side disruption. One can argue that temporarily restricting trade imports could cause energy insecurity in importing countries. For example, if an importing country restricted the importation of non-locally produced green energy technology, it would negatively impact the security of green energy supply, because the country would not have this product available nationally and would not have access to the product internationally. Each country, however, is best situated to assess

its own energy security interests and to decide whether essential energy security interests are at stake relative to certain types of trade measures. Energy security is context dependent and countries could plan their energy strategies to ensure that energy would still be available if they chose to temporarily restrict the trade. For instance, if solar energy equipment importing countries wanted to develop their national solar energy industry, they could temporarily plan to ensure energy security from other energy sources while a percentage of its solar energy domestic market is developed. Strategic plans, therefore, could prevent any general energy supply interruption.

Developing green energy technologies nationally is not an easy and straightforward task. The case of Brazil serves as an example that green energy manufacturing facilities do not just spring up overnight. As seen in Chap. 3, during the 2001 energy crisis, Brazil acted to develop wind energy via its Emergency Programme for Wind Energy, PROEOLICA, to ensure energy security. Evidence showed that a domestic manufacturing base could not be developed in the short-term, because the industry could not be dependent on very few national suppliers for the viability of wind energy projects in Brazil in that initial development period. At the time, there was only one national manufacturer of complete equipment for wind turbines and only a few manufacturers of parts for wind turbines. Therefore, it was expected that the majority of wind equipment would be imported. However, in cases where this international trade is restricted, the country would not be able to ensure its green energy security.

Supply constraints on green energy equipment can result not only in physical supply interruptions, but can also have negative consequences for prices in green energy markets, which, as such, affect, in particular, energy security in the sense of availability and affordability. The concentration of green energy equipment producers in a small number of countries heightens the impact of these issues on energy market volatility, and periods of wildly fluctuating green energy equipment prices will have an impact on the green energy security of country importers, particularly on the element of affordability.

The question then is how likely is international trade on green energy equipment to be disrupted? The full impact of the COVID-19 pandemic on green energy trade is still unknown and so far there has not been any political unrest, conflict or trade embargo with regards to green energy equipment. However, today there is concentration of some green energy equipment in the hands of a few. In 2016, for instance, of the 20 largest solar cells production companies, in terms of actual production/shipments, 11 were 100% Chinese and an additional five had Chinese participation (Jäger-Waldau 2017). In the same year, China and Taiwan held a share of 68% of PV module production in the world (Fraunhofer Institute for Solar Energy Systems 2018). This market share dominance, on the one hand, may not have any negative impact on the energy security of an importer country if access to the supply of the product is stable, accessible and reliable. On the other hand, if this market share dominance makes international trade unreliable, then it is a factor which should be considered when examining energy security concerns.

It seems an open matter as to whether the concentration of some green energy equipment production in the hands of a few is or is not a problem. However, one can safely conclude that market share dominance is not the ideal position for the world to

be in. An evenly distributed market share of green energy technologies and equipment around the world is the best solution to ensure energy security in the context of the just energy transition. No country should depend totally on a few suppliers. The diversification of green energy players in the market is essential and the WTO has an important role to play in achieving this goal. In view of this, the next section will examine whether there is policy space within WTO law for Member States to adopt trade restrictive measures to develop their national green energy industry with a view of ensuring green energy security.

5 Green Energy Security as a Justification for Trade Restrictive Measures

The previous section shows evidence that WTO Member States are increasingly associating energy security with green energy in their legal disputes under the WTO DSB. Member States which have adopted or intend to adopt trade restrictive measures to support national green energy development with a view of ensuring energy security should familiarise themselves with the following question: Does WTO law provide room for national public policy on green energy security grounds? This section aims at answering this question in the context of the WTO agreement on trade in goods, GATT, an agreement that has been raised in all green energy disputes in the WTO system so far. As such, this section is not intended to be either definitive or exhaustive of the legal defences around green energy security within all agreements of the WTO framework. Instead, it focuses on room for green energy security within the current exceptions under GATT.

As a rule, WTO Member States are required to design their internal legislation and regulations in a way that is compatible with WTO law. However, if a WTO Member State wishes to pursue some legitimate non-trade policy objectives, it may enact certain measures that, although inconsistent with WTO rules, may still be justified under GATT. Literature on green energy development and the GATT exceptions focuses mainly on environmental and climate change grounds within the scope of GATT Article XX(b) relating to measures ‘necessary to protect human, animal or plant life or health’ and GATT Article XX(g) relating to ‘the conservation of exhaustible natural resources’ (Rubini 2012; Oniemola 2013; Maggio 2017). In the context of green energy security, the examination of four legal defences under GATT is pertinent: Article III:8(a), Article XX(a), Article XX(j) and Article XXI.

5.1 GATT Article III:8(a)

Article III:8(a) of GATT provides:

The provisions of this Article [National Treatment on Internal Taxation and Regulation] 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.

Article III:8(a) of GATT exempts government procurement programmes from the national treatment obligation, leaving, as such, room for discrimination concerning the exercise of government actions relating to the procurement 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’. Article III:8(a), therefore, establishes a derogation from the national treatment obligation under Article III for government procurement activities falling within its scope.

In all three green energy security cases so far, *Canada—Renewable Energy*, *Canada—Feed-In Tariff Programme* and *India—Solar Cells*, this exception was raised in an attempt to justify the discriminatory measure adopted to support domestic green energy development. Canada’s and India’s argument was that the purchase of electricity from green energy was for government purposes not with a view to commercial resale or with a view to use in the production of goods for commercial sale, as a result of government’s role in ensuring energy security. Although energy security as a legal defence per se is not part of Article III:8(a) of GATT, this is still an important case for green energy security, as green energy security can be raised as a rhetorical defence of the disputed procurement measures. It has also been echoed in the literature that the decision on *Canada—Renewable Energy*, *Canada—Feed-In Tariff Programme* and *India—Solar Cells* in relation to GATT Article III:8(a) will have far reaching implications for the energy security debate (Sarmah 2017).

