The Green Economy under the WTO Regime: Policy Space for Renewable Energy Support Mechanisms

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Abstract

The thesis analyzes the interaction between the international trade rules and climate change mitigation through the lens of trade-related renewable energy measures. It is critically important to examine the compatibility of countries' renewable energy measures that may have trade implications with the World Trade Organization rules. The role that trade and trade rules play in enhancing the supportiveness towards climate change mitigation goal is potentially large and should be fully utilized.

This thesis divides renewable energy measures into two broad categories: de-carbonization measures and green industrialization measures on the basis of the underlying policy objectives. The former refers to renewable energy measures that are adopted to reduce carbon intensity, primarily in electricity. An example would be feed-in tariffs, which are widely used around the world to substitute fossil fuel electricity with renewable energy electricity. The latter refers to renewable energy measures that are adopted to enhance manufacturing capacity of renewable energy equipment in domestic renewable energy industry. For instance, local content requirements are imposed to promote the manufacturing of domestic renewable energy equipment. Although measures that aim at de-carbonization and green industrialization can overlap in some cases, they differ to a large extent with respect to the underlying primary objectives, policy design and implementation as well as possible implications on the trading system.

Relying on the rulings made by the WTO adjudicators in a series of renewable energy disputes, this thesis puts forward following arguments. Firstly, there exists some policy space for WTO Members to make use of trade-related de-carbonization renewable energy measures, particularly under the WTO subsidy rules. Secondly, the policy space for de-carbonization is filled with uncertainties due to the WTO treaty language and relevant case law. Thirdly, the scope of policy space that the Members have in making use of trade-related green industrialization renewable energy measures is not unlimited. It is extremely difficult, if not entirely impossible to justify blatantly discriminatory renewable energy industrial policy measures. Measuring the scope of policy space that the WTO rules shape for the Members' renewable energy measures is of critical importance.

The interaction between the WTO rules and climate change mitigation not only underscores the need to make the current trade rules properly accommodate climate goals but also reflects the role of the WTO regime in removing trade barriers that are also climate unfriendly. Apart from gathering the momentum to amend the current WTO legal framework, it is crucially important that the Members design

and implement renewable energy measures in a WTO-consistent manner. This thesis proposes to examine the feasibility and desirability of renewable energy target setting as a way to develop renewable energy and mitigate climate change while still remaining WTO-compliant.

Key Words: WTO, Climate Change, Renewable Energy, De-carbonization, Green Industrialization, Subsidy

摘要

这篇论文主要以可再生能源支持政策为切入点探讨现有的世界贸易组织条款和气候变化之间的关系，即国家和政府对可再生能源的发展支持是否会对国际贸易产生影响，又或是能否与世界贸易组织条款相兼容。该篇目的就是从本质上提高贸易机制对发展可再生能源和削减气候变化的不利影响的积极作用。长久以来，世界贸易和气候变化的两个法律框架平行前进，交集甚少。而最近的十几二十年里， 越来越多的发达国家以及发展中国家采用各种各样的政策和策略支持可再生能源的发展从而对国际贸易体系造成不同程度的影响，其中有一部分是限制性的不利影响。世界贸易组织的争端解决部门受理了一系列相关的可再生能源政策纠纷。在这种越演愈烈的可再生能源贸易斗争的背景下，一个颇具重要性的研究问题就是：世界贸易组织体系对发展可再生能源以及减轻气候变化问题的威胁性真的会有作用吗?

这篇论文将可再生能源化分为两大类并依次讨论世界贸易组织条款对这两类政策的立场。第一类政策是“去碳化”政策，即指以减少能源生产中的碳含量为主要目的的可再生能源政策，比如上网电价。第二类政策是“绿色产业”政策，即指以增强可再生能源制造业能力的政策，比如补贴，本地化政策。两起已经被争端解决机构解决的可再生能源案件为这个问题的研究提供了很好的素材。

通过对世界贸易组织条款以及案件判决的研究可以得出，在现有世界贸易组织法律框架之下，尤其是补贴条款，一些“去碳化“的政策还面临着很多的不确定因素甚至不必要的约束。因此本篇论文提出意见以增加世贸组织补贴条款对“去碳化”政策的必要扶持，这也能增强世贸组织对气候问题的理解和帮助从而增进贸易领域和气候领域的兼容性。另一方面，世贸组织对带有贸易歧视的“绿色产业“政策持有很明确的反对意见。比如，世贸组织明令禁止在可再生能源产业里实施本土化政策因为这种行为直接违背了非歧视原则。这不仅有利于维护世界贸易体系的基本原则，也有助于移出对解决气候变化并无太大益处的贸易壁垒。这些存在于可再生能源领域内的贸易壁垒增加了成本，降低了创新，破坏了公平有效的竞争环境从而减缓了可再生能源的发展。

本文提出建立合理有效的可再生能源发展目标的构想，因为这样不仅可以大力发展制造业，还可以灵活调动其他可再生能源产业链上的部门，比如，科技开发，服务业，安装维修等一系列。同时，设立目标是不违反世界贸易组织的条款。这也很好的彰显了世界贸易组织的规则和气候变化的核心之间有共通共存的巨大空间。

关键字：世界贸易组织，气候变化，可再生能源，非歧视原则，补贴

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Chapter 1: Introduction and Overview

The purpose of this thesis is to analyze the interaction between the trade regime and climate change mitigation through the lens of trade-related renewable energy measures. The thesis attempts to delineate and measure the scope of policy space that governments have in designing and implementing renewable energy measures while at the same time fulfilling their trade commitments under the World Trade Organization ('WTO')[1]. It is of significance to explore whether the WTO can take into account public policy objectives, such as climate change mitigation and provide policy space for the Member's climate-related actions.

Although the trade regime and climate regime have been evolving independently and on separate tracks for some time, the two have increasingly been coming together and intertwined in the last two decades. As the economic integration and interdependence between countries grows stronger, the trading system agenda has, almost inevitably reached into and overlapped with other domains and interests.[2] For instance, the expansion of trade in renewable energy equipment and hardware around the world has given rise to the interaction between trade-related and climate-related interests.

The intersection between international trade rules and climate change mitigation is multifaceted and complex in economic, environmental, and political terms,[3] which has raised a host of complex issues. This is not to say that the interaction between the two strands of values is exclusively negative; rather, the intersection gives rise to synergies as well as tensions.[4] Stated differently, the relationship between the trade regime and climate regime cannot be overgeneralized as either mutually enhancing or mutually conflicting. The absence of international environmental or climate-related bodies with comparable strength available for advancing environmental initiatives is a reality. Nor is there an internationally agreed upon framework addressing the interface between trade rules and climate action. The natural question which follows is therefore whether the WTO can serve as an

[1] The World Trade Organization was established in 1995 by the founding act – Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, 15 April 1994, 1967 U.N.T.S 14 (1994).

[2] Daniel Esty, 'Bridging the Trade-Environment Divide' (2001) 15(3) Journal of Economic Perspectives 113, at 126.

[3] James Bacchus, 'Questions in Search of Answers: Trade, Climate Change, and the Rule of Law', Keynote Address to the Conference on Climate Change, Trade and Competitiveness: Issues for the WTO, 16 June 2010.

[4] For an analysis of trade and climate change linkage, please see, UNEP, *Climate And Trade Policies In A Post-2012 World* (UNEP 2009); Joost Pauwelyn (ed), *Global Challenges At The Intersection Of Trade, Energy And The Environment* (Centre for Economic Policy Research 2010); World Bank, *International Trade And Climate Change* (World Bank 2008); Lael Brainard and Isaac Sorkin, *Climate Change, Trade, And Competitiveness* (Brookings Institution 2009); Rafael Leal Arcas, *Climate Change And International Trade* (Edward Elgar 2014); Thomas Brewer, 'Trade Policies And Climate Change Policies: A Rapidly Expanding Joint Agenda' (2010) 33 (6) World Economy 799; Andrew Green, 'Trade Rules And Climate Change Subsidies' (2006) 5 (3) World Trade Review 377; Tracey Epps and Andrew Green, *Reconciling Trade And Climate* (Edward Elgar 2010); Thomas Cotttier, Sadeq Z Bigdeli and Olga Nartova (eds), *International Trade Regulation and the Mitigation of Climate Change* (Cambridge University Press 2009).

appropriate platform for the Members to discuss trade and climate change issues, and how the WTO impacts upon efforts to mitigate climate change.

The regulation of both international trade and climate change exhibit some commonalities, both of which require multilateral coordination and agreement in order to succeed. It is well known that the concentration of greenhouse gases in the atmosphere have been rising rapidly for decades, placing the world at a critical juncture in its efforts to reduce greenhouse gas emissions and combat climate change.[5] Human-induced climate change transcends borders and requires solutions not only at national levels but also at international level as well.[6] In the absence of fully committed and urgent action, climate change will have severe and irreversible impacts across the world.[7]

Likewise, the regulation of international trade also requires multilateral efforts. Trade liberalization can serve as an engine of growth and as a means for the reduction of poverty. The broad objectives of increasing human welfare are shared by both trade and climate regimes.[8] The imperatives to liberalize trade and address climate change are not entirely independent from each other as trade laws can effect climate change mitigation strategies and likewise climate change can affect the achievement of objectives in the trading regime.

Among the wide range of issues where the trade and climate regimes potentially converge, the energy sector merits close attention. Renewable energy plays an increasingly important role in the global economy because emissions resulting from energy production and consumption contribute significantly to the total amount of global emissions.[9] It is well understood that developing emissions free renewable energy sources offers a great opportunity to reduce the use of emissions intensive energies, thereby mitigating climate change.[10]

Governments around the world have prioritized the growth of renewable energy technologies through various forms of incentive-based policy measures.[11] Measures and policies are highly varied in terms of different levels upon which they operate different objectives in design and the different stages at which they are provided.[12]

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[5] For a comprehensive and updated analysis of climate change, please see, IPCC: *Climate Change 2014 Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (IPCC, 2014).
[6] *Ibid.*
[7] *Ibid.*
[8] World Bank, *International Trade and Climate Change* (World Bank 2008), at 21.
[9] IEA, *Energy, Climate Change and Environment: 2016 Insights* (IEA 2016), at 11-13.
[10] There are two responses to climate change: mitigation and adaptation. Climate change mitigation refers to actions taken to permanently eliminate or reduce the long-term risk and hazards of climate change. Adaptation refers to actions taken by the society as a whole takes to adjust to climate change that has already happened or will happen. This work focuses on actions for climate change mitigation.
[11] Edwin Vermulst and Madison Meng, 'Dumping and Subsidy Issues in the Renewable Energy Sector' in Thomas Cottier and Ilaria Espa (eds), *International Trade in Sustainable Electricity Regulatory Challenges in International Economic Law* (Cambridge University Press, 2017), at 336.
[12] For a diverse typology of policy tools to promote renewable energy, see Arunabha Ghosh and Himani Gangania, 'Governing Clean Energy Subsidies: What, Why, and How Legal?' (International Centre for Trade and Sustainable Development 2012). There are: direct financial transfers, preferential tax credits, regulation, infrastructure support, investment and trade restrictions.

Trade-related measures to the effect of promoting renewable energy development are available, some of which however remain highly controversial because they may bring about trade restrictions.

To date, the extent to which the WTO regime has the ability to meet the needs of climate-related policy measures (and conversely, the extent the WTO poses barriers to the implementation of such measures) has not been fully addressed in the literature of case law. The answers to these questions are of the utmost importance as to date WTO law and climate change policies have not been well integrated.[13] It is well understood that the GATT/WTO rules were not drafted to accommodate climate change mitigation policies and concerns – the issue was simply not on the agenda during the negotiations.[14] There is not a specific framework or agreement on renewable energy at the WTO, and as a consequence, the governance of which is highly fragmented and lacking coherence.[15]

This thesis formulates its analytical framework by conceptualizing the idea of transitioning into a green economy,[16] which this author sees as having the potential to not only mitigate climate change but also enable economic growth. Stated differently, economic growth and climate change mitigation both constitute necessary factors for the development of a green economy. As a concept with broad coverage, the green economy is understood in this work as made up of two essential components: de-carbonization and green industrialization. The efforts made to realize de-carbonization and green industrialization would contribute to the transition to a green economy to a large extent. Nevertheless, de-carbonization and green industrialization differ with each other in a number of ways, although they can overlap in some cases. The differences between them call for close attention.

The discussion of de-carbonization and green industrialization cannot be isolated from referring to renewable energy development, which plays a critically important role in green economy transition. De-carbonization refers to the efforts made to reduce and eliminate carbon intensity in the energy production sector.[17] It is the electricity sector that is the largest single source of energy-related greenhouse gas emissions and the one with the greatest potential for emissions reduction.[18]

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[13] Thomas Cottier and Nashina Shariff, 'International Trade and Climate Change' in Geert Van Calster and Denise Prévost (eds), *Research Handbook on Environment, Health and the WTO* (Elgar 2013), at 422.

[14] Patrick Low, Gabrielle Marceau and Julia Reinaud, 'The Interface Between the Trade and Climate Change Regimes: Scoping the Issues' (2012) 46 Journal of World Trade 485, at 487.

[15] Thomas Cottier et al., 'Energy in WTO Law and Policy' in Thomas Cottier and Panagiotis Delimatsis (eds) *The Prospects of International Trade Regulation* (Cambridge University Press 2011), at 422.

[16] For discussion on green economy, please see, UNEP, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication: A Synthesis for Policy Makers* (UNEP 2011); OECD, 'Towards Green Growth A Summary for Policy Makers' (OECD 2011).

[17] For discusson on de-carbonization, please see, Nazim Muradov, *Liberating Energy from Carbon: Introduction to De-carbonization* (Springer New York 2014); Christian Flachsland et al., 'Report on Energy and Climate Policy in Europe: The Economics of De-carbonization' (Potsdam-Institute for Climate Impact Research). The concept of de-carbonization is analyzed in depth and details in Chapter Three of this thesis.

[18] International Energy Agency (IEA), Redrawing the Energy Climate Map: World Energy Outlook Special Report (2013), available at: www.iea.org/publications/freepublications/publication/

Therefore, de-carbonization is closely related to bring down carbon intensity in electricity sector. Measures designed primarily to incentivize renewable energy electricity generation fall into the ambit of de-carbonization. The increasing international trade in electricity, including renewable energy generated electricity would make de-carbonization measures more prominent under the trade and climate debate.

Green industrialization refers to the structural transformation of economy that primarily aims at enhancing domestic or local manufacturing capabilities, particularly in renewable energy sector.[19] The manufacturing of renewable energy equipment, such as solar PV, wind turbines or blades plays a critical role in the process of green industrialization. It is the primary objective of green industrialization policy making to increase the competitiveness of renewable energy manufacturing sector. Renewable energy equipment is extensively traded around the world, and an increasing number of industrialized and industrializing countries actively participate in the global competition of renewable energy manufacturing. The potential for employing protectionist-motivated measures and engaging in trade-related disputes in renewable energy sector is therefore rife, but to realize green industrialization it is necessary to enhance the manufacturing efficiency and capacity in renewable energy sector.

The realization of both de-carbonization and green industrialization can play an instrumental role in facilitating the transition to a green economy. The reliance on renewable energy development to achieve both de-carbonization and green industrialization is self-evident. However, de-carbonization and green industrialization measures are designed and implemented with different ends as policy objectives. This can be decisive in how the WTO rules react to the specific renewable energy measures. It is, therefore analytically important to differentiate between renewable energy measures that primarily aim at de-carbonization and these primarily aim at green industrialization in terms of their policy design and implications on the trading system.

The key question therefore becomes how renewable energy measures that aim for de-carbonization and renewable energy measures that aim for green industrialization fare under the WTO. This thesis selects several specific policy measures as illustrative examples. Feed-in tariff is chosen as a classic example of de-carbonization policy measures since it is designed to reduce carbon intensity and facilitate renewable energy development. Local content requirements and renewable energy subsidies are chosen as examples for green industrialization since their primary goal is to enhance manufacturing abilities of renewable energy sector.

Climate-related measures carry a risk of triggering waves of protectionism-motivated policies,[20] which could restrict international trade and harm the global (and many domestic) economy. Policy measures may be introduced with the

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WEO_Special_Report_2013_Redrawing_the_Energy_Climate_Map.pdf, accessed on 9 April 2016, at 15-32.

[19] The concept of green industrialization is analyzed in depth and details in Chapter Three of this thesis.

[20] Harun Onder, 'What Does Trade Have to Do with Climate Change' (VOX, 2012), available at: https://voxeu.org/article/what-does-trade-have-do-climate-change, accessed on 12 January 2018.

objective of not only addressing climate change, but also achieving a host of other objectives, such as ensuring economic growth, increasing industrial competitiveness, bolstering employment opportunities and enhancing energy security.[21] These objectives would be closely linked with policies that are designed and applied to restrict imports and favor domestic products, and which would likely run counter to obligations undertaken in the WTO and/or other trade agreements. Of course, the nature of some supportive measures is not easily or immediately discernable, and a determination on whether such measures would tantamount to protectionism requires careful examination.

Compared with de-carbonization measures, green industrialization measures tend to be more complicated with respect to the potential tension with the trading system since some renewable energy measures that are primarily aimed at industrialization can be trade restrictive. Therefore, differentiating between green industrialization measures with protectionist effects and these without is critically important. A thorough analysis of how de-carbonization measures and green industrialization measures are defined under the WTO regime is a prerequisite for measuring a WTO Member's policy space for developing renewable energy. Such analysis will also provides useful guidance to policy-makers seeking to design WTO-compatible measures in the renewable energy sector.

The interplay between the WTO regulatory system with renewable energy measures is determined not only by the extent to which the WTO regime provides sufficient policy space for legitimate climate-related measures but also the role of the WTO in disciplining illegitimate measures. This work argues that the WTO rules can deter renewable energy policy measures that are trade restrictive yet also climate unfriendly. Sanctioning measures that have protectionist effects on trading system and negatively impact the climate regime demonstrates the supportiveness that the trade regime has towards climate interests.

On the other hand, whether there is sufficient policy space for renewable energy measures without any protectionist effects has also been a matter for debate and enquiry. This thesis argues that the WTO regime provides sufficient policy space for measures primarily aimed at reducing emissions and mitigating climate change. However, as will be further developed in the thesis, the policy space is less than certain or stable, which presents an obstacle for furthering the development of renewable energy. This thesis will propose ways to secure policy space under the WTO regime for climate friendly measures.

Climate change is bound to change the multilateral trading system if the objectives of addressing climate change as well as transparency and communication are taken seriously in the coming negotiations.[22] As 'an important yardstick' to measure climate-related policy measures, the existing WTO law needs a revisit to incorporate the overall goal of climate change mitigation.[23] The WTO can and should play a key role in shaping an enabling environment in which renewable

[21] Mahesh Sugathan, 'Winds of Change and Rays of Hope: How Can the Multilateral Trading System Facilitate Trade in Clean Energy Technologies and Services?' (2013) E15 Initiative, available at: http://e15initiative.org/publications/winds-of-change-and-rays-of-hope-how-can-the-multilateral-trading-system-facilitate-trade-in-clean-energy-technologies-and-services/, at 9.
[22] Cottier and Shariff (n 13), at 446.
[23] *Ibid*, at 447.

energy technologies could be developed and products freely traded. The WTO rules can lend more active support in reducing trade barriers and promoting technology transfer in renewable energy sector. Bringing the trade regime and climate regime into a mutually coherent, supportive and enhancing relationship is a big challenge but also a great opportunity. The WTO, however, and particularly the competence and vitality of its dispute settlement mechanism, has performed admirably is resolving a wide range of conflicts involving trade and non-trade issues, so there is little reason to believe that trade and climate change is an intractable problem.[24]

This thesis argues that the legal framework of the WTO provides policy and legal space for the Members to implement their trade and climate-related obligations both simultaneously and harmoniously. In order for this to occur, the WTO dispute settlement system must play a positive role in interpreting and applying the WTO and non-WTO rules in a way that contributes to the coherence between trade-related and climate-related values. Measures adopted and implemented with an aim to mitigate climate change and transition to a green economy without pursuing any protectionist purposes should be viewed favorably and deemed compatible with the trade rules. The mutual coherence between renewable energy development and trade liberalization relies on the significant additional efforts that could be made by both the WTO regime and Members on behalf of the overriding international goal of climate change mitigation. Policymakers in Member governments should take heed of the WTO rules in the design and implementation of renewable energy support measures to avoid undesirable result of the measures being deemed to be inconsistent with the obligations of the WTO. This thesis investigates the differences between beneficial and harmful measures, including the general conditions which any renewable energy support policy and measure needs to fulfill in order to be WTO-compatible, as well as feasible approaches that the WTO system could take to better accommodate climate change-related objectives and substantial and procedural options to allow Member governments to fully make use of their regulatory autonomy to address climate change.

1.1 Research Question and Methodology

The primary research question in this thesis asks how large is the scope of policy space that the WTO Members have in transitioning to a green economy? Due to the broadness of the question, it is analytically useful to divide it into a number of sub-questions that can be addressed step by step. The sub-questions are follows: What are the measures that the WTO Members can take in realizing the goal of de-carbonization and green industrialization, respectively? How would the WTO regime deal with de-carbonization measures? Is there sufficient policy space exist in the WTO to allow this to occur? How would the WTO tackle green industrialization measures? What are the options to improve the mutual supportiveness between international trade rules and climate change mitigation?

In order to answer the abovementioned questions, this thesis relies on the doctrinal research methodology and case analysis to investigate the scope of policy space that WTO Members have to use trade-related measures to develop renewable energy. Developing on the existing literature, this thesis defines the green economy and its

[24] Carrie Wofford, 'A Greener Future at the WTO: The Refinement of WTO Jurisprudence on Environmental Exceptions to GATT (2000) 24 Harvard Environmental Law Review 563, at 572.

two components - de-carbonization and green industrialization in a coherent and logical way. The conceptualization of the three key research terms: green economy, de-carbonization and green industrialization as well as their interrelationship is critically important in not only laying the foundation for further trade law analysis but also contributing to the current literature.

The thesis also provides a critical analysis and synthesis of primary sources, most important of which are the WTO agreements and case law. The applicable WTO agreements include the General Agreement on Tariffs and Trade ('GATT'), Subsidy and Countervailing Measures Agreement ('SCM Agreement') and Agreement on Trade-Related Investment Measures ('TRIMs'). In addition, the judicial-like determinations made by WTO panels and the Appellate Body amount to another important part of the GATT/WTO *acquis* as they interpret and clarify the treaty.

The thesis employs the method of case analysis in analyzing the decisions made by the WTO adjudicators in the renewable energy disputes. This is, of course, more than a simple restatement of what has been decided by the Panel and more so, the Appellate Body. Critical case analysis contributes to the understanding of how the WTO adjudicators apply and interpret pertinent rules with respect to the specific facts in renewable energy disputes. The aim is to provide a thought-provoking reflection on whether these renewable energy disputes decisions are legally coherent and sensible, and whether a facilitative environment under the WTO regime for climate change mitigation can be shaped. This is a key step in addressing the research questions proposed above.

In addition to relying on primary sources, this research also extensively examines secondary sources, namely the analysis, commentary or a restatement of primary law produced by academics, lawyers and/or trade negotiators in trade/climate. A considerable amount of scholarship has emerged in addressing the interaction between trade, environment, renewable energy and climate change. It is necessary to have a clear understanding of what arguments have been raised in order to identify a research gap in the existing literature. The aim is to not only present the well-argued views (although they might differ and contrast with each other) but also critically assess the strong and weak points underlying the arguments. By identifying what is missing in the literature, this thesis hopes to develop its own analytical framework and provides new insights on the interaction between international trade rules and climate change mitigation.

1.2 Structure of the Thesis

The thesis contains ten chapters. The first chapter consists of a brief introduction to the thesis and discusses the research questions, significance of the research, methodology of research and structure of research. The chapter aims to provide readers with a basic idea of what this thesis intends to ask, discuss and address.

The second chapter reviews the trade, environment and climate law literature as a way to map out the landscape of existing scholarship in the field. The chapter also provides the context needed to gain a more comprehensive and deeper understanding of the issues at stake, such as the relationship between environmental

concerns and trade interests, the linkages between climate change and renewable energy, the interaction between renewable energy measures and the WTO laws and others. While the views and arguments of the thesis draw from existing scholarship, the review also identifies the 'gaps' in current literature that this thesis seeks to fill with critical analysis and original insights.

The third chapter begins to build an overarching framework for the concept of a green economy. The idea for a green economy has been percolating for several years and is likely to become more concrete and deliver more meanings in the coming years. In this thesis, the green economy is divided into two components: de-carbonization and green industrialization. The second section of the chapter discusses specific policy measures primarily aimed at de-carbonization and green industrialization. It is not the aim to cover all possible policy measures. Instead, the thesis will focus on a few select examples to illustrate the broader points.