The Panel and the Appellate Body interpreted Article III:8(a) of GATT differently in *Canada—Renewable Energy/Feed-In Tariff Programme*. The Panel found that the Government of Ontario’s purchases of electricity generated from green energy sources under the FIT programme were ‘with a view to commercial resale’, because whether an electricity system is highly regulated or made up entirely of competitive markets at the different levels of trade, the electricity purchased by the government and sold to retail consumers were in competition with private sector electricity retailers.

What can be concluded from the Panel’s reasoning is that, if countries with a competitive electricity market with private sector electricity retailers adopt trade restrictive measures to promote green energy development, these measures cannot be justified under GATT Article III:8(a) and will be considered in conflict with WTO law. As such, based on the Panel’s decision, to satisfy the ‘not with a view to commercial resale’ criteria and justify their trade restrictive measure to support green energy development under GATT Article III:8(a), it seems that countries would basically need to be in two positions: (i) have a nationalised electricity system, where the government is the only supplier of electricity; or (ii) have government

agencies acting on behalf of the government under the express authority conferred by it and be performing activities exclusively performed by the government. Sarmah argues that this appears to cover several public-private partnerships, especially those secured through a tendering process (Sarmah 2017). However, there is no express confirmation of this by the Panel or Appellate Body in the cases. What seems certain is that companies cannot be involved in a competitive and commercial setup.

The Appellate Body did not elaborate on ‘with a view to commercial resale’, so its position is unknown. The Appellate Body legal reasoning, applied in *Canada—Renewable Energy/FIT Programme* and followed in *India—Solar Cells*, was on the finding that the product of foreign origin allegedly being discriminated against must be in a competitive relationship with the product purchased by the government. In the given cases, the foreign product was the green energy generation equipment (manufactured/purchased by the private sector to generate electricity) while the product purchased by the Ontario and India governments was electricity. Therefore, the discrimination relating to generation equipment contained in the FIT Programme was not covered by the derogation of Article III:8(a) of the GATT 1994. The Appellate Body’s approach has been criticised in the literature in favour of the Panels’ approach (Davies 2015).

What is crucial in the Appellate Body’s decision is that it is irrelevant that the products (i.e. solar panels) might be in a close relationship, in the sense that electricity cannot be generated and then procured without electricity generating equipment (i.e. solar panels). Under the current technological stage, without solar cells and modules there is no solar generated electricity. Therefore, solar cells are a central aspect of solar electrical power generation. If the Appellate Body’s position is followed in future disputes, one of the primary conditions for Article III:8(a) of the GATT to be applied is that the trade restrictive measures should be in relation to the product purchased by the government. Therefore, if the trade restrictive measures are directed to green energy equipment, then the government itself should purchase the equipment and generate green electricity. This would, as a result, amount to a situation where the government could only directly acquire the green energy equipment and generate electricity from it. This implies the existence of an electricity market structure with more government interference and participation in the electricity sector, as the role of electricity generation would be carried out by the government.

If governments want electricity to be generated by the private sector, and then be purchased by governments, in order to apply Article III:8(a) of the GATT, the trade restrictive measure would need to be in relation to green electricity not green energy generation equipment (i.e. solar panels). However, in these circumstances, there would be no direct incentive to develop a national green energy manufacturing industry, as the electricity producers could import all equipment to generate green electricity. Therefore, what can be concluded here is that the panel and Appellate Body may have wanted to prevent protectionist measures, but their limited approach may have had the opposite effect. As shown in the case study in GB, for example, participants pointed out that the government would be held responsible and accountable for energy interruption in the country. This may also apply to many other countries. As such, in attempting to prevent trade litigation and be compliant with WTO law,

Member States, particularly countries facing energy security issues, may decide to take control of their national electricity system and exclude the participation of the private sector so as to enable them to adopt policies necessary to ensure their green energy security.

5.2 GATT Article XX

GATT Article XX provide exceptions to its main substantive obligations. The adequacy and sufficiency of Article XX exceptions to enable Member States to meet contemporary challenges have been questioned in the literature (Conrad 2011). With respect to green energy security, Article XX(a) and (j) are most relevant. Article XX(a) and (j) states:

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;

(j) essential to the acquisition or distribution of products in general or local short supply; Provided that any such measures shall be consistent with the principle that all contracting parties are entitled to an equitable share of the international supply of such products, and that any such measures, which are inconsistent with the other provisions of the Agreement shall be discontinued as soon as the conditions giving rise to them have ceased to exist. The CONTRACTING PARTIES shall review the need for this sub-paragraph not later than 30 June 1960.

According to the interpretation by the Appellate Body of the introductory paragraph to Article XX, known as the “chapeau”, exceptions under Article XX have to observe the requirements in the chapeau of Article XX: the measures must not be applied in a manner which involves ‘arbitrary or unjustifiable discrimination’ and they must not be used as a ‘disguised restriction on international trade’. The application of GATT Article XX involves a two-tier test: (i) justification under one of the exceptions—(a) and (j) for green energy security—and (ii) examination of the chapeau. The chapeau is examined after a disputed measure is found to fall provisionally under one of the specific exceptions. A panel adjudicating Article XX should first consider the threshold question to see if the governmental measure being litigated fits within the range of policies covered by the exceptions in the paragraphs of Article XX. If so, then the chapeau would be examined. The burden of proof lies on the party invoking these exceptions (Charnovitz 2014).

There is controversy over whether Article XX can be invoked to justify breaches of WTO Agreements other than GATT. Subsidies, for example, are enacted under the ASCM which does not integrate the provisions of GATT Article XX. In *China—Raw Materials*, the Panel held that GATT exceptions could only be applied to

violations of the GATT unless specifically incorporated into a non-GATT instrument. For Rubini (2012), the need to include ‘express language’ referring to GATT Article XX is ‘unduly restrictive’ and ‘clearly wrong under general principles of interpretation’. However, in *China—Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products* (WT/DS363/AB/R), the Appellate Body held that Article XX of the GATT could apply to China’s Protocol of Accession, and for the first time it showed a positive attitude towards the idea that Article XX might be applicable beyond the scope of the agreement (Pauwelyn 2010; Farah and Cima 2013). This topic, nonetheless, is still being debated and, therefore, it is uncertain whether Article XX can be used to justify green energy subsidies under the ASCM.

Article XX(a) and (j) will be analysed in the following sections.

5.2.1 Article XX(a)—Social Disruption Within Public Morals Exception?

As shown in the case study of Brazil, and acknowledged by participants in the case study of GB, lack of energy supply can lead to social disruption. In this context, the maintenance of public order as an exception may be applicable to green energy security, i.e. as a defence for trade restrictive measures to promote green energy development with a view of ensuring energy security.

However, unlike Article XIV(a) of the GATS which expressly includes as defence measures necessary to “protect public morals” or to “maintain public order”, the exception IN Article XX(a) of the GATT does not expressly include the wording “to maintain public order”. Article XX(a) of the GATT applies to measures “necessary to protect public morals” only. Nonetheless, difficulty remains in determining whether policy objectives invoked in a specific case would actually fall within the scope of public morals or order (Diebold 2008). In this case, could social disruption as a result of lack of energy supply be included within the public morals exception under GATT Article XX(a)?

The interpretation of “public morals” was developed by the Panel in *United States—Measures Affecting the Cross-Border Supply of Gambling and Betting Services* (WT/DS285/R) and adopted by the Panel in *China—Publications and Audiovisual Products*. In particular, it was held that “the term ‘public morals’ denotes standards of right and wrong conduct maintained by or on behalf of a community or nation” and that “the content of these concepts for Members can vary in time and space, depending upon a range of factors, including prevailing social, cultural, ethical and religious values.” The panel also acknowledged that in applying this and other similar societal concepts, Member States “should be given some scope to define and apply for themselves the concepts of ‘public morals’ ... in their respective territories, according to their own systems and scales of values”.

It can be argued that cases of social unrest as a result of lack of energy supply are likely to affect the standards of right and wrong maintained by a country. Thus, following *Brazil—Certain Measures Concerning Taxation and Charges* (WT/DS472/R),

the responding party would have had to establish that green energy development was very important to the country, as a means of maintaining its standards of right and wrong, and that green energy security as a public policy objective at issue was indeed a public moral objective according to its value system. As such, the discriminatory aspects of the trade restrictive measure would need to be necessary in order to ensure continuity of green energy supply.

However, in *Brazil—Taxation*, the Panel also ruled that imports must be taken into account when assessing continuity of supply in a WTO Member State. Thus, the exception under Article XX(a) would probably not succeed for green energy security if green energy technologies were available to be imported. Also, the complaining parties would probably suggest WTO-consistent alternative approaches, such as the lowering of trade barriers to green energy technologies, as a more effective approach of achieving green energy security objectives. WTO-consistent alternative approaches could be valid for ensuring short-term energy security, but not for long-term energy security in circumstances where countries are adopting strategies to have domestic green energy technologies available in cases of trade supply disruptions. Thus, the exception under Article XX(a) is only likely to succeed in situations where there is no green energy technologies available in the international market to be imported. However, as previously stated, the development of a green energy technology industry is not straightforward, so countries would be in a position where they would need to cope with social disruption for some time until their domestic industry is developed to ensure green energy security.

Although not available under GATT Article XX(a), the public order exception is available under the WTO agreement on services set out at GATS Article XIV(a), which establish under footnote 5 that '[t]he public order exception may be invoked only where a genuine and sufficiently serious threat is posed to one of the fundamental interests of society'. An analysis of the defences under GATS is outside the scope of this chapter. However, the recent Panel's decision in *EU—Energy Package* on the public order exception under GATS Article XIV(a) provides insights into how future disputes on green energy security may unfold in the WTO DSB, as the Panel concluded that security of energy supply is a fundamental interest of society within the meaning of footnote 5 to Article XIV(a) of the GATS.

EU—Energy Package is a recent and the only WTO case so far where security of energy supply was directly related to maintenance of public order. In *EU—Energy Package*, the European Union (EU) raised the public order exception under GATS Article XIV(a), arguing that the trade restrictive measure was necessary to ensure the EU's security of energy supply and hence to maintain public order on the basis that security of energy supply is a fundamental interest of society. Although dealing with the interpretation of the public order exception rather than the public morals exception, and with conventional energy rather than green energy, the recent Panel's decision in *EU—Energy Package* made important remarks relating to the concept of security of energy supply.

According to the Panel, the lack of a definition of security of energy supply in a Member State's legal documents are no basis for concluding that Article XIV(a) covers only fundamental interests which are defined in the challenged measure or

elsewhere in the legislation of the responding party. However, a certain minimum level of clarity is required in order to assess, in a meaningful manner, whether a stated interest can be considered a fundamental interest of society within the meaning of footnote 5. Also, as the responding party bears the burden of making a *prima facie* case when advancing a defence, it is then for the responding party to provide sufficient clarity concerning the meaning of the concept of security of energy supply during the proceedings.

Thus, there is no reason as to why the same conclusions should not be applied to the public morals exception. This, therefore, means that, if energy security is invoked as an element of public morals, legal documents do not necessarily need to define what energy security is as long as the concept is defined with clarity during proceedings. Given the multiplicity of energy security concepts shown in previous chapters, and the manipulation of energy security language for one's own interest as shown in the case study on GB in Chap. 4, this approach leaves broad discretion for energy security to be defined in proceedings in a way which is most advantageous for the responding party. It is unfortunate that the Panel took this approach as, based on this, it would be wise for Member States not to define energy security in their laws and policies, as this would limit the range of interpretative possibilities relating to the concept that a respondent party could raise as defence. However, such an approach will not bring clarity or stability to the green energy security debate.

Another important finding of *EU—Energy Package* is that the Panel did not require imminent or actual social unrest to grant the defence. Therefore, that social disruption has materialised is not a prerequisite for the public order exception. What is needed is the existence of a real and true possibility of security of supply being undermined. As this was the standard applied to public order, there is no reason as to why a Panel would apply a higher standard to the public morals exception. Therefore, it seems that it is sufficient for a Member State to show evidence that social unrest as a result of lack of security of green energy supply would undermine the protection of public morals. The materialisation of social unrest is not necessary. However, this exception for green energy security is still likely to fail if there is international green energy technologies trade. This exception, therefore, does not allow for countries to strategically prepare in advance for long-term green energy security in circumstances where international trade is not available.