The fourth chapter provides a basic but necessary exploration into the WTO Dispute Settlement Mechanism (DSM): the role of the DSM, the procedure of the DSM and the legal interpretations by the WTO Dispute Settlement Body. This retrospective into the development of WTO dispute settlement mechanism sheds light on how newly emerging issues, the majority of which no longer concern purely trade matters, are handled by the DSB. Whether dispute settlement can play an instrumental role in promoting the supportiveness of the trade regime to climate action is of research interest.

The fifth chapter elaborates on the WTO rules pertinent to renewable energy disputes, namely the GATT, TRIMs and SCM Agreement. The chapter reviews the relevant rules and case law interpretation of these agreements and thus lays the foundation for analysis related to the renewable energy. These provisions have been and are likely to be frequently cited in renewable energy disputes. It is analytically important to apprehend the meaning and application of the provisions.

The sixth chapter provides a brief introduction to all the WTO disputes concerning renewable energy measures. This chapter does not explore the details of these disputes or the legal decisions; instead, it aims to provide a general overview of basic facts and situations of those disputes. The increasing litigiousness in renewable energy sector not only among developed countries but also involving developing ones deserves close attention.

The seventh chapter analyzes the manner in which de-carbonization policy measures, namely feed-in tariffs adopted in the renewable energy area have been understood and interpreted by the WTO Panels and the Appellate Body in relevant disputes. This chapter examines how WTO agreements and provisions have been applied in these cases and whether the WTO jurisprudence has accommodated climate-related values. The chapter further discusses options to improve the supportiveness of the WTO regime to climate change mitigation as well as sheds light on the design and implementation of de-carbonization policy measures with respect to their compliance with the WTO laws.

The eighth chapter analyzes how the WTO rules react to green industrialization measures adopted by Members in renewable energy sector, namely local content requirements. The way the Panel and the Appellate Body applied relevant rules to

define the nature of LCRs illustrate the WTO's approach towards the use of measures primarily aimed at industrial objectives in renewable energy sector. It is important not only to map out the scope of policy space under the WTO for Members to resort to green industrialization policy measures but also analyze the implications that the WTO's approach towards these measures.

The ninth chapter proposes an option to develop renewable energy in a manner consistent with WTO rules. More specifically, the chapter proposes the establishment of robust renewable energy targets. It engages in an analysis of four cases: the EU, the Australia, China and India. The integration of target setting, mainly in the area of de-carbonization, has great potential to scale up the development of renewable energy, including in manufacturing sector and achieve a wide range of benefit without violating the WTO obligations.

The tenth chapter concludes the thesis.

Chapter 2: Existing Literature on Trade, Environment and Climate Change

The literature on WTO law and climate change is vast, growing and examines an array of salient and topical issue from different perspectives. An increasing amount of scholarship is being generated discussing the interface between trade regime and countries' domestic climate change mitigation measures taken in the renewable energy sector. In order to formulate and develop my own arguments and identify a gap in the literature to fill, it is necessary to review of what has been researched and produced in these areas.

This part of the literature review is divided into two sections due to the broadness of the central topic. The first part starts from a broad perspective and touches upon the literature on the relationship between trade and environment. The second part narrows the scope of review to trade and climate change debate.

2.1 Trade and Environment Debate

The literature covering the trade and environment debate provides useful insights on how the WTO regime has dealt with vitally important non-trade values, such as the imperative to protect the environment. The extent to which the WTO regime has properly accommodated or could possibly accommodate environmental interests is a controversial yet crucial issue, which has yet to be fully resolved. The issue is also highly relevant in analyzing how the WTO regime defines and deals with Members' action taken to mitigate climate change, which is of course a subset of broader environmental concerns. In this regard, it is useful to now review what has been written on the linkages between trade and the environment.

The expansion of international trade following the conclusion of the Second World War has coincided with a dramatic rise in global environmental degradation,[25] which includes increased air and water pollution, loss of biodiversity, dissertation and global warming. The nexus between trade liberalization and environmental protection has become a controversial issue that the WTO regime has had to encounter 'more of a matter of fact than a choice'.[26] The WTO, and its Member governments, understand that trade interests should not and cannot always trump non-trade interests. The striking of a reasonable balance between trade interests and non-trade interests under the WTO law is therefore, in the words of Flett, 'a question of compromise'.[27]

Supporters of the trade regime argue that the WTO rules can balance state autonomy in environment-related areas with a desire to remove policies that could restrict trade and favor domestic industries.[28] However, much of the 'trade and …' literature has favored the trade regime in the balance with non-trade values and demanded more compromise from non-trade side, such as the environment

[25] Robert Falkner and Nico Jaspers, 'Environmental Protection, International Trade and the WTO' in Kenneth Heydon and Stephen Woolcock (eds), *The Ashgate Research Companion to International Trade Policy* (Routledge 2016), at 22.
[26] Esty (n 2), at 114.
[27] James Flett, 'Preserving the Balance between Trade and Non-Trade Interests through a Systematic Interpretation of WTO Subsidies Law' in Luca Rubini and Jennifer Hawkings (eds), *What Shapes the Law? Reflections on the History, Law, Politics and Economics of International and European Subsidies Disciplines* (European University Institute 2016), at 92.
[28] Andrew Green, 'Climate Change, Regulatory Policy and the WTO: How Constraining Are Trade Rules?' (2005) 8(1) Journal of International Economic Law 143, at 143-144.

regime.[29] The difficulty in reaching an acceptable balance becomes more difficult as environmental protection has attained a highly prominent place in the trade agenda.[30] As the number of newly emerging issues and participants in trade-related environmental disputes increase, arriving at satisfactory answers becomes even more difficult.[31]

Opponents of globalization criticize the WTO's governance system as an impediment to environment protection and an obsolete obstacle to environmental progress.[32] Some commentators even propose to establish a global forum outside of WTO regime to address trade and environment issues. For instance, Speth refers to the WTO as a weak multilateral institution with 'mostly toothless treaties', which ignores the social and economic context underlying the debates.[33] He argues that a potentially new governance structure could be formulated under the United Nations so as to address issues crossing the trade and environment areas.[34] Esty also argues for 'a GATT-inspired Global Environmental Organization' that would centralize development and implementation of environmental standards and resolve environment-related disputes.[35] In this regard, Esty contends that bolstering other regimes through institutional reform has the potential to achieve more balance against the strength of the trade regime.[36] Whalley and Zissimos seemingly agree when addressing the issue and proposing a World Environmental Organization, which would, *inter alia*, ensure the internalization of environmental externalities.[37] Other scholars focus on the WTO regime itself and propose a number of recommendations for reform with an attempt to ensure that the regime maintains legitimacy and relevance into the future.[38] Some commentators argue for greater awareness of and sensitivity to the environment, claiming this would be a positive for the trade regime if incorporated into the regime in a thoughtful and systematic

[29] See Margaret Young, *Trading Fish, Saving Fish: The Interaction Between Regimes in International Law* (Cambridge University Press, 2011), at 14.
[30] See Simon Lester, Bryan Mercurio and Arwel Davies, *World Trade Law* (3rd ed, Hart Publishing, 2018) at Chapter 19; Michael Trebilcock and Robert Howse, *The Regulation of International Trade* (3rd ed, Routledge 2004), at 507.
[31] José María Figueres Olsen, José Manuel Salazar-Xirinachs, and Mónica Araya, 'Trade and Environment at the World Trade Organization: The Need for a Constructive Dialogue' in Gary P Sampson (ed), *The Role of the World Trade Organization in Global Governance* (United Nations University Press 2001), at 157.
[32] Jagdish Bhagwati, 'On Thinking Clearly about the Linkage between Trade and the Environment' (2000) 5(4) Environment and Development Economics 483, at 485.
[33] James Gustave Speth, *Red Sky at Morning: America and the Crisis of the Global Environment* (Yale University Press 2004), at 114.
[34] *Ibid.*
[35] For a detailed discussion of establishing Global Environmental Organization ('GEO'), see, Daniel C Esty, *Greening the GATT: Trade, Environment and the Future* (Institute for International Economics 1994).
[36] Daniel Esty, 'Stepping up to the global environmental challenge' (2001) 8(1) Fordham Environmental Law Review 103, at 108.
[37] John Whalley and Ben Zissimos, 'An Internalisation-Based World Environmental Organisation' (2002) 25 The World Economy 619.
[38] Daniel Esty, 'Non-Governmental Organizations at the World Trade Organization: Cooperation, Competition, or Exclusion' (1998) 1(1) Journal of International Economic Law 123, at 142.

fashion.[39] Howse is more radical, calling for the restructuring of the trade regime so that the perspectives and voices of other policy domains could be heard.[40]

This is not to overplay discontent with the WTO. In fact, several works, which examine the trade/environment disputes, are more appreciative of what the WTO has done in accommodating environmental values. These commentators recognize that the prevailing view dating back to the pre-WTO GATT-era that free trade was always to be favored when conflicted with environmental concerns and norms has been totally rejected and reversed by WTO jurisprudence.[41] The GATT-era Panel in *Tuna/Dolphin* approached the issue of competing trade and non-trade values solely from the perspective of trade liberalization and commitments.[42] The ruling received severe criticism, not only from environmentalists but also trade scholars, for prioritizing free trade over all non-trade values, no matter how significant the other values.[43] In contrast, the WTO dispute of *Shrimp/Turtle* represents a turning point as it represents the first time that the WTO Dispute Settlement Body clearly and wholeheartedly supported a derogation of international trade rules for the purpose of environmental protection.[44]

Knox argues that the Appellate Body has 'greened' the jurisprudence by incorporating moderate pro-environmental reforms and sensibly resolving trade/environment conflict.[45] Likewise, Howse and Turk contend that the evolving nature of WTO jurisprudence shows that non-protectionist domestic regulations for important public policy purposes will not be significantly constrained by WTO law.[46] As the WTO agreements are to be interpreted 'in an evolutionary fashion', Howse further contends that the WTO is now placed 'within a broader universe of international law and policy relevant to environment and development.'[47] Similarly, Bown and McCulloch argue that the Panel and Appellate Body decisions have and will have the effect of encouraging international cooperation to achieve environmental goals.[48] The adjudication decisions made by the WTO, while not technically binding on subsequent disputes, play an important role in shaping the

[39] Esty (n 2), at 126-127; Bryan Mercurio, 'The WTO and its Institutional Impediments' (2007) 8(1) Melbourne Journal of International Law 198.
[40] Robert Howse, 'From Politics to Technocracy – and Back Again: The Fate of the Multilateral Trading Regime' (2002) 96(1) American Journal of International Law 94, at 101.
[41] Robert Howse, 'The Appellate Body Rulings in the *Shrimp/Turtle* Case: A New Legal Baseline for the Trade and Environmental Debate' (2002) 27(2) Columbia Journal of Environmental Law 491, at 493.
[42] *Ibid*, at 493-494.
[43] See, Philip Nichols, 'Corruption in the World Trade Organization: Discerning the Limits of the World Trade Organization's Authority' 1996 28(4) New York University Journal of International Law and Politics 711.
[44] Elizabeth DeSombre and J Samuel Barkin, 'Turtles and Trade: The WTO's Acceptance of Environmental Trade Restrictions' (2002) 2 Global Environmental Politics 12, at 24.
[45] John Knox, 'The Judicial Resolution of Conflicts between Trade and the Environment' (2004) 28(1) Harvard Environmental Law Review 1, at 3-4.
[46] Robert Howse and Elisabeth Turk, 'The WTO Impact on Internal Regulations: A Case Study of the *Canada – EC Asbestos* Dispute' in George A Bermann and Petros C Mavroidis (eds), *Trade and Human Health and Safety* (Cambridge University Press 2006), at 113.
[47] Howse (n 41), at 498.
[48] Chad Bown and Rachel McCulloch, 'Environmental Issues in the World Trade Organization' in Arthur Appleton, Patrick Macrory and Michael Plummer (eds), *The World Trade Organization* (Kluwer 2005), at 161.

law in the regime and have strong *de facto* precedential value on subsequent panels.[49]

While it is welcoming news that environmental-friendly interpretation could be adopted in future disputes if similar issues arise, a greater balancing of trade interests and environment interests is nevertheless needed at the international level – although no consensus has yet been achieved on how to balance these interests.[50] To some commentators and WTO Members (mainly developing countries), environmental objectives could give cover to protectionist mischief and would be dangerous to the principles of the Organization and to the notion of comparative advantage.[51] Many free traders also are concerned that a Member's environmentally motivated trade measures could turn out to be disguised protectionism or irrational fanaticism.[52] The protection of environmental interests should not be used or abused to circumvent fundamental trade commitments. In essence, the WTO must become more attuned to international society's changing priorities and values without abandoning its mission to fight protectionism.[53]

As observed, the scholarly opinions existing in the trade/environment debate differ and contrast in a number of ways. A group of hardcore environmentalists remain skeptical of the capacity of the WTO in taking full consideration of environmental interests. However, many trade experts seem to be convinced that the WTO does not prioritize trade values over environmental ones and that the regime provides sufficient policy space for the Members' environmental measures. The compatibility between trade rules and environmental values is as of yet not fully resolved and remains contentious and subject to debate. What is more certain is that the trade/environment debate sheds important light on how to understand the interaction between trade rules and climate change mitigation.

2.2 Trade and Climate Change Debate

As an important part of environmental problems, climate change has attracted an increasing amount of attention around the world. The issue is also the core of this thesis To date, the majority of the literature concerning this topic is developed either to assess specific WTO provisions or evaluate relevant case law, or both. Many well-argued and inspiring articles have been published in this area, but gaps in the existing literature remain and this thesis proposes ways to fill them.

As a leading trade and environment scholar, Charnovitz predicted in 2007 that trade/environment disputes on knotty issues such as government interventions to address climate change would become a reality in near future.[54] The prediction turned out to be correct and the future is now. The inter-relationship between trade and climate change has become a major source of tension between WTO Members

[49] Lester, Mercurio and Davies (n 30), at Chapter 5.
[50] Andrew Guzman, 'Global Governance and the WTO' (2004) 45(2) Harvard International Law Journal 303, at 349-350.
[51] Daniel Esty, 'Reactions to Seattle: An Environmental Perspective on Seattle' (2000) 3(1) Journal of International Economic Law 176, at 189.
[52] Michael Trebilcock, Robert Howse and Antonia Eliason, *The Regulation of International Trade* (4th Ed, Taylor & Francis 2013), at 656.
[53] Gabrielle Marceau and Julian Wyatt, 'The WTO's Efforts to Balance Economic Development and Environmental Protection: A Short Review of Appellate Body Jurisprudence' (2013) 1(1) Latin American Journal of International Trade Law 291, at 294.
[54] Steve Charnovitz, 'The WTO's Environmental Progress' (2007) 10(3) Journal of International Economic Law 685, at 706.

and as further explored in the following chapters been the subject of numerous disputes.

Before advancing however, it is necessary to differentiate between trade and environment and trade and climate change. It would be a mistake to assume the interaction between trade and environment will be completely followed in the trade and climate debate. Put simply, climate change differs from many other environmental problems and raises differing trade concerns.

Climate change, according to Stern, is the 'greatest and widest-ranging market failure ever seen.'[55] The severity of climate change as a global environmental hazard has been anthropogenic to a large extent.[56] It is difficult to deny that the world is approaching the 'tipping point' after which climate change may become 'abrupt or irreversible'.[57] The development and deployment of renewable energy involves a multitude of policy objectives, including addressing climate change,[58] and de-carbonizing economies.[59] The development of renewable energy has also been associated with governments' increasing use of industrial policies, which explains why trade/climate measures have culminated in a series of renewable energy disputes at the WTO.[60]Most studies on the relationship between trade and the environment and most of the WTO Dispute Settlement Body's decisions have dealt with local environmental problems that affect the environment at a local or regional scale rather than globally.[61] Measures with a relatively narrow scope taken to address environmental problems have relatively limited trade implications, and are confined to a small, well-defined subset of goods.[62] In comparison, the international climate regime is designed to tackle a global problem that has unprecedented ecological, economic and social dimensions.[63] Assessing the compatibility of classic environmental protection measures with the WTO rules and that of climate-related measures will be different. As a part of trade and environment debate, climate change has the potential to sharpen the existing frictions between trade and the environment.

Wu and Salzman define renewable energy disputes as a set of 'next generation trade and environment conflicts'.[64] The academics advocate for 'a profound

[55] See, Nicholas Stern, *The Economics of Climate Change: Stern Review on the Economics of Climate Change* (Cambridge University Press 2007).
[56] Rafael Leal-Arcas and Andrew Filis, 'Renewable Energy Disputes in the World Trade Organization' (2015) 13(3) Oil, Gas and Energy Law Journal 1, at 5.
[57] IPCC, *Climate Change 2007: Synthesis Report* (Intergovernmental Panel on Climate Change 2008) <https://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_full_report.pdf> accessed 20 July 2016, at 13.
[58] For a comprehensive and integrated discussion of the benefits of developing renewable energy in global energy mix see Ramón Pichs Madruga, Youba Sokona and Ottmar Edenofer, *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2011); see also Ghosh and Gangania (n 12).
[59] Thomas Cottier, 'Renewable Energy and WTO Law: More Policy Space or Enhanced Disciplines' (2014) 5(1) Renewable Energy Law and Policy 40, at 40-41.
[60] Mark Wu and James Salzman, 'The Next Generation of Trade and Environment Conflicts: The Rise of Green Industrial Policy' (2014) 108(2) Northwestern University Law Review 401, at 405.
[61] Gary Hufbauer and Meera Fickling, 'Trade and the Environment' in Amrita Narlikar, Martin Daunton and Robert M. Stern (eds), *The Oxford Handbook on the World Trade Organization* (Oxford University Press, 2012), at 726.
[62] *Ibid*, at 727.
[63] Kati Kulovesi, *The WTO Dispute Settlement System: Challenges of the Environment, Legitimacy and Fragmentation* (Kluwer 2011), at 235.
[64] Wu and Salzman (n60), at 403.

reevaluation' of the next generation trade and environment conflict from four perspectives.[65] The first is concerned with more complex geopolitical dynamics of these conflicts; the second is concerned that domestic political economy surrounding trade and environment policymaking are radically being reconfigured by these conflicts; the third is concerned the expanding scope of applicable law and the last concerns the expanding forum choices for litigation. The four points reflect the shift of trade and environment conflicts and the underlying impacts in a holistic manner.

A large body of scholarship has emerged that analytically evaluates the evolving attitude that the WTO has towards addressing climate change.[66] Peat argues that the institutional development of the WTO indicates that the multilateral trade regime does not choose to ignore non-trade values.[67] Leal-Arcas and Filis uphold that the WTO system could accommodate *bona fide* non-discriminatory measures that promote the scale-up and take-up of renewable energy.[68] Whitsitt argues that greater attention needs to be paid at the legislative level so that government intervention in the renewable energy sector matches the underlying public policy objectives in order to achieve compatibility with the WTO.[69]

One controversial point of contention is whether measures adopted to promote renewable energy should be subjected to the discipline of the WTO subsidy rules. The application of subsidy rules in assessing the compatibility of renewable energy measures could play a key role in defining the interaction of international trade rules and climate change mitigation. Horlick even concludes that climate change is one of a handful of issues that has the ability to re-shape the WTO's rules on subsidies.[70]

The issue of subsidies to address climate change in the WTO is difficult, as on the one hand subsidies to promote domestic industrial policy can have a trade distorting

[65] *Ibid*, at 405-406.

[66] See, Gabrielle Marceau, 'The WTO in the Emerging Energy Governance Debate' (2012) 106 American Society of International Law Proceedings of the Annual Meeting 385; Rafael Leal-Arcas and Andrew Filis, 'Certain Legal Aspects of the Multilateral Trade System and the Promotion of Renewable Energy' in Bryan Mercurio and Chin Leng Lim (eds), *International Economic Law after the Crisis: A Tale of Fragmented Disciplines* (Cambridge University Press 2015); Marceau and Wyatt (n 53).

[67] Daniel Peat, 'The Perfect FIT: Lessons for Renewable Energy Subsidies in the World Trade Organization' (2012) 1(1) LSU Journal of Energy Law and Resources 42. Notable actions by the WTO include the creation of a Committee on Trade and the Environment, the inclusion of select environmental issues in the negotiating mandate of the current Doha Round, and the explicit recognition that the WTO holds to tools to promote climate change mitigation. Decision on Trade and Environment, Marrakesh Agreement Establishing the World Trade Organization, Apr. 15, 1994, 1867 U.N.T.S. 154, available at http://www.wto.org/english/docs_e/legal_e/56-dtenv.pdf; WTO, Ministerial Declaration, Nov. 14, 2001, WT/MIN(01)/DEC/1, available at http://www.wto.org/english/thewto_e/minist_e/ min01_e/mindecl_e.pdf; Director-General Pascal Lamy, Speech at the Informal Trade Ministers Dialogue on Climate Change in Bali, Indonesia (Dec. 9, 2007), available at http://www.wto.org/ english/news_e/sppl_e/sppl83_e.htm.

[68] Arcas and Filis (n 66), at 517.

[69] Elizabeth Whitsitt, 'A Modest Victory at the WTO for Ontario's FIT Program' (2013) 20 UC Davis Journal of International Law & Policy 75, at 96-97.

[70] Gary Horlick, 'How Subsidies Rules Have Been Shaped?' in Luca Rubini and Jennifer Hawkins (eds), *What Shapes the Law? Reflections on the History, Law, Politics and Economics of International and European Subsidies Disciplines* (European University Institute 2016), at 66-67.

effect. On the other hand, addressing climate change requires subsidies to further develop and reduce carbon emissions.[71]

Whether the current legal framework of the WTO subsidy rules poses undue constraints and uncertainties on the use of subsidies to incentivize renewable energy development is of research interest. Some scholars argue that the SCM Agreement has inherent limitations in regulating subsidies from environmental policy perspective.[72] Sykes is a leading critic of the agreement, calling for a fundamental reconsideration of the economics of subsidy discipline.[73] Others contend that the paradox existing in the SCM Agreement is that the rules might be both 'too constraining, and too loose.'[74] To some commentators, the current rules could easily clash with some of the most effective mechanisms to combat climate change.[75] Environmental activists in particular strongly assert that the WTO rules should acknowledge non-trade considerations, such as mitigation of climate change, and explicitly allow for deviations from the fundamental principle of trade liberalization.[76] Horlick and Clark point out the flaws of subsidies rules and underscore the need to for reform, in particular to the rules on export subsidies and import-substitution subsidies.[77] Howse recommends re-instituting the now-expired non-actionable 'green light' carve-out.[78] In contrast, Bigdeli refers to the absence of explicit exceptions in the SCM Agreement as a weak point and that reform in this regard should be given serious consideration.[79] More specifically, Bigdeli argues for the 'greening' of the SCM Agreement in the area of governmental support for renewable energy by making 'sector-specific' solutions because in his view a mere revival of expired but limited exemptions under the SCM Agreement would fail to cover most of government supports for renewable energy.[80] Shaffer, Wolfe and Le believe the absence of a preamble in the SCM Agreement is problematic since there are no references to the object and purpose of the agreement and thus a lack of

[71] *Ibid*, at 66-67.
[72] Hyung-Jin Kim, 'Reflections on the Green Light Subsidy for Environmental Purpose' (1999) 33 (3) Journal of World Trade 167, at 172.
[73] Alan Sykes, 'The Questionable Case for Subsidies Regulation: A Comparative Perspective' (2010) 2(2) Journal of Legal Analysis 473, at 519.
[74] Gregory Shaffer, Robert Wolfe and Vinhcent Le, 'Informal Law's Discipline of Subsidies: Definitions, Obligations, Transparency' (ICTSD and World Economic Forum 2015), at 1.
[75] See, Ramón Pichs Madruga, Youba Sokona and Ottmar Edenofer, *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2011). The importance of subsidies for solar, geothermal, hydropower, wind and other renewable energy development to mitigate the effects of climate change is discussed in this book.
[76] Rick A Waltman, 'Amending WTO Rules to Alleviate Constraints on Renewable Energy Subsidies' (2016) 23(2) Williamette Journal of International Law & Dispute Resolution 367, at 377.
[77] Gary Horlick and Peggy Clarke, 'WTO Subsidies Discipline during and after the Crisis' (2010) 13 Journal of International Economic Law 859, at 862.
[78] Robert Howse, 'Do the World Trade Organization Disciplines on Domestic Subsidies Make Sense? The Case for Legalizing Some Subsidies' in George Bermann, Petros Mavroidis and Kyle Bagwell (eds), *Law and economics of contingent protection in international trade* (Cambridge University Press 2009), at 101-102.
[79] Sadeq Bigdeli, 'Incentive Schemes to Promote Renewables and the WTO Law of Subsidies' in Thomas Cottier, Olga Nartova; and Sadeq Bigdeli (eds), *International trade regulation and the mitigation of climate change* (Cambridge University Press 2009), at 192.
[80] Sadeq Bigdeli, 'Resurrecting the Dead? The Expired Non-Actionable Subsidies and the Lingering Question of 'Green Space'' (2011) 8(2) Manchester Journal of International Economic Law 2, at 23.