5.2.2 Article XX(j)—Short Supply Exception

Article XX(j) was interpreted for the first time by the WTO DSB in *India—Solar Cells*. When raising Article XX(j) exception as a defence, India advocated a holistic approach by arguing that the domestic content requirement measures and the basis for invoking Article XX(j) needed to be seen in the context of the overall objectives of energy security and ecologically sustainable growth for which acquisition or distribution of indigenously manufactured solar cells and modules was essential, as well as being seen in the context of India's overall energy scenario and the challenges it

was currently facing, which were characterised by India's rising energy deficit, and its dependence on fossil fuels and imported materials for its energy requirements.

The US, as complainant and appellee, made no categorical comments in relation to India's public policy regarding energy security. The US advocated the narrow approach of taking into account the language of the WTO provisions only and not considerations regarding the achievement of policy objectives. For the US, the policy rationale behind the measure should not be considered a valid ground. In the US's written submissions to the Panel and to the Appellate Body, the wording 'energy security' or 'security of supply' was never used in the US's own arguments. The US acknowledged the environmental underpinnings of the National Solar Mission by noting that the promotion of solar energy was 'a laudable goal that the United States and many other WTO Members share, and it is not this environmental objective that the United States challenges in this dispute'.

The US gave no explanation about the lack of debate on their part concerning energy security as a public policy and the reason as to why this was not advanced remains unknown. Two hypothetical reasons for this can only be briefly surmised here. It could be that the US decided not to draw attention to energy security as an important factor as a diversionary tactic to actually prevent the Panel and Appellate Body from having to acknowledge energy security as an important ground for derogation, or that the US genuinely thought that energy security played no explicit role in the configuration of the issues at stake in this case. However, there is no certainty in these arguments. Whatever the reason might be, the US decision not to engage with the energy security argument reveals a tension surrounding this issue and the potential for energy security to be deployed in various strategic ways to suit certain policy needs.

The Panel did not endorse India's argument, but limited and centred its legal reasoning on the interpretation of the terms of the provisions pursuant to the ordinary meaning of the terms, as well as in light of the interpretation related to the history of Article XX(j) as a way of confirming its interpretation.

India's policy objectives were dismissed as 'legally irrelevant' by the Panel:

[...] we do not consider that these wider objectives of energy security and sustainable development would be legally relevant to the question of whether the DCR measures are "essential to the acquisition" of products in short supply under Article XX(j). We therefore disagree with India's statement that, in the context of Article XX(j), the DCR measures must "be examined in the context of the overall objectives of energy security and ecologically sustainable growth for which acquisition or distribution of domestically manufactured solar cells and modules is essential".

Similarly to the Panel, the Appellate Body's analysis was limited to the interpretation of the language in the articles raised by the parties. The Appellate Body confirmed the Panel's finding that India's lack of domestic manufacturing capacity was not sufficient to constitute product shortage and agreed that India merely identified potential disruptions to imports and failed to demonstrate any actual disruptions. Energy security as a public policy played no role in the legal reasoning of the Panel or the Appellate Body. For the Panel, policy objectives are legally irrelevant under article XX(j). For the Appellate Body, policy considerations may inform the nature

and extent of the provisions under Article XX(j), but the party invoking the exception must demonstrate the applicability of the ordinary meaning of the terms of the WTO provisions. Therefore, the focus has been primarily on the need for the invoking party to meet the substantive requirements of the relevant provision of WTO law.

Turning to the interpretation of the language under Article XX(j), the argument that import dependency amounts to energy security concerns will most likely fail in any dispute. Based on the Panel and Appellate Body's decision, it can be understood that the following criteria must apply concomitantly:

- (i) Members are not entitled to an equitable share in the international *production* of green energy products but instead are entitled to an equitable share of the international *supply* of green energy products. Therefore, a Member State cannot raise the argument that it needs its own domestic production of green energy equipment when there is access to the international supply of the product. Thus, if there is supply availability of the product in the international market, Article XX(j) cannot be raised;
- (ii) There must be *imminent* risks of supply shortage or *actual* supply shortage of green energy equipment, not *potential* risks. The simple existence of low domestic manufacturing capacity does not qualify as an imminent risk. Thus, evidence of the lack of supply or evidence of imminent risks of supply shortage is key for the applicability of Article XX(j). Arguments about possible shortages in the future do not fall within Article XX(j). The level of domestic production, the relevant product and geographic market, potential price fluctuations, and accessibility of international supplies, for instance, will be taken into account to demonstrate the availability and sufficiency of the product. Also, in assessing whether a product is in general or local short supply, the stage of development of a Member State should be taken into account in determining exposure to supply disruption. As noted by the Appellate Body, 'different levels of economic development of Members may, depending on the circumstances, impact the availability of supply of a product in a given market. Developing countries may, for example, have less domestic production, and may be more vulnerable to disruptions in supply than developed countries.' Although the Appellate Body leaves more room to apply the short supply exception under Article XX(j) to developing countries, only allowing imminent or actual risks of supply shortage may still cause greater adverse impact on developing countries that are dependent on imported green energy technological products. These products require a certain level of human and technological expertise and time in order to develop an adequate domestic manufacturing capacity, and if there is a significant imminent or actual supply shortage it may be too late to adopt measures that avoid green energy supply disruption;
- (iii) The trade restrictive measures must be *essential* to address the situation of short supply. The meaning of essential was not clarified by the Appellate Body. However, the Appellate Body points out that the same process of weighing and balancing a series of factors for a "necessity" analysis under Article XX(d) is relevant in assessing "essential" under Article XX(j).

Therefore, for trade restrictive measures with a view to developing green energy to be justified under GATT Article XX(j), there must be an imminent or actual supply shortage and the measures must be essential to addressing the supply shortage. The position is, therefore, based on short-termism, which can cause great adverse impact on countries dependent on imported green energy technological products in an event of unavailability of the products in the market. These products require a certain level of human and technological expertise and time in order to develop an adequate domestic manufacturing capacity and if there is a significant imminent or actual supply shortage it may be too late to adopt measures that avoid green energy supply disruption. Also, based on the interpretation given to GATT Article XX(j), the argument of developing a green energy domestic manufacturing capacity in order to ensure long-term green energy security has no chance to succeed.

5.3 *GATT Article XXI: National Security*

GATT Article XXI provides:

Nothing in this Agreement shall be construed

- (a) to require any contracting party to furnish any information the disclosure of which it considers contrary to its essential security interests; or
- (b) to prevent any contracting party from taking any action which it considers necessary for the protection of its essential security interests
 - (i) relating to fissionable materials or the materials from which they are derived;
 - (ii) relating to the traffic in arms, ammunition and implements of war and to such traffic in other goods and materials as is carried on directly or indirectly for the purpose of supplying a military establishment;
 - (iii) taken in time of war or other emergency in international relations; or
- (c) to prevent any contracting party from taking any action in pursuance of its obligations under the United Nations Charter for the maintenance of international peace and security.

GATT Article XXI permits derogation from otherwise applicable trade obligations, such as the WTO provisions of national treatment and MFN, in cases of ‘essential security interest’. Unlike the general exceptions under Article XX, the security exception encompasses a non-conditional provision. In the literature, the view is advanced that, with Article XXI, Members have sought to retain a degree of autonomy over decisions in ‘sensitive’ policy areas, while balancing the tension between their national security and free trade (Akande and Williams 2003). Scholars agree that the language of Article XXI is broad and ambiguous, (Jackson 1997; Cann 2001; Lindsay 2003; Neuwirth and Svetlicinii 2015) giving Member States an open-ended discretion and a potential power to abuse it (Yoo and Ahn 2016).

A number of authors have debated the self-judging character of essential security provisions. At invocation, a contest existed between security exceptions as self-judging ‘release valves’ on the one hand, where only WTO Member States had the

authority to define their ‘essential security interests’, and as a justiciable and limited means of escaping trade obligations on the other hand, where security exceptions allowed members restricted, but lawful, derogation from their trade obligations subject to review by a dispute settlement body. However, in *Russia—Traffic in Transit*, a panel interpreted Article XXI for the very first time. In *Russia—Traffic in Transit*, the Panel found that WTO panels have jurisdiction to review aspects of a Member’s invocation of Article XXI and clarified the requirements for a successful invocation of this exception provision. The question then is whether clean energy security falls within the security exception under GATT Article XXI.

5.3.1 Applicability of Article XXI to Green Energy Security

Article XXI is divided into three paragraphs, but, generally speaking, the security exception embraces five categories: (1) national security information [Article XXI(a)]; (2) fissionable materials [Article XXI(b) (i)]; (3) military goods and services [Article XXI(b)(ii)]; (4) war or international emergencies [Article XXI(b)(3)]; and (5) UN obligations [Article XXI(c)] (Perez 1998).

Common to the first two paragraphs of Article XXI is that both provide that the essential security interest of the WTO Members is protected under the security exception. However, the difference between them lies in the fact that paragraph (a) allows for abstention from actions in order to protect these interests, whereas paragraph (b) provides that a Member State could, for the interest of its essential security interests, take certain actions, even though they might be infringing. However, the panel in *Russia—Traffic in Transit* clarified that this discretion to take action is limited to circumstances that objectively fall within the scope of the three subparagraphs of Article XXI(b). Paragraph (c) requires prior decision under the UN Charter in order to become applicable. Thereby, this provision expressly gives priority to the obligations under the UN and specifically the Security Council, when clashing with the GATT (Bhala 2013).

Even though in the case study of Brazil there was no express association of energy security with national security in law and policies in any of the documents analysed, and in the case study of GB, interviews with leading energy experts did not present express evidence of an association of energy security with national security, energy security can be closely tied up with national security. Although GATT Article XXI was not drafted with energy trade in mind (Shih 2009), the fact that traditional energy goods could rely on the national security exception under Article XXI has already been accepted by the WTO (1998). Nonetheless, the reference to ‘traditional energy goods’ can be precisely interpreted as fossil fuels and nuclear energy. Scholars have also already suggested the use of energy security as a ground on which national measures can be insulated from trade under the national security exception of GATT Article XXI on the basis that energy products and services are absolutely essential for society to function (Zillman 1994; Shih 2009; Hough 2010; Nedumpara 2014). However, their analysis points towards reference to fossil fuels and nuclear energy only. There are no studies which examine whether green energy security can fall

within the national security exception under GATT Article XXI. What can be safely inferred is that including green energy security as a ground under Article XXI would require the terms of this provision to be interpreted in light of contemporaneous circumstances.

That the term ‘essential security interests’ in the first two paragraphs of Article XXI includes matters beyond purely military threats can be safely concluded from the Panels’ finding in *Russia—Traffic in Transit* that ‘essential security interests’ could be generally understood as referring to those interests relating to the quintessential functions of the State. However, as the specific interests at issue depends on the particular situation and perceptions of the State in question and vary with changing circumstances, the Panel left ‘essential security interests’ to be interpreted by the country invoking it, although its interpretation and application must be done in good faith.

As such, if Member States wish to raise clean energy security within the scope of Article XXI, evidence in laws and policy documents of clean energy security being defined as essential security interests would be important when the Panel and the Appellate Body examine whether the Member’s designation of its essential security interests was made in good faith and whether the measures taken were plausible to protect those security interests or constituted an apparent abuse.

However, would the association of clean energy security with national security be beneficial? In a positive vein, it would promote the national development of clean energy. However, in a negative vein, Member States would be securitising the promotion of clean energy, which can make, for instance, the development of clean energy a justification for using military force or other instruments of coercion, override access to information, reinforce the discourses of control, restrict public participation and limit individual freedom. These consequences would certainly not be desirable. Nonetheless, Member States now seem to be willing to defend their measures by an invocation of the security exception in formal dispute resolution proceedings. It is, therefore, possible that Article XXI would be raised on the grounds of clean energy security.

5.3.2 Is Economic Security a National Security Interest Under Article XXI?

Another way of attempting to include green energy security within the scope of Article XXI is to ask whether economic security can amount to national security interest. It is widely acknowledged that energy is an essential enabler of economic prosperity. As demonstrated in the case studies of GB and Brazil, energy supply interruption not only negatively impact the economy in terms of production and job availability, for instance, but also in terms of attracting investments. Energy security is, therefore, essential for the well-functioning of an economy. In the case study of Brazil, in particular, the framing of energy security was in the context of economic development, demonstrating that energy security in Brazil is first and foremost an economic issue. In this sense, green energy supply interruption, particularly supply

of biofuels in the context of Brazil, could negatively impact the economy not only as a result of lack of energy, but also as a result of reduction of the economic output for the country from biofuels. Therefore, associating green energy with economic security is not a difficult task. In these circumstances, could a Member State raise the argument of economic security under Article XXI in order to adopt trade restrictive measures to promote green energy development?