contextual guidance for its interpretation.[81] Cosbey agrees reform to the text is needed, and stresses that the WTO Dispute Settlement Body is a wrong place to forge international consensus on renewable energy support measures.[82]

The adjudication of the first WTO renewable energy dispute, *Canada – Renewable Energy*, has given rise to even more scholarly discussions. The ruling – as well as the WTO dispute settlement reports in subsequent cases – will have far-reaching ramifications on the 'use and propriety' of subsidy and incentive measures supported by governments for renewable energy projects.[83] The direct implications of the WTO decisions on the design and implementation of government support for renewable energy in future cannot be underestimated.[84]

The majority of commentators have criticized the reasoning made by the WTO adjudicators, in particular to their failure to determine whether the challenged feed-in tariff programs constituted a subsidy.[85] For instance, Genest states that the 'complexity and opaqueness' of the rulings made by the Panel and the Appellate Body might reduce the 'usefulness and persuasiveness' in future disputes.[86] Caiser and Moerenhout argue that the rulings left key question 'largely unanswered' and the status of renewable energy support measures 'unclear'[87] Economist Amar Breckenridge also criticizes the approach employed by the Appellate Body in analyzing market definition was not a rigorous application of fundamental economic concepts to the facts of the case.[88] Cosbey and Rubini highlight the implications of the decision for the future, arguing that the flexibility is likely to bring a hefty price, especially with respect to subsidy transparency and good governance.[89] In another work, Rubini contends that the rulings wrongfully reflected an unwarranted activist attitude.[90] Rubini moves on to make

[81] Shaffer, Wolfe and Le (n 74), at 4.
[82] Aaron Cosbey, 'Renewable Energy Subsidies and the WTO: The Wrong Law and the Wrong Venue' Global Subsidies Initiative (19 July 2011) <http://www.iisd.org/gsi/news/renewable-energy-subsidies-and-wto-wrong-law-and-wrong-venue> accessed 15 August 2016.
[83] Sherzod Shadikhodjaev, 'First WTO Judicial Review of Climate Change Subsidy Issues' (2013) 107(4) The American Journal of International Law 864, at 870.
[84] Andrew Shoyer and Rajib Pal, 'Government Support for Green Energy: Is WTO Decision a Game-Changer? - the Latest Legal Features, Research and Legal Profiles - Who's Who Legal' Who's Who Legal (December 2013) <http://whoswholegal.com/news/features/article/30990/government-support-green-energy-wto-decision-game-changer/> accessed 7 August 2016.
[85] Patrice Bougette and Christophe Charlier, 'Renewable Energy, Subsidies, and the WTO: Where Has the 'Green' Gone?' (2015) 51 Energy Economics 407, at 412.
[86] Alexandre Genest, 'The Canada FIT Case and the WTO Subsidies Agreement: Failed Fact-Finding, Needless Complexity, and Missed Judicial Economy' (2015) 10(2) McGill International Journal of Sustainable Development Law and Policy 237, at 241.
[87] Liesbeth Casier and Tom Moerenhout, 'WTO Members, Not the Appellate Body, Need to Clarify Boundaries in Renewable Energy Support' IISD Commentary (July 2013).
[88] Amar Breckenridge, 'A Matter of Definition – Commentary of Aspects of the Appellate Body's Ruling on the Canada – Renewable Energy Case in the WTO' Frontier Economics (October 2013), available at: http://worldtradelaw.typepad.com/files/fit_definition.pdf, accessed on 02 July 2016.
[89] Aaron Cosbey and Luca Rubini, 'Does It FIT? An Assessment of the Effectiveness of Renewable Energy Measures and of the Implications of the Canada – Renewable energy/FIT Disputes' <http://e15initiative.org/publications/does-it-fit-an-assessment-of-the-effectiveness-of-renewable-energy-measures-and-of-the-implications-of-the-canada-renewable-energyfit-disputes/> accessed 02 July 2016.
[90] Luca Rubini, 'The Good, the Bad, and the Ugly.' Lessons on Methodology in Legal Analysis from the Recent WTO Litigation on Renewable Energy Subsidies (2014) 48(5) Journal of World Trade 895, at 932.

recommendations such as, knowledge generation, data collection, use of experts and others. [91] Charnovitz and Fischer express concern that the Appellate Body might create the 'slippery slope' by introducing policy considerations into the determination of benefit and to equate politician preferences with consumer preferences, which seems to contradict with previous case law.[92] They also argue that avoiding the determination of whether feed-in tariff confers a benefit may risk opening the door for any number of well or poorly intentioned interventions.[93]

The 'legal acrobatics' approach performed by the Appellate Body was aimed to avoid finding a scheme promoting public good as a subsidy, which should be re-thought accordingly with the recognition of subsidy rationale. [94] To these trade scholars, the SCM Agreement seems out of date and unbalanced, as climate change and renewable energy development have become defining challenges for the world community.[95]

This view is no universal. Kent and Jha hold a different view towards the effectiveness and reasonableness of the rulings in this dispute. They recognize the development of the law by the WTO Panel and the Appellate Body demonstrates 'an evolving and activist WTO jurisprudence',[96] and note that the Panel and the Appellate Body had reasonable grounds to develop the law and adapt it to today's circumstances and necessities.[97] In their view, the Appellate Body created policy space for environmentally merited subsidies, which reflects a positive sign towards an improved consideration of environmental sustainability.[98] Similarly, Coppens also argues that the rulings are likely to provide more policy space for certain types of subsidies pursuing legitimate non-trade objectives. [99] In this vein, the environmentalists have generally praised the Appellate Body's novel interpretation.[100] Regardless of position, it does seem clear that the Appellate Body tried to address the most common critique on WTO subsidy law's blindness to the attainment of non-economic policy-objectives.[101] To conclude, it should be clear that the assessment of subsidy rules and relevant case law make up a large part of

[91] Luca Rubini, 'ASCM Disciplines and Recent WTO Case Law Developments: What Space for 'green' Subsidies?' in Thomas Cottier and Ilaria Espa (eds), *International Trade in Sustainable Electricity: Regulatory Challenges in International Economic Law* (Cambridge University Press 2017), at 332-333.
[92] Steve Charnovitz and Carolyn Fischer, 'Canada–Renewable Energy: Implications for WTO Law on Green and Not-so-Green Subsidies' (2015) 14(2) World Trade Review 177, at 205.
[93] *Ibid*, at 208.
[94] Aaron Cosbey and Petros Mavroidis, 'A Turquoise Mess: Green Subsidies, Blue Industrial Policy and Renewable Energy: The Case for Redrafting the Subsidies Agreement of the WTO' (2014) 17 Journal of International Economic Law 11.
[95] Debra P Steger, 'The Subsidies and Countervailing Measures Agreement: Ahead of Its Time or Time for Reform?' (2010) 44(4) Journal of World Trade 779, at 782.
[96] Avidan Kent and Vyoma Jha, 'Keeping up with the Changing Climate: The WTO's Evolutive Approach in Response to the Trade and Climate Conundrum' (2014) 15(1-2) The Journal of World Investment & Trade 245, at 246.
[97] *Ibid.*
[98] Rolf Weber, 'Designing Trade Rules to Promote Climate Sustainability' (2014) 8(4) Journal of Energy and Power Engineering 612, at 613.
[99] Dominic Coppens, 'Twenty Years of (Re)-Shaping WTO Subsidy Law by the Appellate Body and Panels' in Luca Rubini and Jennifer Hawkins (eds), *What Shapes the Law? Reflections on the History, Law, Politics and Economics of International and European Subsidies Disciplines* (European University Institute 2016), at 73.
[100] Shadikhodjaev (n 83), at 871.
[101] Avidan Kent, 'The WTO Law on Subsidies and Climate Change: Overcoming the Dissonance?' (2014) 5(2) Trade, Law and Development 344, at 354.

trade/climate debate. Of late, the interaction between the WTO subsidy rules and climate change mitigation has formed the bulk of the literature. This thesis agrees with the criticism that commentators have expressed towards the WTO rules, particularly the subsidy rules in relation to the policy space that the Members have in mitigating climate change through employing renewable energy measures. However, the existent problems in the SCM Agreement and the controversial decisions made by the WTO adjudicators in relevant disputes does not represent the whole picture, nor does it define the interaction between trade and climate as mutually conflicting.

In this thesis, the study of how international trade rules interact with climate change mitigation requires more than an assessment of the subsidy-related issues but also a comprehensive examination of problems occurring under other WTO Agreements, such as the GATT and TRIMs. Besides from pointing out the constraints that the WTO rules and jurisprudence potentially have on renewable energy development, it is also necessary to clarify the positive contribution that the trade regime can make to climate-related goals. In this regard, the thesis can shape a more thorough and holistic understanding of the trade/climate interaction. By addressing the issue in a holistic manner, the thesis can proceed to discuss what steps can be taken to improve the mutual supportiveness between trade rules and climate change mitigation from a number of perspectives. This will be the greatest contribution of this thesis to the literature.

Chapter 3: The Two Components of Green Economy: De-carbonization and Green Industrialization

This chapter provides a detailed analysis of green economy as a core concept by introducing its two components: de-carbonization and green industrialization. The bifurcation of green economy, which is expansive in coverage into two parts, can add to analytical clarity. De-carbonization and green industrialization are closely intertwined with each other and contribute to the fundamental goal of green economy transition.

However, in certain aspects, de-carbonization and green industrialization are distinct from each other, such as their primary objectives and implications. It is a mistake to perceive de-carbonization measures and green industrialization measures as synonymous. The former primarily aims at reducing or even eliminating carbon emissions while the latter focuses mainly on industrial competitiveness in green sectors. Due to different objectives, measures designed to realize de-carbonization and green industrialization would have different implications, such as cost-effectiveness, the amount of emissions reduction. In this thesis, of particular concern is how these measures with trade-related implications would be defined by the WTO regime. This is to say, whether de-carbonization and green industrialization measures breach the WTO obligations and thus be subjected to the disciplines is a key issue. This chapter aims to provide a detailed analysis of de-carbonization and green industrialization under the context of renewable energy development and climate change mitigation.

The imperative to facilitate the transition to a green economy has been made more pressing by the scale of climate change. Measures taken to mitigate climate change can have the effect of promoting green economy transition. On the other hand, countries' efforts for green economy transition would, in many cases depend on the expansion of renewable energy. Therefore, renewable energy development and climate change mitigation support and are supported by the transition to a green economy.

The use of trade-related measures to promote renewable energy development and thus, realize de-carbonization and green industrialization has become widespread.. This explains why de-carbonization measures and green industrialization measures, during their implementation would have implications on the trading system. What remains unclear is how these implications would be perceived and dealt with by the WTO regime. For instance, whether green economy measures are compatible with trade obligations. If not, what are the consequences? Whether the WTO Members have sufficient scope of policy space for renewable energy development and climate change mitigation plays a key role in green economy transition. Chapter 7 and 8 will elaborate on the issues from trade law perspective.

Green economy is more than a buzzword but a key link between climate change mitigation, renewable energy development and international trade rules. The international trade rules and the need to mitigate climate change converge in the transition to a green economy. A systematic overview of green economy concept and its two components is essential if one is to fully understand their legal implications.

3.1 Defining a Green Economy

Green economy has not been consistently defined, nor is there a universally accepted definition. It is argued that green economy refers to a mix of existing and emerging sectors, topics, principles and concepts.[102] Current assessments are largely related to addressing a specific need or a policy question related to a specific aspect of green economy.[103]

In a pioneering report – 'Blueprint for a Green Economy' drafted by a group of leading environmental economists for the Government of the United Kingdom,[104] the term green economy was coined for the first time. However, apart from being included in the title of the report, there was no further development of conceptualizing green economy. The United Nations Environment Programme ('UNEP') has done extensive research on understanding green economy. The most widely used and authoritative definition defines green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.[105] In its simplest expression, a green economy is marked with three distinct features, which are 'low carbon, resource efficient, and socially inclusive'.[106] Another report commissioned by the UNEP touches upon green economy from the perspective of employment and defines it as an economy 'that values nature and people and creates decent, well-paying jobs.'[107] The growth of green economy should be driven by public and private investment with a view to 'reducing carbon emissions and pollution, enhancing energy and resource efficiency and preventing the loss of biodiversity and ecosystem services.'[108]

The concept of green economy has received considerable amount of attention over the past few years as an instrument to address the 2008 financial crisis as well as one of two themes for the 2012 United Nations Conference on Sustainable Development[109]. The conference discussed how to build a green economy to achieve sustainable development and lift people out of poverty:

'we consider green economy in the context of sustainable development and poverty eradication as one of the important tools available for achieving sustainable development and that it could provide options for policymaking but should not be a rigid set of rules. … We emphasize that it should contribute to eradicating poverty as well as sustained economic growth, enhancing social inclusion, improving

[102] European Environment Agency, *Europe's Environment: An Assessment of Assessments* (EEA 2011), at 93.
[103] *Ibid*, at 135.
[104] See, David Pearce, Anil Markandya and Edward Barbier, *Blueprint For A Green Economy* (Earthscan 1989).
[105] UNEP, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication: A Synthesis for Policy Makers* (UNEP 2011), at 2.
[106] *Ibid.*
[107] Michael Renner, Sean Sweeney and Jill, 'Green Jobs: Towards Decent Work In A Sustainable, Low-Carbon World' (Worldwatch Institute 2008), at 28.
[108] *Ibid.*
[109] The other theme of the 2012 United Nations Conference on Sustainable Development is: how to improve international coordination for sustainable development by building an institutional framework.

human welfare and creating opportunities for employment and decent work for all, while maintaining the healthy functioning of the Earth's ecosystems.'[110]

A rapidly growing body of literature analyzing green economy has emerged from a variety of international organizations, national governments, think tanks, experts, non-government organizations and others.[111] A number of other phrases, such as 'low-carbon growth', 'greening the economy' and 'green growth' have been widely put forward and used interchangeably. For instance, the Stern Report advocates for 'an urgent, world-wide shift towards a low carbon economy', which can be realized with manageable cost.[112] The OECD Report adopts the term 'green growth' and recognizes the synergy that should be achieved between economic development and environment protection. The definition in this report stipulates:

'…fostering economic growth and development, while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies. To do this, it must catalyze investment and innovation which will underpin sustained growth and give rise to new economic opportunities.'[113]

Green economy represents a new paradigm for development where economic development, trade growth and environmental integrity are closely interlinked in an integrated manner. In the case of traditional economic development and growth strategies, it is the rapid accumulation of material wealth that is encouraged while environmental considerations are largely ignored. As a consequence, economic progress has been achieved at the sacrifice of environmental integrity and social inclusiveness. Green economy underscores the need to address multiple issues in an integrated way and overcome interrelated crises,[114] which is superior to traditional growth in the medium to long term. However, green economy must represent more than simply 'green washing' the global economy. Beyond improving the economy's environmental performance, green economy also must be development-led, which implies the need to address economic and social issues simultaneously.[115]

It is important to recognize that the transition to a green economy is already under way, which began largely in response to the increased public awareness and strengthened political will on sustainable development.[116] Among a wide range of environmental concerns that the transition to a green economy aims to cope with, climate change lies at the core of this research. This is to say: green economy transition is expected to deliver promises such as reducing greenhouse gas

[110] See, UN Conference on Sustainable Development, (2012) *The Future We Want*, available at: https://www.eea.europa.eu/policy-documents/the-future-we-want-2013declaration.
[111] For recent publications on green economy, please see: UNDESA Division for Sustainable Development, 'A Guidebook to the Green Economy' (UNDESA 2012); Global Green Growth Institute, 'Green Economy: Measuring the Future We Want' (GGGI 2012); ILO, 'Promoting Decent Work in A Green Economy' (ILO 2011).
[112] Stern (n 55), at 4.
[113] OECD, 'Towards Green Growth A Summary for Policy Makers' (OECD 2011).
[114] Doreen Fedrigo Fazio and Patrick ten Brink, 'Green Economy: What Do We Mean by Green Economy' (UNEP 2012).
[115] UNCTAD, 'The Green Economy: Trade and Sustainable Development Implications' (UNCTAD 2011), at 4.
[116] *Ibid.*

emissions and mitigating climate change. To what extent goals to mitigate climate change can be accommodated by the transition to a green economy is of primary research interest.

Well-known economist Rodrik conceptualizes green growth as 'a trajectory of economic development that fully internalizes environmental costs, including most critically those related to climate change, and is based on sustainable use of non-renewable resources.'[117] Andrew Steer argues that the distinctive insight at the root of green growth indicates that environmental problems can be turned to good advantages.[118] The combination of climate friendly policies and economic growth policies is likely to generate benefits from a national standpoint, such as efficiency gains, technological advances, investment increase and competitive advantages.[119]

To conclude, the transition to a green economy has huge potential to generate significant economic, environmental and social benefits and synergize economic, social and environmental interests. The discussion of green economy is closely related to renewable energy development, which is a means and climate change mitigation, which is a goal. The following part touches upon the linkages between green economy, climate change mitigation and renewable energy development. .

3.2 Issues at Stake: Climate Change Mitigation and Renewable Energy Development

This section introduces two crucial issues: climate change mitigation and renewable energy development, and incorporates them in the discussion under the context of green economy. Both climate change mitigation and renewable energy development have been extensively discussed in the current literature from a variety of perspectives.[120] It is not the aim of this section to elaborate on the two issues conceptually, but to interweave them into green economy transition.

This section asks following questions: why mitigating climate change is at the core of the transition to a green economy? What is the role of renewable energy development in reducing global emissions and mitigating climate change? The questions are important in mapping out the relationships among the transition to a green economy, climate change mitigation and renewable energy development.

3.2.1 Climate Change Mitigation

[117] Dani Rodrik, 'Green Industrial Policy' (2014) 30(3) Oxford Review of Economic Policy 469, at 469.
[118] Andrew Steer, 'Resource Depletion, Climate Change, and Economic Growth' Global Citizen Foundation Working Paper 5 (2013), at 27.
[119] *Ibid.*
[120] The publications from IPCC, IEA, IRENA address climate change and renewable energy development from different perspectives. For instance, IEA, Energy, Climate Change and Environment: 2016 Insights (OECE/IEA 2O16); IREAN, Turning to Renewables: Climate-Safe Energy Solutions (IRENA 2017).

As documented by compelling scientific evidence, climate change represents one of the greatest and most difficult challenges facing the world today.[121] The Intergovernmental Panel on Climate Change issued the Fifth Assessment Report, stating that total anthropogenic greenhouse gas emissions have risen steadily since pre-industrial with larger absolute increases between 2000 and 2010.[122] Climate change is featured with a number of characteristics: its global nature, its intergenerational impact, the uncertainty and massive downside risks make it an unparalleled risk to global collective action.[123]

Nevertheless, in this thesis, climate change is raised not only as a fundamentally daunting environmental problem but also, more importantly, as a multifaceted concept that has inseparable linkages with economy and trade. It is the scope and the severity of climate change that plays a key role in determining how deeply climate change can influence economy and trade.

The impacts of climate change on economic growth and activity has been studied for the past two decades.[124] The Stern Report argues that climate change has the potential to cost a large percent of global GDP each year without any action taken.[125]The impediment occurred from climate change on economic growth cannot be overlooked or underestimated. Without reducing the negative implications that climate change could possibly have on economic development, the transition to a green economy would be ungrounded.

On the other hand, addressing climate change would necessarily incur cost on the economy is 'a mere construct of deficient modeling'.[126] The trade off between climate change mitigation and economic growth does not exist in every scenario, instead, the two policy objectives can co-exist.[127] In this vein, to mitigate climate change can contribute to economic development instead of economic slowdown. The positive relationship between action taken to mitigate climate change and the realization of green economy is, thus established. What becomes crucial is how to formulate proper climate change mitigation measures that at the same time facilitate the transition to green economy. The following part proposes to focus on renewable

[121] See, IPCC, *Climate Change 2014: Impacts, Adaptation and Vulnerability: Working Group II Contribution to the IPCC Fifth Assessment Report Volume I Global and Sectoral Aspects* (Cambridge University Press 2014).
[122] See, IPCC, *Climate Change 2014: Impacts, Adaptation and Vulnerability: Working Group II Contribution to the IPCC Fifth Assessment Report Volume I Global and Sectoral Aspects* (Cambridge University Press 2014).
[123] Steer (n 118), at 11.
[124] See, Richard S. J Tol, 'The Economic Effects Of Climate Change' (2009) 23(2) Journal of Economic Perspectives 29.
[125] See, Stern (n 55), In the book, it says: 'Using the results from formal economic models, the Review estimates that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5 percent of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20 percent of GDP or more. In contrast, the costs of action—reducing greenhouse gas emissions to avoid the worst impacts of climate change—can be limited to about 1 percent of global GDP each year.'
[126] Hermann Held and Ottmar Edenhofer, 'Climate Protection vs. Economic Growth As A False Trade Off: Restructuring Global Warming Mitigation' in Gertrude Hirsch Hadorn et al. (eds) *Handbook of Trans-disciplinary Research* (Springer 2008), at 198.
[127] *Ibid.*

energy sector and analyzes the close linkage between renewable energy development and green economy transition.

3.2.2 Renewable Energy Development

The significant role of renewable energy development in climate change mitigation and thus, green economy transition is rather self-evident. Energy production and consumption not only contributes to climate change but also serves as a backbone in economic development. [128] The development of renewable energy, as a replacement to emissions-intensive fossil fuel is arguably the 'lifeblood' of a green and low carbon economy.[129] In addition, The NDCs submitted by countries to the Paris Agreement already anticipate scaling up the deployment of renewable energy so as to reduce GHG emissions.[130]

Over the past decade, remarkable growth has taken place in renewable energy sector and an accelerated growth of wind and solar has been witnessed on a global scale. It is estimated that approximately 43% of global energy demand can be met with renewable energy by 2030, and up to even 77% by 2050.[131] It is useful to examine the underlying reason why development in renewable energy area has been unprecedented.

It is undeniable that various forms of government supportive measures have played and will play an important role in shaping an enabling environment for renewable energy development. The vast majority of countries worldwide had renewable energy supportive policy measures in place by the end of 2015, at least 173 countries had renewable energy targets and an estimated 146 countries had measures, at the national or state/provincial level.[132] Industrialized countries have for a long time been a forerunner in instituting supportive policy measures in bolstering renewable energy development. However, the number of developing countries with policies in place in 2014 to support renewable energy had increased six-fold since 2006.[133] The increasing momentum of instituting supportive policy measures in renewable energy sector is bound to drive renewable energy capacities and expand renewable energy market worldwide.

Viewed from trade law perspective, it is intriguing to touch upon whether these measures introduced by countries would have implications on the trading system due to the tradable nature of some renewable energy products, such as renewable energy equipment. To be clear, whether renewable energy measures would conflict or be compatible with trade rules depends on the specific design of the measure. The answer to this question is dependable on the specific design and implementation of the specific renewable energy measure. Case-by-case analysis is

[128] IRENA, 'Rethinking Energy' (IRENA 2015), at 22.
[129] *Ibid.*
[130] IRENA, 'Untapped Potential for Climate Action: Renewable Energy In Nationally Determined Contributions' (IRENA 2017), at 9-10.
[131] See, IPCC, *Special Report On Renewable Energy Sources And Climate Change Mitigation* (International Panel on Climate Change 2011).
[132] REN21, Renewables 2016 Global Status Report (REN21 2016), at 8.
[133] UN News Center, 'UN News - Developing Nations' Policies Push Renewable Energy Capacity To Record High, Says UN-Backed Report' (2014) available at: http://www.un.org/apps/news/story.asp?NewsID=47952#.WQizgiN97oB, accessed 22 April 2017.

necessary in assessing the interaction between renewable energy measures and international trade rules.

3.3 Green Economy Components: De-carbonization and Green Industrialization

The concept of green economy is expansive in coverage and can be examined from different dimensions. This thesis proposes to divide it into two components: de-carbonization and green industrialization, which constitute two pillars of green economy transition. The two components nevertheless, have different primary objectives. In this research, the discussion of de-carbonization and green industrialization is juxtaposed with renewable energy development, which is an important part of green economy. Therefore, measures designed and adopted for renewable energy development can be also classified into two categories: de-carbonization renewable energy measures and green industrialization renewable energy measures. The classification of renewable energy measures in relation to the underlying primary policy objectives is novel, which is different from several widely adopted classifications in this area.[134]

De-carbonization renewable energy measures and green industrialization renewable energy measures overlap to some extent since certain forms of renewable energy measures can achieve both objectives simultaneously. For instance, renewable energy policy makers can combine policy tools that aim at the two objectives into a policy package. However, de-carbonization renewable energy measures and green industrialization renewable energy measures still differ in a number of ways, of which the most fundament is the underlying primary objectives and implications.

The implications on the international trading system are of concern since the transition to a green economy is 'inextricably linked with, and crucially affected' by economic activities related to international trade.[135] Examining the implications of certain forms of de-carbonization or green industrialization measures on the trading system sheds light on the interaction between trade regime and climate regime. However, this does not mean that all renewable energy measures that are designed primarily for de-carbonization or green industrialization would implicate the trading system in an identical way. It still requires a case-by-case analysis.