So far, economic security has not been invoked under GATT Article XXI in a WTO dispute. However, in the literature, economic security has been argued to be a dimension of national security (Covey 1996; Ronis 2011; Valdron 2016; Antonova and Ponomarenko 2016), particularly as a result of increased interdependence in global markets where one nation's default may trigger a worldwide chain reaction, cascade failures and may cause a calamity (Romm 1993). Economic security has been broadly defined to include securing a nation's industrial and technological base, access to critical materials and resources and the functioning of critical infrastructures and services that are required for critical societal functions (Fjäder 2016) as well as with reference to global capital and commodities markets flows (Rickards 2009).

In terms of the inclusion of economic security within the national security exception under GATT Article XXI, according to Broome, the few disputes in the GATT invoking Article XXI, as well as the negotiating history of Article XXI do not seem to support economic security within the meaning of "essential security interests" (Broome 2006). In his view, equating economic security with national security in the context of Article XXI would likely constitute an unacceptably broad interpretation of Article XXI.

However, the broader concept of economic security would not be difficult to be included within the dimension of essential security interests under Article XXI if a contemporary interpretation was adopted. It would be important for a Member State raising this point to show in its laws and policies that its society places a great importance on its economic security as a national security interest, although this should be done in good faith.

As the textual content of the GATT was not fully developed regarding the situations where measures could be adopted for security reasons, the scope of Article XXI is still quite unsettled. One of the consequences of securitisation is that security concerns can be devised in order to achieve certain policy aims. Policy makers can place a specific matter of interest under the security umbrella to prioritise and push forward the approval of preferred policies. However, care should also be taken in its interpretation as, in the words of Professor Jackson (1969), the national security exception 'can reopen the door to arbitrary abuse'. GATT Article XXI should not be seen as a political instrument with the aim to enable the contracting parties to take actions or adopt measures with a view of achieving a particular public policy and protecting certain interests, such as green energy security. Its applicability should be as a last resort.

5.4 *Final Remarks on the Section*

This section has demonstrated that there might be some room for short-term green energy security within the defences under Articles III:8(a), XX(a) and (j) and Article XXI. However, under Article XX(a), this means that the defence only applies in circumstances where there is no international trade available, and the exception under Article XX(j) also requires actual or imminent short supply. These defences, therefore, are of no use to countries wishing to apply trade restrictive measures to develop their green national industry as a strategic way to prepare them for any circumstances where there is limited or no international trade, such as pandemics, political unrest, conflicts and trade embargoes.

For long-term green energy security, i.e. countries seeking to develop their domestic green energy industry so that they do not become overly dependent on imports and international trade in cases of trade disruption, the only possible defences are under GATT Article III:8(a) and GATT Article XXI. However, according to the Panel's and Appellate Body's decisions on green energy jurisprudence so far, it seems that trade restrictive measures under Article III(8) will only have chances to succeed in a scenario where the energy market structure is basically nationalised, that is, without the participation of the private sector in a competitive relationship. Invocation of the national security exception under Article XXI to defend trade restrictive green energy measures may also be possible, but will have the consequence of green energy being securitised. From the foregoing analysis, therefore, it seems that room for long-term green energy security is only available under GATT if the government takes control over the energy market or if green energy is expressly associated with national security.

Future WTO Panels and the Appellate Body could follow a different approach, be it a wider and holistic one or even a more restrictive approach, as the Appellate Body has a significant amount of discretion in how they interpret WTO provisions (Scott 2007). Previous cases show, for example, that some adjudicators in the GATT/WTO have contributed to shifts in the meaning of the general exceptions enshrined in Article XX of the GATT (Venzke 2011). Nevertheless, while in WTO jurisprudence previous decisions are not binding for all future cases, the Appellate Body strives to maintain consistency between a ruling in an appeal and of that in subsequent appeals involving the same issue (Matsushita 2015).

An option for reverting the limited defences available for long-term green energy security could be the adoption of a broader, holistic and contemporary interpretation of the provisions, involving weighing and balancing the importance of the interest being protected, the contribution of the measure to the protection of that interest, and the trade-restrictiveness of the measure, in light of any WTO-consistent less trade-restrictive reasonably-available alternatives that could achieve the same level of protection. As per Van Damme, '[t]reaties are incomplete. Nothing is decided comprehensively in advance. Treaties reflect a negotiated political compromise and will leave issues unanswered, unprovided for, or unclear (Van Damme 2009). Such

is the case for green energy security when the texts of the WTO agreements were negotiated.

Nonetheless, how far can the WTO DBS adjudicators go beyond what could be considered ‘ordinary interpretation’? The answer is controversial and brings criticisms of illegitimacy directed at the WTO system as a whole. The fine line between interpretation of factual circumstances of vague provisions and that which goes beyond is hard to draw. What is clear, nonetheless, is that the modern world faces challenges which were not in place when WTO law was enacted. Therefore, WTO rules are not well designed to address some issues. For example, transitioning to a greener energy supply whilst having to cope with increasing population and rising energy demand is a key issue worldwide, and the terms of the WTO provisions were not negotiated with these problems in sight. A reductionist interpretation, particularly if the interpretation of WTO law is by recourse to the history of the provision, may not be able to take into account the current challenges faced by society or prepare society for possible future challenges. The primary responsibility for achieving green energy security lies not with the WTO, but rather its Members: national governments.

Rule change through litigation strategies to alter the interpretation of existing WTO rules also has additional negative aspects, such as governments having to use taxpayers’ money to resort to the lengthy and costly litigation process under the WTO. This would particularly affect developing and least developed countries as they often lack the resources to participate in the litigation (Horlick and Fennell 2011). Also, the decisions still would not bring legal certainty as decisions are not authoritative in all future cases. WTO rules, nonetheless, must address the concerns of Member States in ensuring green energy security without fearing WTO litigations. The next section will propose a possible solution.

6 Proposal for Green Energy Security in the Law of the WTO

The previous section demonstrated that policy space for green energy security within the GATT exceptions is limited, particularly for long-term green energy security strategies. However, green energy security solutions must be not only short-term, but also long-term. The benefits of trade do not necessarily imply that WTO membership has been doing an adequate and sufficient job of promoting green energy security worldwide. Green energy security should be a critical long-term domestic policy goal, and, as such, should not be ignored in the WTO and should assume a high profile in this system due to the need to transition to a low carbon energy system.

The WTO seeks liberalised trade in a world where green energy technologies are still an emerging industry in most countries. The WTO, therefore, should support the creation of competitive and stable domestic industries that could supply the domestic and international markets. The proposal which follows is based on the assumption that where domestic producers could not compete with foreign imports

absent government protection, WTO law should allow the protection afforded to domestic producers, so that such producers can develop their industry. Support for the development of domestic green energy industries worldwide could enable an otherwise uncompetitive domestic industry to become competitive to such an extent that it could supply the national and international markets, resulting in a more evenly distributed global green energy market and lower prices for consumers and, therefore, a net welfare benefit in terms of social development and inclusion worldwide.

There might be WTO compliant incentives available to promote green energy development domestically. However, if countries are using local content requirements and subsidies non-compliant with WTO law, one could expect that this would be based on an economic and technical analysis of the most viable and efficient manner to develop a green energy industry nationally in accordance with a country's circumstances. Therefore, as long as there is evidence of this economic and technical analysis, i.e. an analysis of absence of viable and efficient non-trade restrictive measures to foster the development of a domestic green energy industry, Member States should be allowed some policy space to develop their green energy industry with a view of ensuring short-term and long-term green energy security. The proposal below will elaborate on how to create such policy space.

The WTO multilateral trading system could and should become a relevant tool for supporting green energy security in a world where green energy security concerns are becoming increasingly more widespread and attempts are made to carry out a just energy transition. However, how do we create the legal space in the WTO for trade restrictive measures aiming to ensure green energy security? A proposal will be discussed in the following subsection.

6.1 Proposal—The Way Forward

While the multilateral trade rules are oriented towards ensuring market access, WTO law should also be supporting green energy scale-up. Thus, the proposal is to allow temporary trade restrictive measures subject to an economic and technical analysis of the most viable and efficient manner to develop green energy technologies domestically in accordance with a country's circumstances, so that Member States can develop a percentage—ten percent, for example, to be agreed amongst Member States—of their national green energy industry. This would temporarily bring the world to a scenario in which there would be two basic groups of main players: (i) countries with national green energy industry developed and (ii) countries with no or emerging green energy industry.

These two groups would have differing sets of trade obligations. Countries with no or emerging green energy industry would enjoy “special and differential treatment,” to allow them to develop a percentage of their domestic industry. Although this approach means that the trade regime would be asymmetrical, this asymmetry would be temporary, as when countries achieved, for example, ten percent of domestic market share, they would graduate to taking on full trade obligations. One may

criticise this proposal as inadequate for a sustainable non-discriminatory multilateral trading system. However, this type of measures would be transitional and would assist in bringing a plurality of green energy players into the national and global green energy markets. By increasing the number of market participants, it would boost reliability of green energy technologies supply. With a plurality of green energy players worldwide, unpredicted trade restrictions scenarios would also be less likely to cause green energy interruption, as this proposal would support the opening of new routes to supply of green energy technologies. How the proposal could be implemented is discussed as follows.

6.2 How to Implement the Proposal?

Member States need to use a pragmatic approach to address green energy security. Thus, Member States could consider two options: (i) add a permanent green energy security exception; or (ii) agree on a temporary implementation of a waiver.

Amendment of existing WTO rules and the formulation of new rules in order to strengthen policy space for green energy security purposes could be an option via the inclusion of a green energy security exception under GATT. Attempting to amend agreements under the WTO is, nonetheless, quite complicated, not only because of the nature of the negotiations, but also because of the body's decision-making processes (Gardoqui and Ramírez 2015). Realistically, negotiations on this process would be complex, time consuming and subject to political will. Given the unsuccessful Doha Round trade talks, the latest round of trade negotiations among the WTO membership, this option seems unfeasible at the moment. It would, nonetheless, serve to demonstrate the functionality of the global trade body's negotiating arm.

Waivers may also be an option. The WTO's waiver power is found in Article IX:3 of the Agreement Establishing the WTO (WTO Agreement). It allows the Ministerial Conference '[i]n exceptional circumstances... to waive an obligation imposed on a Member by this Agreement or any of the Multilateral Trade Agreements, provided that any such decision shall be taken by three-fourths of the Members'. Thus, the WTO waiver is the power of the WTO Ministerial Conference to suspend any legal obligation of the WTO Agreement or the annexed Multilateral Trade Agreements to address tensions, such as the tension between international governance and domestic government, and the tension between societies at different stages of economic development and with different forms of government (Feichtner 2011). The waiver is a binding legal act which formally suspends legal obligations and thus allows for non-compliance without putting into question the validity of WTO law (Schermers and Blokker 2003). The waiver, therefore, can allow Member States to take measures in violation of WTO obligations in respect of green energy development. Thus, Member States should consider the waiver as an option for policy space for green energy security as its use would flexibilise WTO law and thus address the tensions identified above.

The terms and conditions governing the applicability of the waiver for the development of a minimal percentage of a national green energy industry in line with the aforementioned proposal should provide for specific time limits to be set when a waiver is granted, an annual review and its termination.

A waiver decision, according to Article IX:3 of the WTO Agreement, needs to be adopted by three-fourths of the members. Although this is a strict voting requirement, it is less challenging than attempts to modify WTO texts. However, waivers are not granted to developed Member States to allow them to adopt protectionist measures (Feichtner 2011). Therefore, waiver to allow green energy development could only be granted to developing and least-developed country members. This limitation, nonetheless, should not prevent the use of a waiver as, in practice, developing and least-developed country members have far greater difficulties in developing their national green energy industry.