Therefore, the classification of de-carbonization and green industrialization avoids lumping all renewable energy measures into a single basket, which otherwise hinders analytical clarity. Meanwhile, the bifurcation highlights the fundamental differences existing in various forms of renewable energy measures, particularly when it comes to assessing the measures' interaction with the WTO rules. Instead of examining renewable energy measures' WTO compatibility one by one, it is more systematic to have these measures grouped and then analyzed.

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[134] In a large number of scholarships, renewable energy measures are generally classified into: fiscal measures, command and control measures or demand and pull measures and technology push measures. See, Felix Groba and Barbara Breitschopf, 'Impact of Renewable Energy Policy and Use n Innovation – A literature Review' (Deutsches Institut für Wirtschaftsforschung Discussion Paper 2013); Sam Aflaki and Andrea Masini, 'Does Economic Growth Matter? Technology-Push, Demand-Pull and Endogenous Drivers of Innovation in the Renewable Energy Industry' (IDEAS Working Paper Series from RePEc 2014).

[135] IISD and UNEP, *Trade and Green Economy: A Handbook* (IISD 2014), at 3.

The following part will define de-carbonization and green industrialization, respectively and select several specific renewable energy measures as illustrative examples. It aims mainly to clarify how de-carbonization and green industrialization measures adopted in renewable energy sector differ from each other.

3.3.1 De-carbonization Objective and Specific Policy Measures

3.3.1.1 The Objective of De-carbonization

As briefly mentioned in the preceding part, de-carbonization constitutes an important component of green economy transition.. A growing recognition is emerging that decarbonizing the economy is a solution to many environmental problems.[136] The introduction of de-carbonization in this part is to highlight the distinct features of this concept and the way measures are designed and implemented to achieve this objective. This paves the way for further discussion on the interaction between de-carbonization measures and the WTO rules in Chapter 7. Without engaging in legal analysis of de-carbonization and its specific measures, this part deals with the definitional issues.

Muradov, in his book defines de-carbonization as 'aiming at eliminating or drastically reducing the amount of carbon dioxide emitted from the use of primary fossil fuel resources.'[137] The world is confronted with an urgent need to address climate change by decoupling the growth of economy and the increase of carbon emissions. There are three major de-carbonization measures, which are: carbon reduction through energy efficiency improvements and energy conservation, carbon rejection through carbon capture and storage and carbon abandonment through switching to zero-carbon energy sources and fuels, such as renewable energy.[138] According to the IRENA, it is the energy efficiency measures and renewable energy that will deliver 'the lion's share' of the emissions reductions needed to decarbonize the global energy system.[139]

This part does not aim to make an exhaustive research of all possible de-carbonization measures but focuses on these that aim at increaseing the share of renewable energy in l energy mix. With the focus in mind, de-carbonization in this thesis refers to reducing the carbon intensity in energy production by increasing the share of renewable energy. Therefore, a transformative shift from fossil fuel based

[136] Nazim Muradov, 'De-carbonization at Crossroads: The Cessation of the Positive Historical Trend or a Temporary Detour?' (2013) 6 Energy & Environmental Science 1060, at 1065.
[137] Muradov (n 17), at 9.
[138] *Ibid*, at 10.
[139] IRENA, 'Global Energy Transition Prospects and the Role of Renewables' (IRENA 2017), at 130.

energy system to a renewable energy based one would greatly reduce carbon emissions and mitigate climate change. This is to say, measures that are designed to incentivize renewable energy development, particularly renewable energy electricity generation can fall into the ambit of de-carbonization.

Due to the ever-expanding trade in renewable energy sector, certain forms of de-carbonization measures would generate trade-related implications and risk being challenged by the WTO Members. It is critically important to have a clear understanding of the design and implementation of de-carbonization measures adopted in renewable energy sector before analyzing their interaction with the WTO rules. The following part uses doctrinal method and maps out the parameters of several classic de-carbonization measures that have been widely used by countries around the world.

3.3.1.2 De-carbonization Measures

A wide range of policy measures have been adopted by governments at both national and sub-national levels to de-carbonize their economic development.[140] As explained by Nordhaus and Yang: 'It is single nations, not the United Nations, that determine energy and environmental policy, so any grand design to slow global warming must be translated into national measures.'[141] It is largely up to individual countries to come up with specific action plans that are in line with their international commitments and national or regional circumstances. Therefore, the specific design and implementation of de-carbonization measures in different jurisdictions would turn out to be varying.

The research focus here is how to de-carbonize the generation of electricity, which means reducing the carbon intensity of electricity generation by incentivizing renewable energy sourced electricity. The reason is simple, because electricity generation contributes the single highest sectoral share of carbon emissions.[142] The realization of de-carbonization objective is largely dependable on the reduction of emissions originated from electricity generation. Without bringing down the electricity generation emissions, climate change mitigation would hardly be achieved.

Since renewable energy development is an inseparable part in de-carbonization, measures need to have the effect of promoting the expansion of renewable energy, which in this case, electricity generated from renewable energy sources. Various forms of incentive measures can be adopted to stimulate renewable energy electricity generation to substitute fossil fuel generation in a direct way. Fiscal stimulus, such as tax rebates, transfer of funds can be awarded to renewable energy electricity generators. On the other hand, policy makers also can design and implement measures that are not directly linked with renewable energy development but still have the effect of promoting it. For instance, carbon pricing has the effect of encouraging electricity generator to switch from emissions

[140] IEA, 'Complementary Measures for De-carbonization: Looking Beyond Pricing and Regulation to Motivate Private Business and State-Owned Enterprises' (IEA, 2015).
[141] William D Nordhaus and Zili Yang, 'A Regional Dynamic General-Equilibrium Model of Alternative Climate-Change Strategies' (1996) 86 The American Economic Review 741.
[142] OECD/IEA and IRENA, 'Perspectives for the Energy Transition – Investment Needs for A Low Carbon Energy System' (OECD/IEA 2017), at 151.

intensive fuels to renewable energy. However, this kind of measures does not directly approach renewable energy developer, which therefore does not fall into the ambit of de-carbonization in this sense.
This part selects feed-in tariffs ('FIT') as an illustrative example of de-carbonization measures adopted in renewable energy area. It is analytically useful to examine the policy design and implementation of FITs. This on the one hand, decides to what extent FITs make renewable energy technologies more competitive and thus, contributes to the goal of de-carbonization. On the other hand, this lays the foundation on which the assessment of the compatibility between FITs with the WTO rules could be made.

(a) The Definition of Feed-in Tariff

Feed-in tariffs[143] is defined as 'an energy supply policy focused on supporting the development of new renewable energy projects by offering long-term purchase agreements for the sale of renewable energy electricity.'[144] 110 jurisdictions at the national or state/provincial level had enacted FITs as of year-end 2015, which made it the most widely adopted regulatory mechanism in renewable energy electricity sector.[145] Empirical analysis by Ragwitz and other colleagues show that FITs have successfully triggered a substantial renewable energy capacity expansion.[146]

The use of supportive mechanisms in renewable energy electricity sector is closely related with of the cost structure generating electricity from renewable energy sources. This corresponds with the theory of market failure in the renewable energy R&D chain, which demands additional policy instruments.[147] One of the noted market failures is the high upfront cost, which would discourage investors, whether public or private, from investing in renewable energy electricity generation.[148] In addition, it normally takes a long time for renewable energy investment to gain returns,[149] which increases the uncertainty and risk of investment decision-making. Investors tend to condition the investment in renewable energy area on a guaranteed level of returns over time. In this vein, FITs provides certainties and reduce risks for investors with a positive effect on the effectiveness and cost-efficient criteria at

[143] The term 'feed-in tariff' derives from the fact that early European feed-in tariffs established rules for how electricity could feed in to the grid.
[144] NREL, 'A Policymaker's Guide to Feed-in Tariff Policy Design' (National Renewable Energy Laboratory 2010).
[145] REN21, 'Renewables 2016 Global Status Report' (Renewable Energy Policy Network for the 21st Century 2016).
[146] Mario Ragwitz et al., 'OPTRES – Assessment and optimisation of renewable energy support schemes in the European electricity market' (2007), available at: https://ec.europa.eu/energy/intelligent/projects/en/projects/optres.
[147] Roland Thayer, 'A Policymaker's Guide to Feed-in Tariffs: Encouraging A Responsible Transition to Renewable Electricity in California' (2013) Pomona Senior Theses, available at: http://scholarship.claremont.edu/cgi/viewcontent.cgi?article=1086&context=pomona_theses, at 23-27.
[148] *Ibid.*
[149] *Ibid.*

the same time.[150] Particularly in early renewable energy technology development stage, the effectiveness of FITs in providing investment certainty is noticeable.[151] It is useful to touch upon why and in what ways FITs can provide investment certainties and promote the expansion of renewable energy electricity generation on a global scale. There are three key characteristics of FITs that determine the policy effectiveness: guaranteed purchase of renewable energy electricity, guaranteed prices to purchase electricity and long-term contracts. The following parts elaborate on the three important parts of FIT scheme one by one.

(b) Characteristics of FITs

An important characteristic of FITs is the obligation to purchase the electricity that is produced from eligible renewable energy producers. In the light of this, a feed-in tariff scheme by its nature is a purchasing agreement. Renewable energy electricity producers that are eligible for the FIT scheme would be guaranteed of the purchase of electricity produced from renewable energy installation. The purchase obligation would increase investment security and certainty, which is of utmost significance and exists in all FIT schemes. In fact, without a purchase obligation, a policy will not be considered as a FIT scheme.[152]

The second characteristic of FITs is that producers of renewable energy electricity are guaranteed with a certain amount of tariff per unit of electricity as payment in accordance with the purchase obligation. There is not a universally applied price in this regard. For instance, electricity produced from solar, wind or thermal might be accorded with different prices. The exact amount of payment varies to the extent that differences in the type of technology, size of project, quality of the resource and/or other project-specific factors would be fully reflected.[153] The payment for renewable energy electricity needs to be adjusted on the basis of production costs. This in turn enables producers to get a reasonable return for their investments.

The price for renewable energy sourced electricity tends to be higher than electricity from traditional fuel sources. The underlying reasons of a higher rate are twofold: the first reason is the one discussed in previous chapter in relation to the rationale of supporting renewable energy. The positive externalities associated with the use of renewable energy should be reflected in the price, such as socio-economic and environmental benefits, which otherwise are left without being accounted. The other reason is that the price of renewable energy electricity should be set at a level that high initial costs can be compensated. In addition, the investors are guaranteed with the certainty to gain a reasonable amount of profits on their investments.

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[150] See, Pablodel Río González, 'Ten Years of Renewable Electricity Policies in Spain: An Analysis of Successive Feed-in Tariff Reforms' (2008) 36(8) Energy Policy 2917, at 2924-2929.

[151] Christian Flachsland et al., Report on Energy and Climate Policy In Europe: The Economics of De-carbonization (2009), available at: https://www.mcc berlin.net/fileadmin/data/pdf/RECIPE_report_2009.pdf, at 92.

[152] David Jacobs, *Renewable Energy Policy Convergence In The EU: The Evolution Of Feed-In Tariffs In Germany, Spain And France (Global Environmental Governance)* (Ashgate Publishing Group 2012).

[153] Arne Klein et al., 'Evaluation of Different Feed-in Tariff Design Options – Best Practice Paper for the International Feed-In Cooperation: 2nd Edition' (Ministry for the Environment, Nature Conservation and Nuclear Safety 2008).

An optimal price set for FITs is critically important. Either a low tariff rate or a high one would not be effective in achieving the policy objectives. A low tariff rate is not adequate in incentivizing investors to invest in renewable energy because the investment could turn out to be less than sufficiently profitable. However, an unnecessarily high tariff level can undermine the cost-effectiveness of FITs by overburdening consumers. How to set a price for FITs that maximizes the cost-effectiveness remain a big challenge as well as a great opportunity for policy-makers.

The third characteristic of FITs is the payment of tariffs to renewable energy electricity generators is guaranteed over a long period of time, which ranges from 15 to 25 years.[154] The length of FIT scheme needs to be responsive to the purpose of incentivizing investment in renewable energy technologies and projects, in line with the lifetime of renewable energy installations.[155] It gives investors a sufficient amount of time to recover initial costs and make profits from investment. Additionally, it enhances security and certainty of investment.

(c) The Effectiveness of FITs

According to a EU report on renewable energy policies implemented in the European Union, well-adapted feed in tariff regimes could turn out to be the most efficient and effective support schemes for promoting renewable electricity.[156] FITs can consistently meet new renewable energy supply and demand more effectively and economically, in comparison with alternative policy schemes.[157] A review of successful FITs experiences in a number of jurisdictions[158] suggests that FITs can facilitate renewable energy technological upgrade by creating enabling conditions.[159] By substituting fossil fuels with renewable energy in electricity generation sector, FITs have played a critical role in reducing global emissions.

The benefits that successful application of FITs can bring are multifold. Firstly, it can progressively de-carbonize energy production and economic development as a whole. Secondly, the increased share of renewable energy in electricity system can diversify energy mix by reducing consumption and reliance on fossil fuel and provide more security. Thirdly, the use of FITs can increase the demand for renewable energy equipment manufacturing, such as wind turbines, solar-

[154] NREL, 'A Policymaker's Guide to Feed-in Tariff Policy Design' (National Renewable Energy Laboratory 2010). For a more detailed discussion of the duration of FIT contracts, see, Commission Working Staff Document, 'The Support of Electricity from Renewable Energy Sources' (Commission of the European Communities 2008).
[155] Jacobs (n 152), at 12.
[156] Commission Working Staff Document, 'The Support of Electricity from Renewable Energy Sources' (Commission of the European Communities 2008).
[157] Philippe Menanteau, Dominique Finon and Marie-Laure Lamy, 'Prices versus Quantities: Choosing Policies for Promoting the Development of Renewable Energy' (2003) 31 Energy Policy 799, at 803.
[158] For a detailed discussion of effective policies for deploying renewables in Europe, which includes FITs, see, IEA, *Deploying Renewables Principles for Effective Policies* (OECD/IEA 2008), at 23.
[159] Karlynn Cory, Toby Couture and Claire Kreycik, 'Feed-in Tariff Policy: Design, Implementation, and RPS Policy Interactions' (National Renewable Energy Laboratory 2009), at 12.

photovoltaic cells, mirrors, lenses, batteries. This can provide local manufacturers opportunities to enhance the capacity building by increasing the demand.

(4) Conclusion

As an illustrative example of de-carbonization measures, the FITs show how policy-makers can shape an enabling environment for renewable energy electricity generation by providing generators investment incentives. The increasing prevalence of employing FITs in both developed countries and developing ones reflects the measure's effectiveness in reducing carbon emissions in electricity sector. The primary policy objective of FITs and other forms of de-carbonization measures is to reduce carbon intensity in electricity generation and economy development as a whole. Only by substituting renewable energy sourced electricity to fossil fuel sourced one can the goal of de-carbonization be realized.

Nevertheless, a proper design and implementation of FITs could also bring other benefits in economics sense, such as incentives for manufacturing, increase in jobs. The incidental effects that de-carbonization policy measures have on economic interests would still be likely to give rise to trade-related issues. For instance, whether the use of FITs favors domestic solar electricity generator over foreign wind electricity generator constitutes discrimination in the WTO law perspective is of research interest. The following Chapter 7 provides more details on these pertinent questions concerning the compatibility of de-carbonization renewable energy measures with trade obligations.

The following section introduces another important component of green economy: green industrialization. Policy measures designed primarily for de-carbonization and these for green industrialization can overlap in some cases, despite they differ to a large extent. Or policymakers can integrate de-carbonization measure and green industrialization measure in a mix policy package and use them simultaneously to achieve a multitude of policy objectives. In this scenario, the assessment of the measures' compatibility with international trade rules would be compounded.

3.3.2 Green Industrialization in the Context of Green Economy

3.3.2.1 Green Industrialization Objective

Green industrialization refers to the structural transformation of economy that primarily aims at enhancing manufacturing capabilities in renewable energy area, which can contribute effectively to addressing pressing environmental challenges, such as climate change. Successful green industrialization offers the possibility to reconcile social, economic and environmental goals at the same time.

The realization of green industrialization needs to be accompanied with a mix of green industrial policy measures. Cosbey defines green industrial policy as any that 'supports the development of industries that produce green goods, or goods that have better environmental performance in operation, directly address environmental

problems or being produced in a way that is environmentally preferable to their competitors.'[160]

In this part, green industrial policy refer to these that aim at enhancing the manufacturing capability of renewable energy equipment, such as solar panel, solar PV, wind turbines. In a similar manner to traditional industrial policy making, the design and implementation of green industrial policy measures invariably focus on the manufacturing sector.[161] The widespread use of green industrial policy is related to not only the urgency of realizing green industrialization so as to address climate change but also substantial economic benefits that developing renewable energy manufacturing sector can bring.

As statistics shows, most of trade in renewable energy is related to manufactured products and components, which has been expanding in a rapid manner.[162] It is estimated that growth in imports in renewable energy equipment outpaced overall global merchandise imports during 2007 to 2011.[163] The eagerness that governments have in developing strategic renewable energy industry with a competitive advantage on international markets is noticeable not only in developed countries but also developing ones.[164]

As an illustrative example, the global solar PV market was valued at approximately USD 108 billion in 2014 and is expected to reach around USD 148.5 billion by 2020.[165] Robust growth on the basis of growing demand from residential and utility application sectors will ensure the steady rise of solar PV market value. Global market for wind power equipment manufacturing increased from USD 7.5 billion in 2003 to USD 58.5 billion in 2013 and is expected to reach USD 93.8 billion in 2023.[166] The ever-increasing market for renewable energy has potential to bring about new economic opportunities and benefits.

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[160] Aaron Cosbey, 'Green Industrial Policy and the World Trading System' *ENTWINED Issue Brief* (IISD 2013), available at: http://www.iisd.org/sites/default/files/publications/entwined_brief_green_industrial.pdf, accessed on 15 October 2016.

[161] Bijit Bora, Peter Lloyd and Mari Pangestu, 'Industrial Policy and the WTO' (UNCTAD Policy Issues in International Trade and Commodities Study Series No.6, 2000), at 2.

[162] Arunabha Ghosh, 'Clean Energy Trade Conflicts: The Political Economy of a Future Energy System' in Thijs Van de Graaf et al. (eds) *The Palgrave Handbook of the International Political Economy of Energy* (Palgrave Macmillian, 2016), at 175.

[163] Arunabha Ghosh, 'An Unsettled Political Economy' (Smart Investor, 13 June 2016), available at: http://smartinvestor.business-standard.com/pf/Tax-390116-Taxdet-Arunabha_Ghosh_An_unsettled_political_economy.htm#.Wf2Y6oVOKUk, accessed on 17 October 2017.

[164] Katrin Jordan-Korte, *Government Promotion of Renewable Energy Technologies: Policy Approaches and Market Development in Germany, the United States, and Japan* (Gabler Verlag Springer 2011), at 33.

[165] Nasdaq Global Newswire, 'Solar Photovoltaic (PV) (CPV, Hybrid and Other systems) Market for Residential, Non-residential and Utility Applications: Global Industry Perspective, Comprehensive Analysis, Size, Share, Growth, Segment, Trends and Forecast, 2014 – 2020', available at: https://globenewswire.com/news-release/2016/04/07/826736/0/en/Global-Solar-PV-Market-Poised-to-Surge-from-USD-108-3-Billion-in-2014-to-USD-148-5-Billion-by-2020-MarketResearchStore-Com.html, accessed on 12 November 2017.

[166] Statista, 'Value of the Global Wind Power Equipment Manufacturing Market from 2003 to 2023', available at: https://www.statista.com/statistics/217174/global-projected-growth-of-wind-power-by-2020/, accessed on 17 November 2017.

Governments around the world attempt to employ policy instruments to affect the allocation of resources in favor of industry, principally manufacturing as distinct other sectors.[167] The policy goal is to change fundamentally the structure and bolster technological development in new industries.[168] In many cases, the use of industrial policy is associated with multiple objectives, including increased employment, better income distribution and enhanced technological capacity and improved environmental conditions as non-economic objectives.

Various forms of supportive policy measures have been adopted to stimulate and create domestic industries manufacturing renewable energy electricity generation equipment.[169] The design and implementation of policy measures in incentivizing domestic renewable energy manufacturing sector is of key importance. There might be possibility that governments favor domestic renewable energy manufacturing to the detriment of foreign ones, which could generate restrictive implications on the trading system.

The following part selects two specific green industrialization measures: local content requirements and renewable energy subsidies. A close examination of the policy design and implementation of the policy measures is a prerequisite to exploring the compliance with the WTO rules.

3.3.2.2 Green Industrialization Measures

A mix of policy measures have been adopted by governments around the world to shape an enabling environment that is instrumental for green industrialization. These measures can foster industries to take a leading role in developing and applying low carbon and climate resilient technologies, products, processes and approaches.[170] In this part, the research sphere is confined to renewable energy equipment manufacturing.

From a traditional perspective, policy makers frequently use tariffs and import protection to direct resources into certain sectors.[171] Imposing high tariffs on foreign renewable energy equipment also has the effect of protecting domestic industries. The US President Trump made a decision recently to impose a 30% tariff on imported solar panels, most of which come from China.[172] This will increase the price of Chinese solar panels when they are imported to the US, which provides artificial advantage for solar panel manufacturers in US.

[167] John Weiss, 'Industrial Policy in the Twenty-First Century: Challenges for the Future' in Adam Szirmal, WimNaudé and Ludovico Alcorta (eds), *Pathways to Industrialization in the Twenty-First Century: New Challenges and Emerging Paradigms* (Oxford University Press 2013).
[168] Dani Rodrik, 'Normalizing Industrial Policy', Commission on Growth and Development Working Paper 3 (The World Bank 2008), at 4.
[169] Andrew Prag, 'Removing International Trade Barriers' in OECD/IEA/NEA/ITF, *Aligning Policies for a Low-carbon Economy*, (OECD Publishing, 2015), available at: http://dx.doi.org/10.1787/9789264233294-en, at 130.
[170] United Nations Industrial Development Organization, 'UNIDO Green Industry Initiative for Sustainable Industrial Development' (UNIDO 2011), at 19.
[171] Bora, Lloyd and Pangestu (n 161), at 2.
[172] Julia Horowitz and Patrick Gillespie, 'Trump Slaps Tariffs on Foreign Solar Panels and Washing Machines' (CNN Money, 2018), available at: http://money.cnn.com/2018/01/22/news/economy/us-tariff-washing-machines-solar-cells/index.html, accessed on 2 January 2018.

This work does not aim to touch upon all policy measures that primarily aim at green industrialization. Instead, it chooses two illustrative examples: local content requirements ('LCRs') and renewable energy subsidies. These measures not only are widely used by governments to protect domestic renewable energy manufacturing industries but also become grounds for trade disputes at the WTO. Because renewable energy, particularly equipment is increasingly traded internationally, these measures would have cross-broader ramifications. It is critical to elaborate on the policy design and implementation of the measures before delving into the compatibility of them with international trade rules.

(1) Local Content Requirements

(a) The Definition of LCRs

Local content requirements are policy measures that require foreign or domestic investors to source a certain percentage of intermediate goods from local manufactures or producers.[173] The WTO defines an LCR as a 'requirement that the investor purchase a certain amount of local materials for incorporation in the investor's product.'[174] These local manufacturers can be either domestic firms or localized foreign-owned enterprises.[175] To put it differently, LCRs serve as performance requirements that regulate the extent to which certain projects must use locally manufactured products.[176]

By mandating the use of local products in specific projects, LCRs aim to ensure sales for local infant industries before they grow up to be competitive with international competitors, both domestically and internationally.[177] Without imposing a direct burden on the government budget, LCRs are favored by policymakers.

The use of LCRs has become increasingly popular for promoting local manufacturing, including in the renewable energy manufacturing sector. At stake in the use of LCRs is the governments' attempt to provide incentives for renewable energy development by enhancing local manufacturing capabilities. As inevitably, the controversy is growing over the use of LCRs in renewable energy area that subjects foreign manufactures' trade interests into jeopardy. It is necessary to have a better understanding of the design of LCRs as well as its effectiveness in achieving the goals in relation to cultivating a domestic renewable energy industry.

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[173] Jan-Christoph Kuntze and Tom Moerenhout, 'Local Content Requirements And The Renewable Energy Industry - A Good Match? (2013) ICTSD, available at: http://www.greengrowthknowledge.org/sites/default/files/downloads/resource/local-content-requirements-renewable-energy-industry-ICTSD.pdf, accessed 7 November 2017, at 12.

[174] WTO, Local Content Measure, available at: https://www.wto.org/english/thewto_e/glossary_e/glossary_e.htm, accessed on 12 March 2018.

[175] Kuntze and Moerenhout (n 173), at 12.

[176] Vladimir Tomsik and Jan Kubicek, 'Can Local Content Requirements in International Investment Agreements Be Justified?' (2006) NCCR Trade Regulation Working Paper No. 2006/20.

[177] Khan Mushtaq and Stephanie Blankenburg, 'The Political Economy of Industrial Policy in Asia and Latin America' in Mario Cimoli, Giovanni Dosi, and Joseph Stiglitz (eds) *Industrial Policy and Development: The Political Economy of Capabilities Accumulation* (Oxford University Press 2009), at 342-343.

(b) The Design and Implementation of LCRs

The use of local content requirements has a relatively long history. Many countries have introduced such measures in large-scale industries with externalities such as automobile, chemical industries as government interventions.[178] Recent years have witnessed the rising popularity of imposing LCRs in renewable energy policy sector in not only developed but also developing countries. The adoption of LCRs in renewable energy sector is widespread within recent decades. LCRs are often introduced as a complementary policy concurrently with government supportive measures or as part of government procurement.[179] By obligating renewable energy investors to source from local suppliers, policy makers create opportunities to enhance the capacity of local firms and enterprises. As a consequence, the competitiveness of local renewable energy sector can be increased, which will also incentivize jobs creation. For instance, a government can impose LCRs to mandate wind electricity generator to source wind turbines and blades from local suppliers. In this case, the foreign manufactured wind turbines and blades will be disfavored and local ones reap the benefits.

There is not a one-size-fits-all design of LCRs in renewable energy sector. The policy design and enactment of LCRs in different jurisdictions can differ in a number of ways that next part will address. How LCRs are designed decides the interaction of these measures and international trade rules.

LCRs can be used as a stand-alone policy. Alternatively, LCRs can be tied to a wide array of government concessions, such as preferential tariffs, tax exemptions, low interest loans and government procurement in many cases.[180] LCRs can also be factored into virtually any good or service that can be used as an input into most goods and services.

(c) The Effectiveness of LCRs

This part discusses the effectiveness of LCRs in achieving the goals with respect to enhancing local renewable energy manufacturing industries to become competitive and thus, expanding the development of renewable energy. It is intriguing to explore whether the negative spillovers of LCRs as being protectionism measure could be offset by any positive impacts LCRs can bring. The debate on the effectiveness of LCRs from a general perspective and LCRs adopted in renewable energy sector has been carried on.

The UNCTAD conducts a comprehensive research on the linkage between local content requirements and green economy.[181] In its report, the UNCTAD identifies positive rationales of using LCRs from a general perspective: it can strengthen an infant industrial base, which is much needed particularly in developing countries; a secondary use is to address a market or policy failures where multinationals fail to

[178] Gary Clyde Hufbauer, Jeffrey J Schott and Cathleen Cimino, *Local Content Requirements: A Global Problem* (Peterson Institute for International Economics, 2013), at 16.
[179] Nicholas Rivers and Randy Wigle, Domestic Content Requirements and Renewable Energy Legislation (June 11, 2011), available at: https://ssrn.com/abstract=2129808 or http://dx.doi.org/10.2139/ssrn.2129808.
[180] Kuntze and Moerenhout (n 173), at 5.
[181] See, UNCTAD, 'Local Content Requirement ad the Green Economy' (United Nations, 2014).

respond to; a third positive rationale is to overcome existing barriers to technological transfer and development; also, countries can re-distribute rents arising from economic activities; lastly, in comparison to other forms of protection measures, LCRs may be preferable from an overall welfare perspective. [182] Particularly, developing countries should be able to implement local content measures to protect and strengthen infant industries that are not yet able to compete in the world market.[183]

Meyer also argues that the use of discriminatory subsidies such as LCRs at the subnational level can, in some cases increase global welfare since these measures can generate necessary political support for schemes that provide global public goods and internalize benefits from providing such public goods. [184] Local governments' use of LCRs in renewable energy sector could turn out to be welfare enhancing from an international perspective.[185] From environmental perspective, the use of LCRs is likely to bring more, new mature players to the global market in the medium to long term, which implies a higher degree of competition and innovation as well as lower renewable energy technology costs.[186] From political economy perspective, it remains very difficult to make a bold move in favor of renewable energy development, particularly of the scale called for by climate change instruments, if the local constituencies do not see a tangible advantage.[187] It is more realistic in practice to make use of buy-local requirements in massively promoting renewable energy so that social-economic development goals could also be achieved at the same time.[188]

In a joint work produced by Kuntze and Moerenhout, five factors are listed out that decide the effectiveness of LCRs in renewable energy sector. These factors are: the size and stability of renewable energy market, restrictiveness of LCRs, cooperation and financial incentives in the whole renewable energy supply chains, learning-by-doing potential and degree of current technological knowledge.[189] This is to say, the Market size needs to be large enough and has a high level of stability; the restrictiveness of LCRs needs to be set at a proper level instead of being unnecessarily high; the cooperation and other forms of financial incentives need to exist as complementary policy tools; the potential of learning-by-doing and the degree of technological knowledge base need to be high. Grossman finds that the imposition of LCRs 'within a certain degree of standard stringency' has potential to increase production of domestic inputs compared to a counterfactual without such

[182] *Ibid*, at 4-6.
[183] Lise Johnson, 'Space for Local Content Policies and Strategies: A Crucial Time to Revisit an Old Debate' (Deutsche Gesellschaft für Internationale Zusammenarbeit Gmbh 2016), available at: http://ccsi.columbia.edu/files/2016/10/giz2016-en-local-content-policies-study.pdf, accessed on 11 November 2017, at 7.
[184] Timothy Meyer, 'How Local Discrimination Can Promote Global Public Goods' (2015) 95 Boston University Law Review 1937, at 1940-1941.
[185] *Ibid*, at 2003-2012.
[186] Kuntze and Moerenhout (n 173), at 6-7.
[187] Jorge E Vinuales, Interview by the Wire, 'India Solar Disputes: Right Intent, Wrong Means' (22 April 2016), available at: https://thewire.in/31003/india-solar-dispute-right-intent-wrong-means/, accessed on 17 November 2017.
[188] *Ibid.*
[189] Kuntze and Moerenhout (n 173), at 2.

requirement.[190] LCRs could be very effective in certain settings when they can ensure the steady and fast development of a strategically important domestic industry.[191]

Lewis and Wiser argue that there are mainly two ways that local economy could benefit from private and public investment via the imposition of LCRs.[192] Firstly, infant industries could be protected from competition with foreign competitors through obtaining an artificial competitive advantage. Otherwise, it would be difficult for local manufacturers to compete with foreign ones. Secondly, the foreign firms are incentivized to establish their manufacturing facilities locally or outsource manufacturing to domestic firms so as to meet the requirements of LCRs. This can attract more investment from foreign sources.

As a result of increased investment, employment opportunities will increase in the manufacturing industry of intermediate products or components, such as wind blade, solar cells, and solar modules.[193] The job potential in renewable energy manufacturing sector cannot be underestimated. For instance, jobs in the segment of the Chinese solar PV industry jumped by 81% to reach 635,000.[194] Manufacturing jobs in the US wind sector also grew by 15% to reach 25,000 jobs in 2016.[195] Since enhanced equipment manufacturing can lead the deployment of renewable energy projects in other sectors, such as construction and installation, the potential for job increase exists as well.

Envisaged from a medium to long term, LCRs can facilitate the transfer of technology through learning by doing and capacity building in domestic industries.[196] With tangible socio-economic benefits promised, costly renewable energy policies with LCRs attached would be more likely to garner political support, which otherwise may not be.[197]

In addition, environmental benefits associated with LCRs could emerge in a longer term, which is so-called 'positive spillover effects'. In other words, the use of LCRs would bring more mature and competitive national players to the global renewable energy market and improve the competitiveness of renewable energy industries. This can drive down the cost of renewable energy technologies and encourage competition and innovation. In the light of this, expansion of renewable energy is conducive to address climate change.

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[190] For the discussion of the relationship between the imposition of local content requirements and the production of domestic intermediates, see, Gene M Grossman, 'The Theory of Domestic Content Protection and Content Preference' (1981) 96 The Quarterly Journal of Economics 583; Carl Davidson, Steven J Matusz and Mordechai E Kreinin, 'Analysis of Performance Standards for Direct Foreign Investments' (1985) 18 The Canadian Journal of Economics 876.

[191] Dani Rodrik, *One Economics, Many Recipes: Globalization, Institutions, and Economic Growth* (7th Ed, Princeton University Press 2007).

[192] Joanna Lewis and Ryan Wiser, 'Fostering a Renewable Energy Technology Industry: An International Comparison of Wind Industry Policy Support Mechanisms' (2007) 35(3) Energy Policy 1844, at 1846.

[193] *Ibid.*

[194] IRENA, Renewable Energy and Jobs Annual Review 2017 (IRENA, 2017), at 8.

[195] *Ibid*, at 9.

[196] Lewis and Wiser (n 192). .

[197] Meyer (n 184), at 1946.

Localized manufacturing can be an important element of a move to a renewable energy system that is not dependent on foreign imports or fossil fuel.[198] This amounts to a strong political motivation for building up local manufacturing capabilities. Without developing these capabilities, countries will have to import new technology or rely on traditional fossil fuels.

However, the opposing camp has raised skeptical views towards the effectiveness of LCRs adopted in renewable energy area. Forcing or incentivizing the sourcing of intermediate goods from local production, LCRs represents 'an inefficient and suboptimal allocation of resources.'[199] The competitiveness of locally produced renewable energy products would be artificially improved. As a consequence, like products of foreign origins will be less attractive, which is against Ricardo's theory of comparative advantage.[200] Investors are restricted from using the full range of technologies available in the marketplace.

As a result, the investors will be burdened with higher costs or lower performance, or even both because the locally manufactured equipment is not competitive. As empirical evidence shows, producers would normally pass the burden of extra payment imposed by local contents to local consumers.[201] By making the cost of renewable energy products higher, the effectiveness of LCRs in promoting renewable energy development is questionable. Without promoting renewable energy development, LCRs constitute a barrier of slowing down climate change mitigation. A World Bank Report in 2010 on barriers to solar power development found that around 75% of solar PV developers interviewed felt LCRs would amount to a major barrier to the development of solar plants in India.[202]

The argument that LCRs can generate additional jobs remains questionable.[203] Because the increased cost of inputs leads to less production of end products, which means fewer employment opportunities within a short term. However, there is counterargument that jobs in input production sectors would increase because of localization requirements. The net outcome of the effects that LCR measures can have on local employment is theoretically ambiguous.[204] It remains an area that

[198] Oliver Johnson, 'Exploring the effectiveness of local content requirements in promoting solar PV manufacturing in India (2012) Deutsches Institut für Entwicklungspolitik Discussion Paper, available at: https://www.die-gdi.de/uploads/media/DP_11.2013.pdf, at 9.
[199] Tomsik and Kubicek (n 176), at 12.
[200] The theory of comparative advantage is an economic theory about the work gains from trade for individuals, firms, or nations that arise from differences in their factor endowments or technological progress. In an economic model, an agent has a comparative advantage over another in producing a particular good if they can produce that good at a lower relative opportunity cost or autarky price, i.e. at a lower relative marginal cost prior to trade. It is argued that countries should specialize by allocating their scare resources to produce goods and services for which they have a comparative cost advantages.
[201] René Belderbos, Clive Jie-A-Joen, and Leo Sleuwaegen, 'Local Content Requirements, Vertical Cooperation, and Foreign Direct Investment' (2002) 150 De Economist 155, at 159.
[202] Gevorg Sargsyan et al., 'Unleashing the potential of renewable energy in India' (2012) World Bank ESMAP Report, at 14.
[203] Kuntze and Moerenhout (n 173), at 7-8.
[204] Sustainable Prosperity, "Domestic content requirements for renewable energy manufacturing," (2012) Sustainable Prosperity policy brief, available at: http://institute.smartprosperity.ca/sites/default/files/publications/files/Domestic%20Content%20Requirements%20for%20Renewable%20Energy%20Manufacturing.pdf, accessed on 17 November 2017.

needs to be further explored as to the linkage between the use of LCRs and the conditions of local employment. Furthermore, critics also content that LCRs can be difficult and costly to enforce properly and these tools only increase administrative costs for government.[205]

Therefore, driven by protectionist purposes, the use of LCRs cannot allocate resources in an efficient or cost-effective way, which would reduce welfare as a consequence.[206] Particularly in small economies/markets or in conditions with a lack of underlying infrastructure, facilities and skills, LCRs could turn out to be dissatisfactory.[207] Investors are mandated to source from suppliers that provide products that are either more costly or inferior in quality. This will increase the cost of renewable energy production and slows down the diffusion of renewable energy technologies.

By favoring domestic renewable energy manufacturers over foreign ones, the use of LCRs clearly amounts to discrimination within the meaning of the WTO law. The higher the local content requirement, the more restrictive the impacts on international trade that LCRs could engender. The controversy is growing in to what extent the WTO Members are permitted to develop the domestic renewable energy industry in a way restricts international trade. Chapter 8 develops detailed discussions on the WTO legality of LCRs used in renewable energy area.

(d) Conclusion

It is a very nuanced and context specific issue in analyzing the effectiveness of LCRs that there is no simple rule on whether, when and how policy makers should employ LCRs to fulfill the intended goals.[208] Among a variety of factors that determine the effectiveness and desirability of incorporating LCRs in policy measures, the nature of the requirement, the linkage between the requirement and intended objective, the circumstances in the host country and the drivers behind these firms' decisions to invest abroad are of importance.[209]

Although LCRs have been employed widely in renewable energy sector for the objective of green industrialization the effectiveness of LCRs in terms of incentivizing renewable energy development remains questionable. It is very likely that in some jurisdictions, the use of LCRs would fail to nurture and grow local renewable energy industry besides from distorting the market. In addition, the use of LCRs could violate international trade obligations and risk being challenged under the WTO regime.

Whether the goal to realize green industrialization would be translated to discriminatory policy measures adopted in renewable energy sector is a NO. What

[205] Johnson (n 198), at 7-8.
[206] See, Abraham Hollander, 'Content Protection and Transnational Monopoly' (1987) 23 Journal of International Economics 283; Neil Vousden, 'Content Protection and Tariffs under Monopoly and Competition' (1987) 23 Journal of International Economics 263; Kala Krishna and Motoshige Itoh, 'Content Protection and Oligopolistic Interactions' (1988) 55 The Review of Economic Studies 107.
[207] Harsha Vardhana Singh, 'New Industrial Policy and Manufacturing: Options for International Trade Policy' (ICTSD and World Economic Forum 2016).
[208] *Ibid*, at 8.
[209] *Ibid*.

is of interest is to whether there exists policy space for such blatantly discriminatory policy measures under the WTO. This is to say, whether the Members can rely on certain exoneration or exception clauses under the WTO regime to justify otherwise illegal green industrialization. The following chapter 8 provides a detailed examination of this issue.

Not all measures designed to enhance renewable energy manufacturing capacity and realize green industrialization need to discriminate against foreign suppliers. There are examples of government practices in incentivizing domestic renewable energy manufacturing sector while not subjecting foreign ones into jeopardy. The next section examines the use of renewable energy subsidies, which can be trade-neutral in some cases.

(2) Renewable Energy Subsidies

(a) Definition of Renewable Energy Subsidy

Subsidy is a form of industrial policy that being widely used in not only industrialized countries but also emerging ones.[210] Subsidies can operate at different stages and have different targets, which means their effects tend to differ.[211]

When it comes to renewable energy sector, subsidies are designed to support production of renewable energy equipment, inputs, installation, generation and others.[212] In this sense, capital subsidies, grants, tax rebates or favorable loan terms would easily fall into the ambit of subsidy. On the other hand, subsidies can also be granted to consumers to artificially decrease the price of energy paid by consumers.[213] According to the statistics released by IEA, the amount of subsidies for renewable energy reached USD 140 billion in 2016.[214] However, it is found that the development and deployment of renewable energy technologies may be occurring at a slower pace than what is environmentally desirable, which underscores the need of subsidization and other supports.[215]

(b) The Effects and Implications of Renewable Energy Subsidy

By subsidizing renewable energy, a shift is highly likely to occur in energy production towards sources with fewer greenhouse gas emissions. Subsidies in renewable energy area could be divided into: green technology subsidies, green

[210] Cosbey (n 160).
[211] Luca Rubini, 'Ain't wastin' time no more: Subsidies for renewable energy, the SCM agreement, policy space and law reform' (2012) 15(2) Journal of International Economic Law 525, at 530.
[212] Luca Rubini, 'The Subsidization of Renewable Energy in the WTO: Issues and Perspectives' (2011) NCCR Trade Regulation Working Paper, at 12.
[213] Bob Carbaugh and Max St. Brown, 'Industrial Policy and Renewable Energy: Trade Conflicts' (2012) 5(1) Journal of International and Global Economic Studies 1, at 2.
[214] IEA, 'Commentary: Fossil Fuel Consumption Subsidies are Down, But Not Out' (2017), available at: https://www.iea.org/newsroom/news/2017/december/commentary-fossil-fuel-consumption-subsidies-are-down-but-not-out.html, accessed on 29 December 2017.
[215] Ludivine Tamiotti and Vesile Kulaçoglu, 'National Climate Change Mitigation Measures and Their Implications for the Multilateral Trading System: Key Findings of the WTO/ UNEP Report on Trade and Climate Change' (2009) 43(5) Journal of World Trade 1115, at 1124.

energy subsidies, green electricity subsidies, transmission support subsidies, energy consumption subsidies and others. [216] Instead of imposing a cost on climate unfriendly emissions through carbon pricing, subsidization of renewable energy confers an economic advantage either to producers or consumers.[217] This explains why the use of subsidies in renewable energy sector has been gaining popularity among policymakers not only in developed countries but also developing ones.
Renewable energy subsidies represent an efficient policy instrument when they address market failures associated with renewable energy technologies or markets.[218] They also can be used to complement other regulatory measures, such as carbon pricing. However, the practical difficulties in subsidizing renewable energy in an efficient and cost-effective manner should not be underestimated. Two critically important factors need to be considered. First, it is extremely difficult to pick the recipients of government support and devise appropriate policies to nurture them. Second, the phenomenon of a prisoners' dilemma is likely to occur when other nations also engage in policy making in this area.

In addition, the possible implications of renewable energy subsidies on the international trading system exist. For instance, in some cases when the government subsidizes domestic renewable energy industries to the detriment of foreign producers' interests and distort competition, trade law issues will follow. The establishment of SCM Agreement under the WTO regime signals that the Members' subsidization is subjected to certain disciplines. The intriguing yet tricky question surfaces when some forms of renewable energy subsidies turn out to be trade-restrictive and breach WTO obligations yet create desirable outcomes in relation to mitigating climate change, as suggested by Rubini.[219]

3.3.2.3 Reflections on Green Industrialization

Both local content requirements and subsidies can be designed to target at enhancing the manufacturing capability in renewable energy sector. The application of renewable energy subsidies can be broader than that of LCRs. It is rather clear that the use of LCRs can easily be deemed as breach of trade obligations while the legality of renewable energy subsidies is subjected to specific analysis of the policy design.

With the increasingly fierce competition in renewable energy area, particularly the manufacturing sector, the use of various green industrial policy measures will be witnessed in a foreseeable future. It is important to not only analyze the effectiveness of these measures in delivering global public goods, but also understand how they would interact with the WTO rules. Green industrialization measures that fail to achieve legitimate policy objectives yet breach the WTO rules should be subjected to stringent discipline. Nevertheless, whether there is scope of policy space for green industrialization measures that violate trade obligations but succeed in realizing public policy goals under the WTO regime is complicated. Chapter 8 will address it in details.

[216] See, Rubini, (n 91), at 319.
[217] Rubini (n 211), at 531.
[218] Matthias Kalkuhl, OttmarEdenhofer and Kai Lessmann, 'Renewable Energy Subsidies: Second-Best Policy or Fatal Aberration for Mitigation?' (2013) 35(3) Resource and Energy Economics 217, at 229.
[219] Rubini (n 212), at 22.

3.4 Conclusion

This chapter aims to conceptualize the key components of green economy: de-carbonization and green industrialization before examining how they would possibly interact with the WTO rules. Although measures primarily aim at de-carbonization and green industrialization can overlap in some cases, they differ to a large extent. Measures adopted for the goal of de-carbonization aim to reduce the carbon intensity of electricity generation while measures for green industrialization aim to enhance manufacturing capability of renewable energy equipment. The generation of renewable energy electricity is dependable on the supply of renewable energy equipment. On the other hand, the enhanced manufacturing capacity of renewable energy equipment can enable electricity generated from renewable energy sources. The linkage between de-carbonization measures and green industrialization measures is clearly observed.

The difference in relation to the underlying policy objectives of de-carbonization measures and green industrialization measures decide the difference of their policy design and implementation. Therefore, the interaction between the two categories of green economy measures with international trade rules tends to differ. This thesis argues that the issue of interface between international trade rules and green economy measures is bound to be complicated and multifaceted. Therefore, this question is filled with nuances, which makes case-by-case analysis a necessity.

In comparison to de-carbonization renewable energy measures, green industrialization measures are more likely to be designed to reap economic benefits and achieve trade protectionism, either intentionally or unintentionally. Although there are certain forms of green industrialization measures void of discrimination, it is important to detect any possible trade restriction, even some of which are well camouflaged by other legitimate policy goals. Whether the WTO regime provides policy space for blatantly discriminatory green industrialization renewable energy measures is of research interest.

De-carbonization measures are not designed with a purpose to favor domestic renewable energy electricity generators over foreign ones. However, there might be cases when policymakers favorable treatment to certain forms of renewable energy electricity produced domestically instead of other forms produced by foreign generators. Chapter 7 elaborates on in what ways de-carbonization measures are designed with effects of trade restrictions and possibly breach the WTO rules. Empirical evidence also suggests that de-carbonization renewable energy measures can be complemented with green industrialization measures so as to achieve a multitude of policy objectives. This compounds the assessment of the measures' compatibility with the WTO law. If the measures constitute violation, a following question is to examine what rules the measures could breach. If the measures can provide desirable outcome in terms of climate change mitigation, should the WTO regime provide more breathing room?

Chapter 4: WTO Dispute Settlement System in the New Era of Trade/Climate Debate

Before moving to the chapters discussing how the WTO rules interact with the Members' action in addressing climate change and facilitating green economy transition, it is useful to analyze the Dispute Settlement System. This aims to provide a basic introduction of this important institutional mechanism and how it has been evolving ever since the establishment. The focus is on the role of WTO interpretation in addressing cutting-edge issues, such as the interface of trade values and other fundamental non-trade values. How the WTO Dispute Settlement System deals with newly emerging issues, which no longer only concern trade interests plays a key role in addressing the trade/climate debate.

4.1 What is the WTO Dispute Settlement System?

The WTO Dispute Settlement System is the result of over four decades of experience and the evolution of dispute settlement under the GATT 1947. It serves to adjudicate contentions between Members concerning the implementation of the WTO Agreements. The WTO Dispute Settlement System was established through the Dispute Settlement Understanding ('DSU'), which is deemed as one of the most important agreements negotiated during the Uruguay Round.[220]
The objective of the Dispute Settlement System is realized through 'the prompt settlement' of and 'a positive solution' to disputes.[221] The result should be a 'satisfactory settlement of the matter in accordance with the rights and obligations under this Understanding and under the covered agreements'[222] and should 'secure the withdrawal of the measures concerned if these are found to be inconsistent with the provisions of any of the covered agreements'.[223] The underlying values of this system, as clarified by the DSU are 'the effective functioning of the WTO and the maintenance of a proper balance between the rights and obligations of Members'.[224]

A unique feature of the WTO, the Dispute Settlement System is mandatory and binding as an adjudication process.[225] It is characterized by the compulsory jurisdiction and reverse consensus mechanism, which means the decision can only be blocked by the Members' near unanimous vote [226], which makes the system well-equipped to hold the Members accountable to the terms of the covered

[220] Bruce Wilson, 'The WTO Dispute Settlement System and Its Operation: A Brief Overview of the First Ten Years' in Rufus Yerxa and Bruce Wilson (eds), K*ey Issues in WTO Dispute Settlement: The First Ten Years* (Cambridge University Presss 2005), at 15; David Palmeter and Petros Mavroids, *Dispute Settlement in the World Trade Organization* (2nd Ed, Cambridge University Press 2004), at 16. For a detailed interpretation of the DSU, see Yang Guohua, Bryan Mercurio and Li Yongjie, *WTO Dispute Settlement Understanding: A Detailed Interpretation* (Kluwer Law International 2005).
[221] See, Dispute Settlement Understanding, articles 3.3-3.7.
[222] *Ibid*, article 3.4.
[223] *Ibid*, article 3.7.
[224] *Ibid*, article 3.3.
[225] Rufus Yerxa, 'The Power of the WTO Dispute Settlement System' in Rufus Yerxa and Bruce Wilson (eds), *Key Issues in WTO Dispute Settlement: The First Ten Years* (Cambridge University Presss 2005), at 3.
[226] Reverse consensus means the decision can only be blocked by Member States' near unanimous vote.

agreements.[227] Yerxa describes WTO dispute settlement as 'an adjudication process that respects national sovereignty yet gives Members a compelling reason to comply with its decisions'.[228] More than two decades have passed since the establishment of the WTO, its Dispute Settlement System has been widely heralded as the 'jewel in the crown' and the very 'backbone of the multilateral trading system.'[229]

Jackson perceived DSM as the 'core linchpin' of the whole trading system, which ensures the effective implementation of the Uruguay Round text.[230] Dispute settlement procedures add an essential measure of predictability and effectiveness to the operation of a rule-oriented system in the otherwise relatively weak realm of international relations.[231] Matsushita has also appraised the DSM, stating that it has taken 'great strides towards the rule of law in international trade' and becomes most effective international tribunal for settling disputes among international tribunals such as International Court of Justice.'[232] Former WTO Director-General Pascal Lamy characterizes the WTO as a 'distinctive organization', which 'represents a unique legal order or system of law.'[233] The Dispute Settlement System contributes to explaining how and why the WTO has evolved towards 'an integrated and distinctive legal order' that 'produces a body of legal rules, making up a system and governing a community.'[234] In this vein, it is reasonable to assume that the WTO jurisprudence has become an increasingly important constituent of the WTO governance.