The waiver would, therefore, allow developing and least-developed Member States to maintain trade restrictive measures in violation of WTO law for green energy security reasons to allow a minimal percentage of a national green energy industry to be developed. An exception in this direction could provide the right incentives for countries to acquire serious commitments on long-term green energy security and at the same time promote the stability of the multilateral trading system with the existence of a plurality of green energy players widespread around the world.

The international community needs to respond realistically to countries wanting to develop their green energy industry on the basis of ensuring green energy security. With this proposal, domestic policies supporting the development and scale-up of green energy for energy security purposes would be more explicitly permissible and thus sheltered from challenge. This proposal is intended to open the debate in this direction.

7 Conclusions

This chapter examined whether there is any flexibility within the current GATT/WTO rules and the interpretation given to them that permit trade restrictive measures which support green energy security. It showed that green energy development has increasingly come to be associated with energy security in the WTO jurisprudence. An analysis of the WTO green energy disputes involving energy security revealed that broader concepts of energy security found in the literature which include environmental, climate and social considerations have not reached the jurisprudence in the WTO system yet.

Energy security concepts have been raised differently by respondents. While in *Canada—Renewable Energy* and *Canada—Feed-In Tariff Programme* the concept focused on availability and reliability, in *India—Solar Cells*, in addition to availability and reliability, affordability is also placed as part of the energy security concept. Interestingly, the energy security concept as raised by Canada is the same concept

raised by the majority of participants in the case study of GB, which is correlated to the view adopted by the UK government in recent policy documents. The concept raised by India which include the elements of availability, reliability and affordability is the same concept in the current legal framework in Brazil as shown in Chap. 3. However, energy security concept is dynamic and evolves, so it may be just a coincidence that developed countries, i.e. Canada and UK, currently use the same concept, while emerging economies, i.e. India and Brazil, currently use the same concepts. Further comparative studies on the topic would be necessary to draw any further conclusions here.

What was also an interesting finding in the analyses of *Canada—Renewable Energy and Canada—Feed-In Tariff Programme* was the fact that the panel and Appellate Body presented a different framing for green energy and energy security links. While the panel focused on green energy not supporting energy security due to green energy intermittent nature, the Appellate Body advanced the role played by green energy in ensuring energy security in the long-term. From a legal perspective this divergence in frames has implications for the interplay between energy security and green energy under WTO law, because the frame adopted can impact the applicability and interpretation of WTO provisions. The negative frame, for instance, cuts down the room for energy security to be raised as a legal defence for trade restrictive measures adopted to promote green energy. Such negative frame might signal about the inability of WTO to adapt to a changing global landscape and add to the discontent among its membership.

The analyses of room for green energy security as a justification for trade restrictive measures concluded that there might be some room for short-term green energy security within the defences under Articles III:8(a), XX(a) and (j) and Article XXI. However, under Article XX(a), this means that the defence only applies in circumstances where there is no international trade available, and the exception under Article XX(j) also requires actual or imminent short supply. These two exceptions under GATT Article XX are only likely to succeed in situations where there are no green energy technologies available in the international market to be imported. However, the development of a green energy technology industry is not straightforward, so countries would be left in a position where they would need to cope with the negative consequences of imminent or actual green energy supply disruption for some time until their domestic industry is developed to ensure green energy security. These defences are also inapplicable to countries wishing to adopt trade restrictive measures to develop their national green energy industry as a strategic way to prepare them for any circumstances where there is limited or no international trade, such as pandemics, political unrest, conflicts and trade embargoes.

For long-term green energy security, i.e. countries wanting to develop their domestic green energy industry so that they do not become overly dependent on imports and international trade in cases of trade disruption, the only possible defences are under GATT Article III:8(a) and GATT Article XXI. However, according to the Panel's and Appellate Body's decisions on green energy jurisprudence so far, it seems that trade restrictive measures under Article III:8(a) will only have chances to succeed in a scenario where the energy market structure is basically nationalised, that is, without

the participation of the private sector in a competitive relationship. The panel and Appellate Body may have wanted to prevent protectionist measures, but their limited approach may have the opposite effect. In attempting to prevent trade litigation and be compliant with WTO law, State Members, particularly countries facing energy security issues, may decide to take control of their national electricity systems and exclude the participation of the private sector to adopt policies necessary to ensure their green energy security.

Trade restrictive measures within the national security exception under Article XXI may also be possible, but will have the consequence of securitising green energy, which is not desirable. However, given how rarely GATT Article XXI is invoked, Member States do not seem to be willing to defend their measures via the invocation of the security exception in formal dispute resolution proceedings. In any case, given the negative consequences of securitisation, such as justification for using military force or other instruments of coercion, overriding access to information, reinforcing discourses of control, restricting public participation and limiting individual freedom, GATT Article XXI should be used as a last resort.

An option for reverting the limited defences available for green energy security could be the adoption of a broader, holistic and contemporary interpretation of the terms of the provisions, involving weighing and balancing the importance of the interest being protected, the contribution of the measure to the protection of that interest, and the trade-restrictiveness of the measure, in light of any WTO-consistent less trade-restrictive reasonably-available alternatives that could achieve the same level of protection. However, rule change through litigation strategies to alter the interpretation of existing WTO rules has negative aspects, such as governments having to use taxpayers' money to resort to the lengthy and costly litigation process under the WTO. This would particularly affect developing and least developed countries as they often lack the resources to participate in the litigation. Also, the decisions still would not bring legal certainty as decisions are not authoritative in all future cases.

This chapter argued that an evenly distributed market share of green energy technologies and equipment around the world is the best solution to ensure green energy security in the context of the just energy transition. The WTO multilateral trading system could and should become a relevant tool for supporting green energy security in a world where green energy security concerns are becoming increasingly more widespread and attempts are made to carry out a just energy transition. This work, therefore, proposed a way forward to create the legal space within the WTO for trade restrictive measures aimed at ensuring green energy security. The proposal involved allowing temporary trade restrictive measures subject to an economic and technical analysis of the most viable and efficient manner to develop green energy technologies domestically in accordance with a country's circumstances, so that Member States could develop a percentage of their national green energy industry. With this proposal, domestic policies supporting the development and scale-up of green energy for energy security purposes would be more explicitly permissible and thus sheltered from legal challenge. This proposal is intended to open the debate in this direction.

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