4.2 The Dispute Settlement Procedures

Procedurally, four steps can be taken to file a dispute with the WTO under its Dispute Settlement Mechanism. First, parties from two sides must engage in consultation (for 60 days) with an attempt to resolve the dispute amicably. In the case of failing to settle dispute through consultation, one of the parties or both can request the DSB to establish a panel, which is made of three panelists appointed by the WTO. The third step is an appeal can be made to the Appellate Body by request of either party or both when the Panel fails to make satisfactory decisions. Unlike the Panel, which is on an *ad hoc* basis, the Appellate Body is a standing body composed of seven members based on the selection and appointment made by the DSB. The decisions made by the Panel can be overturned at this stage since

[227] Teun Avafia, 'Does The WTO's Dispute Settlement Understanding Promote Sustainable Development' in Marie-Claire Cordonier Segger and Markus W. Gehring (eds), *Sustainable Development in World Trade law* (Kluwer Law 2005), at 259.
[228] Yerxa (n 225), at 4.
[229] Mike Moore, 'WTO's Unique System of Settling Disputes Nears 200 Cases in 2000 - Press 180' WTO 2000 Press Releases (5 June 2000), available at: https://www.wto.org/english/news_e/pres00_e/pr180_e.htm, accessed 16 December 2016.
[230] John H. Jackson, *The World Trading System: Law and Policy of International Economic Relations* (2nd Ed, MIT Press 1997), at 124.
[231] *Ibid*, chapter 4.
[232] Mitsuo Matsushita, 'Dispute Settlement Mechanism at the WTO: The Appellate Body—Assessment and Problems' in Martin Daunton, Amrita Narlikar and Robert M Stern (eds), *The Oxford Handbook on The World Trade Organization* (Oxford University Press 2012), at 510.
[233] Pascal Lamy, 'The Place of the WTO and Its Law in the International Legal Order' (2006) 17(5) European Journal of International Law 969, at 970.
[234] *Ibid*, at 971.

Appellate Body members are not selected to simply 'rubber-stamp' panel rulings.[235] Their objective is to provide a 'safety valve' for WTO Members through dealing with the possibility of occasional 'bad decisions' made by the Panel.[236] Reports issued by the Appellate Body are effectively the final resolution of the disputes, which are adopted by negative consensus.[237] The last step in dispute settlement procedure is to implement the verdicts made by the WTO and monitored by the DSB, which is the so-called compliance stage.

An interesting study conducted by Bernauer and Sattler shows that WTO trade disputes over environment, healthy and safety issues are more likely to escalate than other types of disputes.[238] This is to say, these disputes are more likely to escalate from panel resolution to compliance stage than other types of disputes. Two reasons can explain this phenomenon: firstly, it is more difficult for the respondents to grant gradual concessions to the complainant in disputes involving environmental, health and safety issues; secondly, the arrangement of side payments to domestic interest groups, which are politically important on which defending parties rely to obtain political support for concessions in these disputes turns out to be quite difficult. Political economy considerations play a key role in the process of disputes.

Since the majority, if not virtually all of renewable energy disputes involve the need to mitigation climate change and preserve environment, it is highly likely for these disputes to escalate to the end stage of the WTO dispute settlement process. In the light of this, it is crucially important to analyze the decisions made by the Appellate Body in the disputes, which means they way the relevant rules are applied and interpreted. The Appellate Body is undisputedly the most important organ of WTO Dispute Settlement, which is all but in name the 'World Trade Court'.[239] The case law of the Appellate Body is highly authoritative and has made a significant contribution to the development of international trade law.[240] How the Appellate Body address renewable energy disputes plays a key role in determining the scope of policy space that the Members have in mitigating climate change and transitioning to a green economy through developing renewable energy.

4.3 The Role of the WTO Dispute Settlement System in New Era

[235] Thomas Bernauer, Manfred Elsig and Joost Pauwelyn, 'Dispute Settlement Mechanism-Analysis and Problems' in Amrita Narlikar, Martin Daunton and Robert M Stern (eds), *The Oxford handbook on the world trade organization* (Oxford University Press 2012), at 489.
[236] Robert Hudec, 'Dispute Settlement' in Jeffrey J Schott (ed), *Completing the Uruguay round: A results-oriented approach to the GATT trade negotiations* (Institute for International Economics 1990).
[237] According to the WTO Dispute Settlement Understanding, this special decision-making procedure is commonly referred to as 'negative' or 'reverse' consensus. It means the DSB must automatically decide to take the action ahead, unless there is a consensus not to do so.
[238] Thomas Bernauer and Thomas Sattler, 'Sind WTO-KonflikteImBereich Des Umwelt- Und VerbraucherschutzesEskalationsträchtigerAlsAndere WTO-Konflikte?' (2006) 13 ZeitschriftfürInternationaleBeziehungen 5, at 12.
[239] Peter Van Den Bossche, 'The Making of the World Trade Court: The Origins and Development of the Appellate Body of the World Trade Organization' in Rufus Yerxa and Bruce Wilson (eds), *Key Issues in WTO Dispute Settlement: The First Ten Years* (Cambridge University Presss 2005), at 64.
[240] *Ibid*, at 63.

This section touches upon the WTO Dispute Settlement System in the 21st century, particularly with respect to its role in dealing with 'new generation' conflicts such as these trade rules and climate change mitigation. Amidst a fast-paced globalizing economy, the WTO needs to evolve to be responsive to ever-changing conditions and circumstances since new factors, new policies and new subject matters were not considered at the initial negotiation stage.[241] In the failure to cope with emerging situations, the WTO will be marginalized to the detriment of its multilateral approach.[242] It is crucial that the dispute settlement process can play an importantly systematic role in the development of WTO law generally.

In the current WTO institutional framework, there are two ways the law can evolve: negotiation of specific treaty and development of case law. However, the WTO has not resumed its function as a negotiating machine given the long-lasting stalemate in the Doha Development Round.[243] The difficulty in pursing rounds of negotiations on a multilateral basis has to be recognized.[244] The impediment faced by the WTO multilateral negotiation has placed an increasingly heavy burden on its Dispute Settlement System whenever new issues surface. Whether the Dispute Settlement System can play an increasingly systemic role in development of the WTO rules is of significance[245]

An important question is whether the Dispute Settlement System is well suited to clarify and enforce the legal obligations contained in various WTO Agreements in relation to new issues, some of which could be highly controversial and multifaceted.[246] When the relevant WTO law was drafted in an ambiguous manner, whether the Dispute Settlement Body could play an active role to fill the gap remains highly contested.

A growing body of scholarship has addressed the role of the WTO Dispute Settlement System in not only disputes resolution but also law making from a number of different perspectives.[247] Hudec points out that compared with negotiation on a multilateral basis, the development of Dispute Settlement System 'in an evolutionary manner' is a preferable one.[248] The cumbersome decision-making process based on the WTO multilateral negotiations cannot be viewed as a substitute to the more efficient dispute settlement proceedings at the moment.[249] It is the developing body of WTO jurisprudence on a wide range of issues that will

[241] Jackson (n 230), at 183.
[242] *Ibid*, at 184.
[243] Peter Sutherland, 'The Doha Development Agenda: Political Challenges to the World Trading System – A Cosmopolitan Perspective' in Ernst – Ulrich Petersmamm (ed), *Reforming the World Trading System: Legitimacy, Efficiency, and Democratic Governance* (Oxford University Press, 2005), at 39.
[244] *Ibid*, at 52.
[245] Fiona Macmillan, *WTO and the Environment* (Sweet and Maxwell 2001), at 15.
[246] Claus-Dieter Ehlermann, 'Tensions Between the Dispute Settlement Process and the Diplomatic and Treaty-Making Activities of the WTO' (2002) 1(3) World Trade Review 301, at 304.
[247] See, Tomer Broude, *International Governance in the WTO: Judicial Boundaries and Political Capitulation* (Cameron & May 2004).
[248] Robert Hudec, 'The New WTO Dispute Settlement Procedure: An Overview of the First Three Years' (1998) 9 Minnesota Journal of Global Trade 28.
[249] Stefan Zleptnig, *Non-Economic Objectives in WTO Law* (Martinus Nijhoff, 2010), at 34.

become the test of the impact made by the WTO on global trade as a whole.[250] The ever-expanding scope of the trade and economic issues that have been addressed testifies to the importance of the WTO Dispute Settlement System.

The vagueness that can give rise to interpretational difficulties can be found in the WTO agreements and provisions. The commonly used vague phraseology can attributable to two reasons: one is there is no explicit consensus on a particular meaning of certain words or phrases, the other reason is these issues did not attract adequate attention initially.[251] The vagueness provides an opportunity for the WTO Panel and the Appellate Body to be empowered to develop legal norms in a significant manner. [252] From another perspective, it is difficult to define the parameters of facts to be examined by treaty drafters, judicial making by the adjudicators in turn assumes a difficult yet powerful role in the task.[253]

Pauwelyn analyzes the role of WTO Dispute Settlement Mechanism under the broad context of trade politics in 21st century.[254] In his view, the WTO system is facing the imperative to gradually transform from a 'driving engine' of trade liberalization to a 'stabilizer' of the status quo.[255] To be specific, 'stabilizer' means preventing 'resurgent or new temptations of protectionism.'[256] The core function of the WTO would no longer be to organize consecutive rounds of trade negotiations but rather the WTO's dispute settlement system, which serves as the 'stabilizer' of free trade.[257] Whether and how the WTO Dispute Settlement System plays a proper role in reducing and eliminating resurfaced or newly formed protectionist measures in renewable energy area becomes crucially important. The rise of various forms of trade-related measures in renewable energy sector is a testing ground of how the Dispute Settlement System performs the task.

Nevertheless, a considerable amount of skepticism exists towards an activism role that the Dispute Settlement System could play. Sarcerdoti argues that the authority of the Dispute Settlement System cannot make up for the shortcomings of consensus based negotiation mechanism between Member States.[258] Also, the WTO adjudication is likely to disrupt the balance of rights and obligations under the WTO regime. The 'institutional paradox' between the WTO's consensus-based, inefficient law-making procedures and its highly efficient, automatic dispute settlement is self-evident.[259] This form of imbalance is problematic and risky for

[250] Elimma C. Ezeani, 'WTO Dispute Settlement' in Indira Carr, ShawkatAlam and MD Jahid Hossain Bhuiyan (eds) *International Trade Law and the WTO* (The Federation Press 2013), at 99.
[251] Jeffrey Waincymer, 'Reformulated Gasoline under Reformulated WTO Dispute Settlement Procedures: Pulling Pandora out of A Chapeau?' (1996) 18(1) Michigan Journal of International Law 141, at 195.
[252] *Ibid.*
[253] *Ibid*, at 164.
[254] Joost Pauwelyn, 'New Trade Politics for the 21st Century' (2008) 11 Journal of International Economic Law 559, at 566.
[255] *Ibid.*
[256] *Ibid.*
[257] *Ibid.*
[258] Giorgio Sacerdoti, 'The Dispute Settlement System of the WTO in Action: A Perspective on the First Ten Years' in Giorgio Sacerdoti, Alan Yanovich and Jan Bohanes (eds), T*he WTO at Ten: The Contribution of the Dispute Settlement System* (Cambridge University Press 2006), at 53.
[259] Ignacio Garcia Bercero, 'Functioning of the WTO System: Elements for Possible Institutional Reform' (2000) 6 International Trade Law and Regulation 103, at 105.

the WTO from a long perspective.[260] The interpretation of existing rules by the WTO adjudicators is less than sufficient, which should be accompanied by establishment of new trade rules.[261]

Facing new problems such as various forms of environmental degradation and climate change, which has trans-border effects, the participation of all Members in the development of trade rules is an efficacious solution.[262] Judicial activism performed by the WTO adjudicators might not be the right or preferable process for law making at the WTO.[263] Dunoff, for instance argues that the WTO Dispute Settlement System is 'ill-equipped' to engage openly in the balancing of economic and non-economic objectives.[264] This could, in his view endanger the effectiveness and legitimacy of WTO dispute settlement.[265] It is more sensible for the WTO Dispute Settlement System to play a deferential and constrained role in addressing highly contested disputes, abstaining from deciding sensitive issues.[266] Barfield upholds that controversial issues that were left open in the WTO agreements should be resolved through negotiation since the way the WTO law has been refined during the dispute settlement process cannot always be foreseeable.[267] James Bacchus, one of founding Members of the Appellate Body, also advocates for negotiations instead of litigation that would broaden the scope of the WTO treaty to bring within it many more newly emerging global economic issues.[268] The WTO adjudicators should not take the responsibilities of responding to innovative claims that are beyond the current scope of the WTO treaty.[269] There is a chance that Geneva judges tend to overstep their mandates by engaging in law making through the back door, providing faulty interpretations of the WTO rules and embarking on the task of gap filling.[270]

The relationship between multilateral negotiation and dispute settlement has become more prominent in recent years. A solid jurisprudence may shed useful light on the course of other negotiations.[271] This is to say, an active legal adjudication system can provide incentives and materials for negotiation.[272]

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[260] See, Ehlermann (n 246).
[261] Ellisa Alben and Timothy Reif, 'Homage to a Bull Moose III: Striking the Correct Balance Between Political Governance and Judicialiazation in the WTO' in in Giorgio Sacerdoti, Alan Yanovich and Jan Bohanes (eds), *The WTO at Ten: The Contribution of the Dispute Settlement System* (Cambridge University Press 2006), at 114.
[262] Patrick Kelly, 'Judicial Activism at the World Trade Organization: Development Principles of Self-Restraint' (2002) 22(3) Northwest Journal of International Law and Business 353, at 388.
[263] *Ibid.*
[264] Jeffrey Dunoff, 'The Death of the Trade Regime' (1999) 10(4) European Journal of International Law 733, at 756.
[265] *Ibid.*
[266] *Ibid, at 758.*
[267] Claude E. Barfield, *Free Trade, Sovereignty, Democracy: The Future of the World Trade Organization* (American Enterprise Institute 2002), at 44 and 56.
[268] James Bacchus, 'Not In Clinical Isolation' in Gabrielle Marceau (ed), *A History of Law and Lawyers in the GATT/WTO: The Development of the Rule of Law in the Multilateral Trading System* (Cambridge University Press 2015), at 515.
[269] *Ibid*, at 516.
[270] Bernauer, Elsig and Pauwelyn (n 235), at 495.
[271] Giorgio Sacerdoti, 'Presentations by the panelists: Professor Giorgio Sacerdoti, Chairman of the Appellate Body' in WTO, 2007 *WTO Public Forum – "How Can the WTO Help Harness Globalization?'* (WTO 2008), at 106.
[272] Palmeter and Mavroidis (n 220), at 304.

However, there is also a possibility that the dispute settlement could render negotiations more difficult since it is not an easy job to persuade Member in consensus on a matter that they had lost previously in a dispute. In addition, the increasing reliance on dispute settlement is likely to make Member States more reluctant to participate in a much more challenging consensus-based negotiations. A strong Dispute Settlement System can reduce Member States' enthusiasm in reaching a common ground, especially on highly contentious issues by means of treaty negotiation.

It is worth emphasizing that the WTO judicial making is strictly circumscribed by the WTO agreement and the agreements annexed to it that the Panel and the Appellate Body have to take as a given. As understandable as it is, the more than 20 years old WTO law has not properly incorporated the needs of green economy transition or climate change mitigation. This adds to the complication of adjudication, especially when there is a lacuna in the treaty language that the WTO DSB has no textual basis to rely on or vagueness that may require further clarifications. In addition, the WTO regime also has to deal with the increasingly prominent linkage with other international organizations, such as UNFCCC in this case as well as their legal norms. As Lamy indicats, the effectiveness and legitimacy of the WTO depend on how it relates to norms of other legal system and on the nature and quality of its relationship with other international organizations.[273] Dealing with the relationship between the trade regime and climate regime becomes an important task as well as great challenge that the WTO adjudication bodies have to assume.

The author does not share the view that the WTO Dispute Settlement System should refrain from making decisions for contested disputes and leave these issues for the Member to solve via negotiations. The WTO is confined to one narrow area of human activity: trade. Nevertheless, its coverage has expanded enormously to include issues of high public policy.[274] A host of new issues have surfaced to prominent since the conclusion of the Uruguay Round more than two decades ago, including the need to address climate change. The WTO Dispute Settlement System appears to be a well-suited forum for setting these disputes in an enforceable manner. The essential question is how the WTO adjudication bodies understand and apply the WTO rules in dispute resolution that properly weights and balances trade values and non-trade ones.

4.4 Legal Interpretation under the WTO Dispute Settlement Understanding

The preceding part supported the view that the WTO Dispute Settlement should not step away from addressing cutting edge issues that involve a complex web of trade and non-trade interests. This part furthers to discuss how and in what ways the WTO adjudicators deal with these issues in jurisprudence. Is there any particular interpretative approach that should be endorsed so as to tackle highly controversial issues? Is it permitted for the WTO adjudicators to perform an activism role in the interpretation?

[273] Lamy (n 233), at 977.
[274] David Palmeter, *The WTO as A Legal System* (Cameron May 2004), at 338.

4.4.1 Literal Or Flexible Interpretative Approach?

The interpretation of the WTO covered agreements is governed by the same principles as these applicable to other treaties. Article 3.2 of the DSU stipulates that the duty of the dispute settlement body is 'to clarify the existing provisions of those agreements in accordance with customary rules of interpretation of public international law'.[275] Customary rule of interpretation of public international law is reflected in the Vienna Convention on the Law of Treaties Article 3.1, which states that a provision should be interpreted in accordance with the ordinary meaning of the word used in the treaty, its context and the purposes and objectives of the treaty.

Viewed from law and economics perspectives, the incompleteness of contracts leaves the task on the WTO Dispute Settlement System.[276] In some scenarios when the negotiating parties cannot reach a common ground over some concepts and provisions, they might have to leave it 'intentionally vague', to be clarified by means of adjudication later.[277] The contractual silence on issues or ambiguous wording with the effect of creating different expectations fuel the Members' recourse to dispute settlement under the WTO regime.[278] Trachtman points out the distinction between specific rules and general standards,[279] which means that the more specific the text is, the less discretion is available to the WTO adjudicator.[280] On the other hand, more discretion is accorded to the WTO adjudicator in interpreting a general standard, which is more open-ended in drafting.[281] As discussed in Chapters 7 and 8, the application of some WTO rules in renewable energy disputes is featured with uncertainties and ambiguities because the relevant rules were not drafted in an explicit manner at the early stage.

The way the Panel and the Appellate Body interpret WTO agreements is classified into two categories: a literal/textual way and a flexible/activism way.[282] This does not imply that the WTO adjudicators adopt either one of the approaches by excluding the other. More often than not, the mixed use of literal interpretation and flexible interpretation is common in the WTO jurisprudence.

By adopting a literal approach, the Panel and the Appellate Body intend to ensure that their interpretation would not deviate from the textual meanings of the worlds in WTO agreements, showing the faithfulness to the membership.[283] However, the other side of the coin is that a literal approach is likely to reduce the flexibility of dispute settlement, which obstructs gap filling. Particularly when the language

[275] See the WTO Dispute Settlement Understanding Article 3.2.
[276] See, Henrik Horn, Giovanni Maggi and Robert Staiger, 'Trade Agreements as Endogenously Incomplete Contracts' (2010) 100(1) American Economic Review 394, at 395.
[277] Mark Daku and Kryzsztof J. Pelc, 'Who Holds Influence Over WTO Jurisprudence' (2017) 20(2) Journal of International Economic Law 233, at 235.
[278] See, Giovanni Maggi and Robert Staiger, 'The Role of Dispute Settlement Procedures in International Trade Agreements' (2011) 126(1) The Quarterly Journal of Economics 475, at 488.
[279] See, Joel P. Trachtman, 'The Domain of WTO Dispute Resolution' (1999) 40(2) Harvard International Law Journal 333.
[280] Gregory Shaffer and Joel Trachtman, 'Interpretation and Institutional Choices at the WTO' (2011) 52(1) Virginia Journal of International Law 103, at 110.
[281] *Ibid.*
[282] Isabelle Van Damme, 'Treaty Interpretation by the WTO Appellate Body' (2010) 21(3) European Journal of International Law 605, at 612-618.
[283] Matsushita (n 232), at 511.

contained in the WTO provision is unclear or ambiguous, adjudicators might need to consider interpreting these provisions in the meaning they think these provisions should have been drafted.[284] The use of flexible interpretation approach has the potential to fill in gaps in interpretation, clarifying lacunae, and applying the rules to unpredicted matters back in negotiating stage.[285] A flexible interpretative approach, although risks negating the words of the text, aims to search for the real intention of the contracting parties in using the language employed by them.[286] The WTO adjudicators have to weigh different interpretations.

It is observable that the adjudicators often contextualize the meaning of the text or its dictionary definitions as the starting point.[287] However, the Appellate Body's recent reports send a clear signal that a more flexible approach is taken.[288] The approach taken by the Panel and the Appellate Body in address trade/climate disputes will be discussed in Chapter 7 and 8.

4.4.2 The Possibility to Refer to Non-WTO Law in WTO Disputes

This part examines another interpretative issue that is relevant in addressing disputes involving non-trade values, for instance, climate change mitigation. The question here is whether and to what extent the WTO adjudicators can make a decision by referring to non-WTO law.

Although it is hardly contested that the DSU limits the WTO jurisdiction to claims brought under WTO-covered agreements.[289] The debatable question is whether the WTO adjudication bodies can refer to non-WTO law, for instance, the rules and obligations in international climate regime as administered by the UNFCCC. Whether non-trade rules might be introduced in the WTO dispute settlement and in what way the adjudication bodies apply and interpret them becomes essential.

Some scholars contend that the WTO Panel and the Appellate Body should limit themselves to considering WTO law alone on the basis that the WTO is a limited domain.[290] Trachtman states that, 'while it might well be argued that the customary rules of interpretation would apply without express invocation, this would not change the fact that the drafters demonstrated an intent to exclude other international law by virtue of their decision not to mention it.'[291] The intent of the drafters of the WTO treaty should be respected and protected by the adjudicating

[284] Mitsuo Matsushita, 'Sovereignty Issues in Interpreting WTO Agreements: The Sardines Case and Article 2.4 of the TBT Agreement' in Kim van Der Borght and Dencho Georgiev, *Reform and Development of the WTO Dispute Settlement System* (Cameron May 2006), at 193.
[285] Krzysztof Pelc, 'The Welfare Implications of Precedent in International Law', in Joanna Jemielniak, Laura Nielsen, and Henrik Palmer Olsen (eds), *Establishing Judicial Authority in International Economic Law* (Cambridge University Press 2016), at 178.
[286] Arnold Mcnair, *Law of Treaties* (2nd Ed, Carendon Press 1961), at 366.
[287] Claus-Dieter Ehlermann, 'Reflections on the Appellate Body of the WTO' (2003) 6(3) Journal of International Economic Law 695, at 699.
[288] Van Damme (n 282), at 635.
[289] See Article 1.1 of the DSU.
[290] See, Trachtman (n 279); Gabriel Marceau, 'A Call for Coherence in International Law' (1999) 33 (5) Journal of World Trade 87; Debra Steger, 'The Jurisdiction of the WTO' (2004) 98 American Society of International Law Proceedings 142.
[291] Trachtman, (n 279) at 342.

bodies.[292] Applying only WTO law is deemed to be the right path to take. Marceau also argues 'the provisions on the limited jurisdiction of panels mirror those on the applicable law between WTO Members' because she thinks the application or direct effect of non-WTO law provisions into the WTO legal system will always lead to an addition to or diminution of the covered agreement.'[293]

However, the WTO law may not necessarily cover each and every relevant detail of the dispute that could possibly be brought up to its dispute settlement. The law within the scope of the WTO Agreements is not broad enough to meet the needs of the WTO adjudication bodies in some particular disputes.[294] As a consequence, the coverage of law applicable to the adjudication bodies has to be expanded so as to be more responsive to new needs.[295] It seems that the WTO treaty should be interpreted to ensure its fullest effect and go beyond the strict confines of the treaty text.[296]

WTO law should not be viewed as a 'secluded island' but a part of international law on the basis of 'implied powers' that the adjudication bodies should provide complete legal answers.[297] In Pauwelyn's words, 'the absence of explicit contracting out must be regarded as a continuation of implicit acceptance of the rules in question.'[298] He urges that 'the fact that the substantive jurisdiction of the WTO Panels is limited to claims under WTO covered agreements does not mean that the applicable law available to a WTO Panel is necessarily limited to WTO covered agreements.'[299] The WTO Dispute Settlement System can apply but not enforce non-WTO rules.[300] The WTO system is automatically part of general international law.[301] Both the covered agreements and the WTO Dispute Settlement System are integral parts of public international law, not closed or self-contained regimes.[302] Non-WTO law is of guidance to the interpretation of WTO law, which could promote coherence in the international architecture.

Scholarly opinion on this question is with majority of scholars such as Trachtman and Marceau on the one hand and Pauwelyn on the other. Pauwelyn perceives that the non-WTO law such as international environmental law should be placed on an equal footing with WTO norms.[303] In dealing with the renewable energy disputes,

[292] *Ibid.*
[293] Gabrielle Marceau, 'WTO Dispute Settlement and Human Rights' (2002) 13(4) European Journal of International Law753, at 766-777.
[294] Rao Geping, 'The Law Applied by World Trade Organization Panels' (2003) 17 Temple International & Comparative Law Journal 120.
[295] *Ibid*, at 128.
[296] Ronnie R. F. Yearwood, *The Interaction Between World Trade Organization Law and External International Law* (Routledge 2012), at 106.
[297] Joost Pauwelyn, *Conflict of Norms in Public International Law: How WTO Relates to Other Rules of International Law* (Cambridge University Press 2003), at 447-451; 'The Jurisdiction of the WTO' (2004) 98 American Society of International Law Proceedings 136.
[298] Joost Pauwelyn, 'The Role of Public International Law in the WTO: How Far can We Go?' (2001) 95(3) American Journal of International Law 535, at 559.
[299] *Ibid*, at 560;
[300] *Ibid*, at 566.
[301] Joost Pauwelyn, 'How to Win a World Trade Organization Dispute Based on Non-World Trade Organization Law: Questions of Jurisdiction and Merits' (2003) 37(6) Journal of World Trade 997, at 1001.
[302] Pauwelyn (n 298), at 568.
[303] *Ibid.*

the extent to which the rules as established under the international climate regime can be applied by the WTO adjudication body is of critical importance. The sole focus on the WTO law while ignoring other specialized areas of international law could undermine the legitimacy of the WTO Dispute Settlement System. A flexible interpretation approach becomes essential for applying non-trade rules and norms in addressing trade disputes.

4.4.3 Precedential Effects of the WTO Rulings

Another issue that has been subject to long running debate is whether the WTO decisions can obtain precedential value. According to Article IX: 2 of the GATT, a universally binding interpretation may only be adopted by the Ministerial Conference. In other words, the legal impacts of any interpretation and application of law is, in principle, only of relevance to the dispute at hand and binding only to the parties to the dispute. In the absence of a strict notion of precedent, the interpretations of the Panel and the Appellate Body are case-specific.

Nevertheless, the persuasive power of prior Panel reports and especially, the Appellate Body reports cannot be underestimated. Practice suggests that the Panel and the Appellate Body closely examine precedents during adjudication of a dispute and try not to deviate from the reasoning made by the precedents.[304] The reliance by the Member on these judicial decisions also shows that the system is operating a form of precedent in dispute settlement procedures.[305]

As argued by Palmeter and Mavroidis, 'application of the same rules to the same factual issues, independently of the parties involved, treating like cases alike is an important source of legitimacy for any adjudicator.'[306] This can largely contribute to continuity and coherence, as valuable attributes of the WTO system.[307] The failure of the WTO adjudicators to follow precedents can undermine the consistency and continuity, which are precious attributes of any legal system.[308] To create legitimate expectations among WTO Members can contribute to the legitimacy of the dispute settlement process.[309] Most WTO disputes will be resolved primarily with reference to prior reports made by the adjudication bodies.[310] The Appellate Body is likely to be more inclined to follow its own prior decisions when compared with the Panel, due to its nature as a standing judicial body.[311]

In this vein, the decisions made by the Appellate Body in the first ever trade/climate dispute will cast far-reaching implications on future jurisprudence. The WTO adjudicators in the following disputes would refer to what has been

[304] Mitsuo Matsushita et al, *The World Trade Organization Law, Practice, and Policy* (3rd Ed, Oxford University Press 2015), at 89.
[305] James Watson, *The WTO and the Environment Development of Competence Beyond Trade* (Routledge 2013), at 86.
[306] David Palmeter and Petros Mavroidis, *Dispute Settlement in the World Trade Organization: Practice and Procedure* (Kluwer 1999), at 41.
[307] *Ibid.*
[308] Palmeter (n 274), at 221.
[309] *Ibid*, at 222.
[310] *Ibid*, at 239.
[311] *Ibid*, at 226.

decided in the first one, although there still could possibly be fundamental deviation from prior jurisprudence. It is in the interest of climate change mitigation that climate-friendly interpretation made in prior case would be followed in future similar cases. While if the rulings turn out to be less than positive in protecting climate interests, the WTO adjudicators may be expected to deviate from prior jurisprudence. Therefore, it is of research interest in this thesis to firstly examine whether the WTO rulings in trade/climate disputes are climate-friendly. The next question is to touch upon whether the decisions made in the first trade/climate dispute would be adopted in a consistent way in future. The Chapters 7 and 8 will address these issues in details.

4.4.4 Conclusion

A wider spectrum of contentious issues that the Panel and the Appellate Body have to deal with is foreseeable. Whether the role being played by the DSB could be evolving so as to better respond to ever-changing social and legal circumstances needs to be closely monitored. It is desirable that balances of power between and the interest of all the States accommodated and the integrity of adjudication and that of the WTO being preserved.[312] Furthermore, the tensions between trade values and non-trade ones need to be reconciled.

Increasing attention has been paid to the role of the WTO Dispute Settlement System in reviewing the conformity with trade law of domestic rules that are not primarily or exclusively about trade.[313] The imperative to protect the environment has been increasingly recognized by the trade regime as one of the prioritized objectives that humankind is facing. Although environment is one of the themes that have not made it onto the multilateral trade agenda since there is no separate agreement dedicated to it, the multilateral trade system has dealt with it in different ways.[314] Esty points out that the WTO's future legitimacy requires a more robust trade and environment dialogue instead of an artificial separation of these policy-making realms.[315] Building environmental sensitivity into the international trade regime in a systematic and thoughtful manner should as a consequence be of great interest with respect to upholding trade-related values.[316]

As a trade institution at heart, the WTO has forayed into what were traditionally considered non-trade areas, which has given rise to superiority of trade concerns over non-trade ones.[317] The question whether the WTO should extend its reach beyond the trade arena or whether the WTO should stay away from controversial non-trade issues such as the environment related ones is now moot. Because it is an indisputable fact that an increasingly number of environmental issues have been

[312] *Ibid*, at 383.
[313] Guzman (n 50), at 303.
[314] Marion Jansen, 'Internal Measures in the Multilateral Trading System: Where are the Borders of the WTO Agenda?' in Thomas Cottier and Manfred Elsig (eds) *Governing the World Trade Organization: Past, Present and Beyond Doha* (Cambridge University Press 2011), at 66.
[315] Esty (n 2), at 124.
[316] *Ibid*, at 127.
[317] See, Margaret Graham Tebo, 'Power Back to The People' (2000) 86 American Bar Association Journal 52, at 53.

brought to the WTO dispute resolution stage.[318] Instead, what needs to be addressed is how the WTO can take a proper role in weighing and balancing trade and non-trade values without prioritizing trade interest over non-trade ones.

Recent WTO jurisprudence testifies to the trend of more considerations being devoted for non-trade values. There is no one-size-fits-all solution for weighing and balancing competing interests under the WTO regime since the factual scenarios under each case may vary to a large extent. Even within the same sector, say, renewable energy development and deployment, the policy measures at issue would be diverging in terms of policy design and implementation. Dispute resolution requires more than mechanically applying WTO provisions into real-life conflicts and there are cases when provisions can be unclearly drafted with unavoidable gaps. Is international trade law system sufficiently developed to deal with climate-related challenges? What else needs to be clarified is the scope of policy autonomy that can be created for WTO Members in terms of their domestic policy-making by integrating considerations of non-trade benefits. In this vein, it imposes a job full of complexities on WTO adjudicating bodies to set aside appropriate autonomy to for Members in terms of their domestic policy-making, which would occupy much of this work.

After an overview of specific policy measures designed and enacted by countries to incentivize renewable energy development for the transition a green economy in the previous chapter, this chapter focuses on the WTO Dispute Settlement System and its role in dealing with renewable energy disputes. The objective of this chapter is to map out the WTO regulatory framework of trade related renewable energy measures, in which the dispute settlement is the prioritized area. Whether the WTO Dispute Settlement System is well suited to address disputes concerning a deeply entangled web of trade and climate interests and how the WTO Dispute Settlement System deals with them becomes an essential question.

When it comes to the challenges arising from the relationship between international trade and climate change, the WTO has three principal institutional functions.[319] Firstly, the WTO provides a system of enforcement of its rules by way of its Dispute Settlement resolution mechanism. Secondly, the WTO establishes a mechanism through which Members can engage in a peer-review of each other's trade policies. Thirdly, the WTO offers a negotiating platform in which Members exchange views, opinions and ultimately negotiate pathways to further their trade relations.[320]All of the three roles, as complementary to each other are instrumental in removing collisions and enhancing the mutual supportiveness between climate regime and trade regime. How collisions between trade interests and climate interests are resolved by the WTO is a testing ground of its capability in balancing trade liberalization and climate change mitigation objectives.

[318] For a discussion of how the WTO rules are applied in assessing trade conformity of environment related issues, see, Chris Wold, *Trade and the Environment: Law and Policy* (Carolina Academic Press 2005).
[319] Ludivine Tamiotti and Daniel Ramos, 'Climate Change Mitigation and the WTO Framework' in Panagiotis Delimatsis (ed), *Research Handbook on Climate Change and Trade Law* (Edward Elgar 2016), at 507.
[320] *Ibid.*

This chapter focused on the institutional role played by the WTO to establish a binding legal mechanism that Members' trading relationship in renewable energy sector is subject to regulation via the Dispute Settlement System. The WTO does not deal with energy or renewable energy as a distinct sector and no special agreement on trade in energy has come into existence since the Kennedy Round, which was held between 1964 and 1967.[321] The likelihood of tension between what the WTO agreements explicitly provide and what WTO Members are seeking the Panel and the Appellate Body to adjudicate, based on issues that arise but may not be dealt with by agreements is growing.[322] Due to the stalemate the latest round of multilateral negotiations is suffering, the focus of trade and climate change debate lies on the role of WTO Dispute Settlement System in addressing relevant disputes.

How to maximize the net positive contribution that trade rules and jurisprudence can make to the mitigation of climate change and the transition to a green economy represents a great challenge. A clear knowledge of how renewable energy supportive measures in different structures and designs would be defined under the WTO regime is a prerequisite for tackling such a challenge and in the end helping enhance the mutual supportiveness between renewable energy development, climate change mitigation and green economy transition.

[321] Thomas Cottier et al, 'Energy in WTO Law and Policy', NCCR Trade Working Paper no 2009/25 (May 2009), available at: https://www.researchgate.net/publication/228548564_energy_in_wto_law_and_policy.
[322] Alben and Reif (n 261), at 114.

Chapter 5: WTO Rules Pertinent to Adjudicating Trade-related Renewable Energy Measures

This chapter aims to discuss the specific WTO provisions that are relevant in addressing trade/climate disputes. It relies on prior case law outside of trade/climate area, which can shed light on how the relevant rules could be applied generally. Nevertheless, this chapter is not exhaustive in covering all provisions that would possibly be cited by the parties in trade/climate disputes. Instead, it chooses to analyze frequently cited ones. A clear and thorough understanding of the meaning and application of certain WTO rules is necessary to explore how renewable energy measures would be defined under the WTO regime.

The WTO Agreement and specific agreements annexed to the WTO Agreement cover a great number of subject areas, ranging from intellectual property to agriculture and trade in services.[323] The WTO Agreement and its annexed agreements seek to maintain the principles of free international trade by imposing obligations, disciplines and restraints on national governments.[324]

When it comes to trade/climate debate, the central issue is to explore how de-carbonization measures and green industrialization measures, adopted in renewable energy sector would be dealt with. Three WTO agreements fall into the ambit of examination: the GATT, the TRIMs, and the SCM Agreement. Another important point, which also is easily neglected, is the concept of sustainable development contained in the WTO Preamble. The following parts elaborate on these provisions one by one.

5.1 Sustainable Development in the Preamble to the Marrakesh Agreement Establishing the WTO

Both the international climate change law and WTO law treat sustainable development as 'axiomatic'.[325]The relationship between sustainable development and climate change mitigation is intrinsically linked. Protection of the global climate system is a precondition for any development to be sustainable, which is essential to human welfare and development.[326]

In the recently adopted 2030 Agenda for Sustainable Development, goals 13 urges countries to 'take urgent action to combat climate change and its impacts'.[327] Climate change cannot be simply categorized as an environmental problem due to its breadth and contextual richness that reaches to social, developmental and environmental spheres. Nor is sustainable development a purely environmental concept, but one common to and integrated into all aspects of international

[323] See the individual agreements listed in the Annexes to the Agreement establishing the WTO Agreement.
[324] Macmillan (n 245), at 7.
[325] Christina Voigt, *Sustainable Development As A Princeple of International Law Resolving Conflicts Between Climate Measures and WTO Law* (Martinus Nijhoff Publishers 2009), at 2.
[326] *Ibid*, at 373.
[327] United Nations Sustainable Development Goals, available at: http://www.un.org/sustainabledevelopment/climate-change-2/.

society.[328] How to integrate sustainable development into international trade law is not an easy task.

The preamble to the Marrakesh Agreement[329] establishing the WTO makes a reference to the significance of working towards sustainable development. It states that the WTO Members recognize:

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

Sustainable development is mentioned in connection with the optimal use of the world's resources. It is an expansion of the GATT 1947 preamble, which referred to the need for '[…] developing the full use of the resources of the world […].' The inclusion of sustainable development in the Preamble shows informs it being an objective to all WTO covered agreement. In other words, the implementation and interpretation of the covered agreements should not ignore the objective of sustainable development.

In addition, the Uruguay Round Agreement Decision on Trade and Environment further highlighted the object of the WTO Agreement as far as sustainable development is concerned:[330]

'…there should not be, nor need be, any policy contradiction between upholding and safeguarding an open, non-discriminatory and equitable multilateral trading system on the one hand, and acting for the protection of the environment, and the promotion of sustainable development on the other.'

Two years later, the objective of sustainable development, which is clearly linked to the implementation of the international trade regime, can be found in the Singapore Ministerial Declaration:[331]

'Full implementation of the WTO Agreements will make an important contribution to achieving the objectives of sustainable development.'

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[328] Voigt (n 325), at 126.

[329] The Agreement Establishing the World Trade Organization, commonly known as the "Marrakesh Agreement" was signed in Marrakesh, Morocco, on April 15, 1994 at the conclusion of the Uruguay Round of Multilateral Trade Negotiations and entered into force 1 January 1995. This Agreement defines the scope, functions and structure of the World Trade Organization. Please see, WTO Website: https://www.wto.org/english/docs_e/legal_e/04-wto_e.htm

[330] Uruguay Round Agreement Decision on Trade and Environment (Marrakesh, 15 April 1994), Preamble.

[331] See, WTO Singapore Ministerial Declaration (13 December 1996), available at: https://www.wto.org/english/thewto_e/minist_e/min96_e/wtodec_e.htm.

The 1998 Geneva Ministerial Conference witnessed a further movement, confirming sustainable development as one of the goals of the WTO itself. The preamble of the Ministerial Declaration states:[332]

'We shall also continue to improve our efforts towards the objectives of sustained economic growth and sustainable development.'

The Doha Declaration reaffirmed the WTO's commitment to the objective of sustainable development,[333] it also boosted the potential for harmony between trade liberalization and environmental protection by stating that the two 'can and must' be mutually supportive.[334] The Doha Declaration included a series of environmental issues in its negotiating agenda and the single undertaking to be concluded by 2005. This indeed demonstrates a step towards integration of the trade and environment linkage within the WTO regime and shows a positive sign for future governance and policy.[335] A promising message is delivered that sustainable development and environmental protection can be achieved by means of international trade.

The WTO regime provides support to sustainable development and examines the concept in the light of trade liberalization, which provides some elucidation of its substance.[336] How to understand the concept of sustainable development and apply it in WTO disputes matters if it can serve as a legal tool for dealing with trade/climate conflicts.

Nevertheless, it should be noted that preambular language is not as legally binding as operational provisions. Nevertheless, according to the Vienna Convention, the preamble contains important information about the object and purpose of the treaty.[337] The preamble is fundamental to the interpretation of treaty text.[338] The explicit acknowledgment of environmental protection and preservation has already played and will play an important role in the WTO adjudicators' interpretation of WTO rules that interrelate with non-trade concerns.[339]

The legal significance can be manifest by the fact that the WTO adjudicators have repetitively referred to sustainable development as a justification for a stronger environmental dimension.[340] For example, the Panel in the *US – Shrimp* reached the conclusion that 'sustainable development is one of the objectives of the WTO

[332] See, WTO Geneva Ministerial Declaration (20 May 1998), available at: https://www.wto.org/english/thewto_e/minist_e/min98_e/mindec_e.htm.
[333] See, WTO Fourth Ministerial Declaration, Adopted on 14 November 2001, Doha, Qatar, WTO Document WT/MIN(01)/DEC/1, Preamble.
[334] *Ibid*, para. 6.
[335] Jan McDonald, 'It's Not Easy Being Green: Trade and Environment Linkages beyond Doha' in Ross Buckley (ed), *The WTO and The Doha Round* (Kluwer Law 2003), at 159.
[336] Voigt (n 325), at 115.
[337] According to Vienna Convention on the Law of Treaties, Article 31.2, 'the context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes.'
[338] *Ibid.*
[339] William J. Davey, *Non-Discrimination in the World Trade Organization: The Rules and Exceptions* (Hague Academy of International Law 2012), at 28.
[340] Charnovitz (n 54), at 712.

Agreement'.[341] The Appellate Body in the same case also made clear that the interpretation of WTO law should reflect the Uruguay Round's deliberate inclusion of the language and concept of sustainable development. The reference to sustainable development in the WTO preamble 'gives color, texture and shading to the rights and obligations of Members under the WTO Agreement.'[342] This systematic inclusion of sustainable development within WTO DSB jurisprudence points at a significantly important change, not only for the dispute settlement but also the WTO as a whole.[343]

The adjudicating bodies in another subsequent WTO dispute, *China – Raw Materials* also made reference to the objective of sustainable development in an explicit manner.[344] This way the concept of sustainable development has been accepted shows that the WTO regime is not reluctant to integrate non-trade values, particularly these closely related to environmental and developmental issues. To what extent the application of sustainable development principle allows for a legal argument that the interest in preserving environmental integrity could prevail over the economic and trade interests of single states protected by the WTO regime is intriguing.[345]

Cordonier Segger and Gehring argue that the reasoning that WTO dispute settlement body has provided in some environment-related disputes demonstrates that the objective of sustainable development has become 'an integral part of the world trading system' even though it is not 'a trump card'.[346] It is encouraging that the general trend observed in the evolution of the world trading system from the GATT to WTO is one featured with acknowledgement of the importance of sustainable development as a goal.[347]

Ruggiero, in one of speeches given in Bonn on the subject of sustainable development emphasizes that trade is a powerful engine for the economic growth, which is vital to the creation of conditions which favor improving social conditions and advancing environmental protection.[348] The important role played by trade liberalization with respect to contributing to sustainable development should be recognized. Sustainable development as a goal explicitly stated in the preamble of the WTO agreement has the potential to contribute substantively to the reconciliation, balance, and integration of trade and climate interests. As Gaines argues, sustainable development trade policy needs to provide room for appropriate

[341] Panel Report, *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/RW, para. 5.54, adopted 21 November 2001.
[342] Appellate Body Report, *US – Shrimp*, para. 155.
[343] Voigt (n 325), at 142.
[344] See, *China – Measures related to the Exportation of Various Raw Materials*, DS 395. Panel Report was circulated on 5 July 2011, Appellate Body Report on 30 January 2012.
[345] Voigt (n 325), at 378-379.
[346] Marie-Claire Cordonier Segger and Markus W. Gehring, 'Sustainable Development Through Process in World Trade Law" in Marie-Claire CordonierSegger and Markus W. Gehring (eds), *Sustainable Development in World Trade law* (Kluwer Law 2005), at 193.
[347] Avafia (n 227), at 217.
[348] ICTSD, 'Renato Ruggiero on Trade and Sustainable Development' *Bridges* 6(1) 1 December 1997, available at: https://www.ictsd.org/bridges-news/bridges/news/renato-ruggiero-on-trade-and-sustainable-development, accessed on 31 July 2017.

deviates from core principles of free trade and non-discrimination.[349] How to ascertain the scope and substance of appropriateness of permitted deviations is important. Elevating the objective of sustainable development to a level that enhances the mutual supportiveness of trade policy and climate interests is of critical importance and of course, challenging.

At the same time, sustainable development also has been referred to in the UNFCCC, Kyoto Protocol and Paris Agreement, which testify to the pervasiveness of the concept. The preamble to the UNFCCC mentions 'sustainable economic growth' and 'sustainable social and economic development'.[350] Kyoto Protocol provides that 'Parties have a right to, and should, promote sustainable development.'[351] There are many references to sustainable development in Paris Agreement. Article 2 of Paris Agreement stipulates its objective and aims as to 'strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty.'[352] It is acknowledged that sustainable development has provided and will provide much of the conceptual underpinnings for international responsive action on climate change.[353] Measures designed to respond to climate change can contribute to the wider realization of sustainable development. The interdependence between realization of sustainable development and mitigation of climate change is ever strengthened.

The reference to sustainable development under both the WTO and climate regimes signals that issues of environment protection, development interests and trade values all have to accord with the end of sustainable development.[354] As a central element of the WTO law, sustainable development provides the framework in which to discuss the interface between WTO law and other public policy objectives. The application of sustainable development principle has the potential to resolve the fragmentation of international norms, as exemplified by international trade rules and the need to address climate change.[355]

Liberalization of international trade should not be an end in itself but is subjected to the objective of sustainable development. The ultimate purpose of the WTO is to liberalize international trade so as to realize the common goal of sustainable development.

5.2 The GATT: The National Treatment Principle and General Exceptions

This part elaborates on several provisions that are relevant in addressing trade/climate disputes: non-discrimination principle and general exceptions under

[349] Sanford Gaines, 'International Trade, Environmental Protection and Development as a Sustainable Development Triangle' (2002) 11(3) Review of European Community & International Environmental Law 259, at 260.
[350] See, United Nations Framework Convention on Climate Change, opened for signature May 29, 1992, 1771 U.N.T.S. 107 (entered into force 24 March 1994).
[351] See, Kyoto Protocol to the United Nations Framework Convention on Climate Change, adopted Dec. 10, 1997, 37 I.L.M. 22 (entered into force 16 February 2005).
[352] See, Paris Agreement, Article 2.
[353] Duncan French, *International Law and Policy of Sustainable Development* (Manchester University Press 2005), at 113.
[354] Brown Weiss, 'Environmental and Trade As Partners in Sustainable Development: A Commentary' (1992) 86(4) American Journal of International Law 728, at 731.
[355] Voigt (n 325), at 380.

the GATT. The use of green economy measures, particularly these with an aim of green industrialization, in some cases is likely to discriminate against foreign producers and breach non-discrimination principle. The general exceptions, however can justify the otherwise WTO-illegal measures from being subjected to sanction. This part not only analyzes the treaty language but also examines prior case law so as to map out how these provisions have been understood by the WTO adjudicators.

5.2.1 National Treatment under the GATT 1994

As a key concept in the WTO law and policy, non-discrimination has two main components: the most-favored-nation ('MFN') treatment obligation and the national treatment obligation, which form the cornerstones of the international trade regime. The key provisions of the GATT 1994 dealing with non-discrimination in trade in goods are: Article I on the MFN treatment obligation and Article III on the national treatment obligation.

When it comes to assessing the compatibility of the trade-related renewable energy measures with the GATT, it is the national treatment principle that has been invoked much more frequently than the MFN treatment obligation. Because the WTO Members are more inclined to discriminate against foreign products by favoring domestic ones rather than to impose differential treatment among foreign producers. In this vein, this section focuses on national treatment principle and the jurisprudence in this respect.

5.2.1.1 The Definition of National Treatment under the GATT 1994

Article III, known as the national treatment obligation is the central provision in the GATT regulating the application of domestic policies to imported products. Article III of the GATT 1994, entitled 'National Treatment on Internal Taxation and Regulation' states:

1. The [Members] recognize that internal taxes and other internal charges, and laws, regulations and requirements affecting the internal sale, offering for sale, purchase, transportation, distribution or use of products, and internal quantitative regulations requiring the mixture, processing or use of products in specified amounts or proportions, should not be applied to imported or domestic products so as to afford protection to domestic production.

2. The products of the territory of any [Member] imported into the territory of any other [Member] shall not be subject, directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products. Moreover, no [Member] shall otherwise apply internal taxes or other internal charges to imported or domestic products in a manner contrary to the principles set forth in paragraph 1.

4. The products of the territory of any [Member] imported into the territory of any other [Member] shall be accorded treatment no less favorable than that accorded to like products of national origin in respect of all laws, regulations and

requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use.

The basic purpose of the national treatment obligation is to ensure that products made abroad have the same opportunity to compete with domestic products in domestic markets. Article III: 1 establishes a general principle and it acts as a chapeau to the following paragraphs of the provision.[356] The meaning of Article III: 2 and 4 needs to be understood with consideration given to Article III: 1.

The coverage of Article III is expansive that it applies to virtually all taxes, laws, regulations or similar policy instruments. In this vein, this provision is bound to have profound impact on countries' freedom to formulate their domestic policies, a staggering number of GATT disputes among states have been brought towards the WTO Dispute Settlement Body.[357] As a consequence, the jurisprudence in this area is rich as well as important.

Before embarking on the detailed analysis of national treatment obligation and its application in case law, it is analyitically useful to discuss the underlying rationale of the obligation. The negotiation history suggests that the prupose is to prevent tariff concessions made to trading partners from being eroded by favorable treatment of domestic goods against foreign ones.[358] As tariffs have been progressively reduced over rounds of negotiations, there is a tendency for countries to resort to internal polices that may restrict market access or alter competitive situations between domestic products and imported ones in favor of the former. Hoekman and Mavroidis view the GATT Article III as 'a cost-effective defense' against 'concession erosion' through opportunistic or protectionist use of domestic policy instruments.[359] Subjecting discriminatory internal taxes or other measures that might undermine the benefit of a tariff reduction agreed multilaterally to scruitiny is necessary.[360] Jackson also points out that an important policy rationale behind this obligation is 'to prevent domestic tax and regulatory policies from being used as protectionist measures that would defeat the purpose of tariff bindings.'[361] The Appellate Body emphasized that the broad and fundamental purpose of national treatment is to avoid protectionism in the application of internal tax and regulatory measures.[362] In a paper jointly authored by Mavroidis and Horn, the GATT is described as a 'highly incomplete contract' that the inclusion of

[356] Thomas Cottier and Matthias Oesch, *International Trade Regulation: Law and Policy in the WTO, the European Union and Switzerland* (Cameron May 2005), at 382.
[357] Henrik Horn and Petros Mavroidis, 'Still Hazy After All These Years: The Interpretation of National Treatment in the GATT/WTO Case Law on Tax Discrimination' (2004) 15(1) European Journal of International Law 39.
[358] Gene Grossman, Henrik Horn and Petros Mavroidis, 'National Treatment' in Henrik Horn and Petros C. Mavroidis (eds) *Legal and Economic Principles of World Trade Law* (Cambridge University Press 2013), at 205-225.
[359] Bernard Hoekman and Petros Mavroidis, *The World Trade Organization (WTO): Law, Economics, and Politics* (Taylor & Francis 2007).
[360] Kevin Kennedy, 'GATT 1994' in Patrick F J Macrory, Arthur E Appleton and Michael G Plummer (eds), *The World Trade Organization: Legal, Economic and Political Analysis* (Springer 2005).
[361] Jackson (n 230), at 213.
[362] See, Appellate Body Report, *Japan – Alcoholic Beverages II*.

national treatment obligation provides the WTO adjudicators guidance on what internal measures are admissible and what are not.[363]

Article III of the GATT prohibits discrimination against imported products, which means it is illegal when the WTO Members treat imported products less favorably than like domestic products once the imported product has entered the Member's domestic market. The less favorable treatment obligation has been interpreted in the WTO jurisprudence as not changing the conditions of competition to the detriment of the imported products.[364]

From trade law perspective, discrimination can be classified into two forms: *de jure* discrimination and *de facto* discrimination. *De jure* discrimination refers to the use of nationality as the express criterion while *de facto* discrimination means the use of other regulatory criteria, which appear to be origin neutral but have the discriminatory effects between products on the basis of nationality.[365] In other words, *de jure* discrimination signals an overtly protectionist objective which can be readily discerned from the text, whereas *de facto* discrimination, which pursues a purported non-protectionist objective, can only be discovered by examining the relationship between the means and the end.[366] *De jure* discrimination is manifested in measure that differentiates between products on the basis of origin or nationality in an explicit manner. Whether a measure that *prima facie* appears to be origin neutral has in practice protectionist effects on foreign products would needs particular attention.[367] The identification of *de jure* discrimination tends to be easier than that of *de facto* discrimination. However, the distinction between de jure discrimination and de facto discrimination is, in some cases difficult to draw and could be blurred.[368]

Two key issues arise in the interpretation and application of national treatment obligation. First, what does 'like product' mean? Since the GATT Article III mandates no less favorable requirement for like products only, if two products are found to be not like, providing discriminatory treatment between them would not constitute a violation of GATT obligations. The second key issue is what is meant by 'no less favorably'. It is acknowledged that domestic measures imposed on imported and domestic products can be different as long as the resulting treatment of the imported products is no less favorable than domestic ones. In another scenario when the treatment of imported products and domestic ones appear to be exactly the same on paper while the effect of the law is discriminatory towards imported products, it amounts to a breach of the national treatment obligation.

5.2.1.2 Defining 'Like Product' in National Treatment Principle

[363] Horn and Mavroidis (n 357), at 68.
[364] See, Appellate Body Report, *Canada – Certain Measures Affecting the Automotive Industry*, WT/DS139/AB/R, WT/DS142/AB/R, adopted 19 June 2000, p 2985, para 69.
[365] Federico Ortino, 'WTO Jurisprudence on *De Jure* and *De Facto* Discrimination' in Federico Ortino and Ernst-Ulrich Petersmann (eds) *The WTO Dispute Settlement System 1995-2003* (Kluwer Law International 2004), at 217.
[366] Gaetan Verhoosel, *National Treatment and WTO Dispute Settlement: Adjudicating the Boundaries of Regulatory Autonomy* (Hart Publishing 2002), at 51.
[367] Ortino (n 365), at 231.
[368] Cottier and Oesch (n 356), at 383.

The GATT Article III: 4 has been invoked more frequently than any other GATT provision in WTO disputes to date.[369] As one of the two prerequisite elements in establishing the violation of Article III: 4, the 'likeness' of products is of critical importance. The term 'like product' appears in Article III: 4 and the first sentence of Article III: 2.

Attached to Article III: 2, second sentence is an Interpretive Note regarding violations in the absence of like products:

'A tax conforming to the requirements of the first sentence of paragraph 2 would be considered to be inconsistent with the provisions of the second sentence only in cases where competition was involved between, on the one hand, the taxed product and, on the other hand, a directly competitive or substitutable product which was not similarly taxed.'

The scope and practical relevance of national treatment principle is dependent on the application of '*like product*'. This means that the WTO Members have the discretion to grant discriminatory treatment to products that are not 'like'. It sets a benchmark for the Members' regulatory autonomy in treating imports in a different way from domestically made products. In order to make a non-discrimination challenge, these products need to be shown sufficiently 'like' each other that non-discriminatory treatment ought to be accorded.

The contour of the phrase 'like products' varies between different provisions. Both Article III: 2 and Article III: 4 use the term 'like product' and the footnote to the second sentence in Article III: 2 expands the obligation of national treatment to not only 'like products' but also products which are directly competitive or substitutable. The interpretation of 'like products' or 'directly competitive or substitutable' products is not fixed. However, assessing the likeness is one of the thorniest issues in the GATT/WTO jurisprudence,[370] After more than twenty years' jurisprudence, there is still not a textbook definition. Even the Appellate Body ruled that a precise and absolute definition of what is 'like' does not exist.[371]

The growing body of case law in understanding the phrase 'like product' sheds important light on how to assess likeness. Verhoose classifies the school of thoughts with respect to determining likeness of products into two categories.[372] One school upholds that factors such as physical similarity, tariff classification, consumer preferences, and end uses are determinative in the assessment of likeness. These criteria also have been confirmed repetitively in the case law up to now.[373] The other school, which was originated from even earlier case law, took into account regulatory objectives of measures at issue, which is the so-called 'aims and effects test'.

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[369] William J. Davey, 'Dispute Settlement Relating to GATT 1994' in Federico Ortino and Ernst-Ulrich Petersmann (eds) *The WTO Dispute Settlement System 1995-2003* (Kluwer Law International 2004), at 197.

[370] Mitsuo Matsushita, Thomas J. Schoenbaum and Petros C. Mavroids, *The World Trade Organization Law, Practice, and Policy* (2nd Ed, Oxford University Press 2006), at 236.

[371] See, Appellate Body Report in *Japan – Alcoholic Beverages* (WT/DS11/AB/R) at 21.

[372] Verhoosel (n 366), at 23.

[373] The Appellate Body Report of the Working Party on *Border Tax Adjustments*, BISD 18S/97, para 18.

The Panel in *United States – Measures Affecting Alcoholic and Malt Beverages* laid the basis for the aims and effects test by stating it would be necessary to determine the likeness of products that are subject to differential treatment by considering whether such product differentiation is made 'so as to afford protection to domestic production.'[374] In a following dispute *United States – Taxes on Automobiles,* the Panel also took into consideration of aims and effects of the challenged measures to determine features common to the domestic and imported products.[375] The Panel highlighted that paragraphs 2 and 4 of Article III had to be read in light of Article III: 1 and only regulatory distinctions between products applied to afford protection to domestic production should be prohibited.[376] The complaining party in this dispute, the EC objected to this Panel report, which was never adopted by the Contracting Parties.[377] The aims and effects test has been considered as 'overly permissive' of regulatory barriers and thus, had created rather large policy space for regulatory protectionism by setting the standard for finding a breach of Article III excessively high.[378]

Unsurprisingly, the aims and effects test had been followed by the WTO adjudication bodies for only a short time. The Panel in *United States – Standards for Reformulated and Conventional Gasoline* asserted that aims and effects test runs contrary to the ordinary meaning of the terms of Article III: 4 and abandons the objective basis of products likeness.[379] This would give rise to great instability and uncertainty in the conditions of competition as between domestic and imported products.[380]

The Panel in *Japan – Taxes on Alcoholic Beverages* rejected the aims and effects test, considering that this test was inconsistent with the wording of Article III: 2 as well as its context.[381] The Appellate Body in this dispute upheld the Panel's reasoning with regards to determining the likeness of products.[382] According to the Appellate Body, 'so as to afford protection' in Article III: 1 is not an issue of intent but an issue of how the measure in question is applied.[383] In this vein, it is unnecessary to explore the underlying reasons for measures. Rather, it requires a comprehensive and objective analysis of the structure and application of the measure in question on domestic as compared to imported products. It is he design, the architecture, and the revealing structure of a measure that constitute discernable factors of the protective application of a measure.[384] The Appellate Body also added that the concept of 'likeness' is a relative one that evokes the image of an

[374] Panel Report, *United States – Measures Affecting Alcoholic and Malt Beverages* (DS23, adopted on 19 June 1992), para. 5.25.
[375] Panel Report, *United States – Taxes on Automobiles* (DS31/R, not adopted), para. 5.8.
[376] *Ibid.*
[377] *Ibid*, para.5.14.
[378] Verhoosel (n 366), at 53.
[379] Panel Report, *United States – Standards for Reformulated and Conventional Gasoline* (WT/DS32/R, adopted 20 May 1996), para. 6.39.
[380] *Ibid.*
[381] Panel Report, *Japan – Taxes on Alcoholic Beverages* (WT/DS8/R, adopted on 1 November 1996), para. 4.16.
[382] Appellate Body Report, *Japan – Taxes on Alcoholic Beverages* (WT/DS8/R, adopted on 1 November 1996).
[383] *Ibid*, p. 27.
[384] *Ibid*, p. 28-29.

accordion, the width of which must be determined by the particular provision in which the term 'like' is encountered as well as by the context and the circumstances that prevail in any given case to which that provision may apply.[385] The metaphor of 'accordion' as used by the Appellate Body explains the flexibility as well as instability embodied in the concept of 'likeness'. For instance, the tariff classification of products in this case, turned out to be a problematic criterion since it was not sufficiently detailed, which cannot be applied directly to decide 'like products'.[386] However, tariff classification still can be used to assist decision-making regarding likeness based on other criteria.[387] The assessment of 'like products' concept would always involve an irreducible amount of subjective discretion on the part of decision-makers.[388] This interpretative approach was followed by the Panel in its report on *Canada – Certain Measures Affecting the Automotive Industry.*[389]

A more recent ruling in the *EC – Asbestos* provides perhaps the most comprehensive analysis in relation to assessing the likeness. The Panel found that products containing certain asbestos fibers and products containing other fibers met the definition of 'like products'. However, the Appellate Body reversed the Panel's ruling and expanded the scope of likeness,[390] which set forth a framework for evaluating whether products bear likeness within the meaning of Article III: 4.

A few analytical points made by the Appellate Body should be underscored: first, the Appellate Body held that the scope of 'like product' in Article III: 4 is broader than the scope in Article III: 2, first sentence, but not broader than the combined products scope of the two sentences of Article III: 2 of the GATT 1994.[391] Second, the Appellate Body underlined the need to examine the evidence relating to the each of the four criteria that decide products likeness and weigh all the evidence, coupled with any other relevant evidence in determining whether the products at issue could be defined as 'like'.[392] Merely by relying on one of the four criteria is likely to lead to erroneous decision. A consideration of four criteria is necessary for sorting and examining the relevant evidence because 'they are neither treaty mandated nor a closed list of criteria that will determine the legal characterization of a product.'[393] Third, the analysis of 'like products' is to consider evidence, which indicates whether, and to what extent, the products involved are, or could be in a competitive relationship in the marketplace.[394] Forth, the Appellate Body stated that evidence relating to the health risks associated with a product could be relevant in assessing 'likeness', which falls under the ambit of physical properties and/or consumers' tastes and habits.[395] Fifth, procedurally, a higher burden is placed on the complaining parties to establish that there is a competitive relationship between

[385] *Ibid*, p. 21.
[386] *Ibid*, p.25.
[387] *Ibid.*
[388] *Ibid*, at p. 22.
[389] Panel Report, *Canada – Certain Measures Affecting the Automotive Industry* (WT/DS139/R, adopted on 19 June 2000), para. 10.78.
[390] Appellate Body Report, *EC – Asbestos*, WT/DS135AB/R, March 12, 2001, para 98-100.
[391] *Ibid*, paras. 93-99.
[392] *Ibid.* paras. 109.
[393] *Ibid*, para. 102.
[394] *Ibid*, para. 103.
[395] *Ibid*, para. 113.

the products that demonstrates that the products are 'like'.[396] It recognizes the possibility to rule over the statement that products are not 'like' in cases where the evidence relating to physical properties establishes that the products at issue are physically different.[397] The Appellate Body's decision has been welcomed as 'to provide clearer and perhaps more ample assurances to regulators that non-protectionist domestic regulations for important policy purposes will not be significantly constrained by WTO law.'[398]

The jurisprudence indicates a shift in determining 'like product' from the purpose or objective of a regulatory measure to the economic evidence and survey data. This reflects the new jurisprudential style, which is 'the disembodying of the GATT/WTO's legal system from the world of trade diplomacy.'[399] The criteria of likeness should be viewed as 'technical description of the function of the market' rather than be influenced by 'value judgments concerning the legitimacy of the regulation.'[400]

Determining the likeness of products is highly relevant in assessing the legality of renewable energy measures that are designed to facilitate a transition to a green economy under the GATT. To illustrate, is it permitted for governments to source intermediate goods, such as renewable energy equipment from domestic producers in producing renewable energy electricity? Are measures that grant differential treatment to renewable energy and fossil fuels legal under the GATT, regardless of the origin? Do measures that favor domestic renewable energy producers over foreign fossil fuel producers run afoul of the national treatment obligation?

The abovementioned first issue has been raised repetitively raised in the WTO renewable energy disputes that Chapter 6 and 8 elaborate on. The following two questions can be discussed in this part. Since the health effects of asbestos were considered as relevant factor, namely the physical properties, nature and quality of the products and consumer preferences in determining the likeness of products at issue in *EC – Asbestos*, the environmental effects of products as well as production process are likely to become relevant in in the assessment.[401] Accordingly, the differences in environmental impacts that renewable energy and fossil fuels entail need to be properly accounted. Climate-related policies targeting GHG emissions reduction often do not deal with products *per se* but the process and production methods, which may discriminate between similar products on the basis of non-product related criteria.[402] Whether the different treatment based on climate-related indicators passes the scrutiny of the GATT obligation is of research interest.

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[396] *Ibid*, para.118.
[397] *Ibid.*
[398] Howse and Turk (n 46), at 117.
[399] Andrew Lang, *World Trade Law after Neoliberalism: Re-imagining the Global Economic Order* (Oxford University Press 2011), at 262.
[400] Horn and Mavroidis (n 357), at 60.
[401] Bradly J Condon, 'Climate Change and Unresolved Issues in WTO Law' (2009) 12(4) Journal of International Economic Law 895, at 907.
[402] Gabrielle Marceau, 'The Interface Between and Trade Rules and Climate Change Actions' in Deok-Young Park (ed) *Legal Issues on Climate Change and International Trade Law* (Springer Nature 2016), at 4-5.

In addition, could consumer preference be used as justification for differences in regulatory treatment of climate-friendly and non-friendly products worth thinking?[403] The role played by consumer preference on the market place has been increasingly important in deciding whether products are 'like' or 'directly competitive or substitutable'.[404] So long as consumers care to a sufficient degree for the product's non-economic characteristics, market-based approaches might deem physically identical products not 'like' for purposes of the WTO law. By mean of purchasing decisions, consumers could render distinctions between physically like products WTO-consistent. The distinction between renewable energy products and fossil fuel products could be justifiable if the consumers prefer the former to the latter when they make the consumption choices.

However, it is not secure to rely on the choices made by consumers to determine the likeness of the products at issue. Because the price of products plays a non-negligible role in influencing consumers' choices and poor consumers tend to favor the cheaper product.[405] In the light of this, would consumers who are not financially capable still choose more expensive renewable energy over cheaper fossil fuels? In addition, consumers' decisions are not always rational in every scenario, which would indirectly and negatively influence the determination of products likeness.[406] Therefore, there are pros and cons in relying on consumer preference in determining whether products at issue are 'like'.

It is analytically important to map out the scope of policy space decided by the assessment of 'likeness' within the meaning of the GATT Article III. Pauwelyn believes that the notion of 'like' or 'directly competitive or substitutable' products under GATT Article III has been greatly restricted in the past jurisprudence.[407] Therefore, some legal scholars have raised proactive ideas in expanding the policy space under this provision so that legitimate policy measures would not be subjected to undue restraint. Howse argues that non-discriminatory process-based measures ('PPMs') are consistent with GATT Article III: 4 on the basis of consumer preferences, according to the Appellate Body ruling in *EC – Asbestos*.[408] Esty also advocates for a redefinition of 'like products' by arguing that products made using different processes should be deemed as unlike so that trade restrictions can be applied legitimately to goods produced using environmentally unacceptable methods.[409] In his view, this is one of the necessary moves that the trade regime needs to make so as to build in more environmental sensitivities in the regime.[410] Products related and non-products related production process methods, if incorporated as one of criteria to determine the 'likeness' would largely enlarge the scope of policy space under the national treatment obligation, which on the other hand, possibly gives rise to abusive use and disguised protectionism.

[403] Voigt (n 325), at 54.
[404] Joost Pauwelyn, 'Recent Books on Trade and Environment: GATT Phantoms Still Haunt the WTO' (2004) 15(3) European Journal of International Law 575, at 586-587.
[405] Christiane R. Conrad, *Processes and Production Methods (PPMs) in WTO Law: Interfacing Trade and Social Goals* (Cambridge University Press 2011), at 234.
[406] Pauwelyn (n 404).
[407] *Ibid.*
[408] Howse (n 41), at 515.
[409] Esty (n 35), at 220.
[410] *Ibid*, at 205.

At current stage, it remains not fully clear whether consumer preferences can take a decisive role in determining the 'likenesses of products. Nor is it clear to what extent the PPMs can be factored into the assessment of 'like products'. As discussed by Charnovitz and others, the WTO adjudicating bodies have to determine likeness on a case-by-case basis in relation to all factors that might point to 'likeness' or 'unlikeness', which implies little legal certainty in their decisions.[411]

The determination of 'likeness' in renewable energy sector also tends to be quite complicated. It is rather clear that discrimination in renewable energy equipment, for instance domestically manufactured solar PV and imported ones breaches the non-discrimination obligation unless being justified under specific WTO derogation or exception. However, it is more complicated when it comes to distinction between products based on the production process or the emissions of greenhouse gas emissions. If products that were different in their carbon emissions would not fall into the category of 'like products' at the first place, the non-discrimination obligation would not be applicable. The scope of policy space that the Members have in promoting climate-friendly products by disfavoring climate-unfriendly products would be largely secured and expanded.

5.2.1.3 Defining 'Less Favorable Treatment' in National Treatment Principle

The other definitional element of national treatment violation is the existence of less favorable treatment of imports. Article III: 4 is violated when foreign products are subjected to 'less favorable treatment' than domestic products. If the treatment were not less favorable towards foreign products, there would be no violation of national treatment obligation. However, it is noted that differential treatment would not necessarily give rise to less favorable treatment even in many cases differential treatment would lead to discrimination. Regulatory distinctions between 'like products' are not inconsistent with Article III: 4 in every scenario.

For example, the Panel in *United States –Section 337* of the Tariff Act 1930 decided that differential treatment of imports need not be less favorable, because it could also possibly be more advantageous.[412] The Panel clearly recognized that 'contracting parties may apply to imported products different formal legal requirements if doing so would accord imported products more favorable treatment.'[413] A difference is not in itself a disadvantage that imported products have to be subjected to.[414] As long as the 'effective equality of opportunities' for imported products in respect of the application of laws, regulations and requirements remain, Article III: 4 is not breached.[415] The Panel furthermore specified that in such cases, 'it is incumbent on the contracting party applying differential treatment to show that, in spite of such differences, the no less favorable treatment standard of Article III is met.'[416] The reasoning as made by the Panel in this dispute has been followed in subsequent jurisprudence.

[411] Steve Charnovitz, Jane Earley and Robert Howse, 'An Examination of Social Standards in Biofuels Sustainability Criteria' (IPC Discussion Paper – Standards Series December 2008), at 10.
[412] Panel Report, *United States - Section 337 of the Tariff Act of 1930*, adopted 7 November 1989, BISD 36S/345, para. 5.11
[413] *Ibid.*
[414] *Ibid.*
[415] *Ibid.*
[416] *Ibid.*

The Appellate Body in *Korea – Beef* provided detailed discussion of it:[417]

'A formal difference in treatment between imported and like domestic products is thus neither necessary, nor sufficient, to show a violation of Article III: 4. Whether or not imported products are treated 'less favourably' than like domestic products should be assessed instead by examining whether a measure modifies the conditions of competition in the relevant market to the detriment of imported products.'

The Appellate Body thus rejected the Panel's ruling that 'any regulatory distinction that is based exclusively on criteria relating to the nationality or the origin of the products is incompatible with Article III.'[418] The Appellate Body concluded that whether a measure modifies the 'conditions of competition' in the relevant market to the detriment of imported products should be assessed in determining the existence of 'less favorable treatment'. [419] A formal difference in regulatory measures between imported products and domestic ones is not necessary or sufficient to show a violation of Article III: 4.

The Appellate Body in *EC – Asbestos* developed the understanding of 'less favorable treatment' by ruling that something more than a mere adverse economic effect might be required in the case. Not all regulations that draw a distinction between products and modify the conditions of competition between them, but these aim at protectionist objectives could be prohibited.[420] In a subsequent dispute *Dominican Republic – Cigarettes*, the Appellate Body adopted a similar interpretative approach:[421]

'…the existence of a detrimental effect on a given imported product resulting from a measure does not necessarily imply that this measure accords less favorable treatment to imports, if the detrimental effect is explained by factors or circumstances unrelated to the foreign origin of the product, such as market share of the importer in this case.'

Therefore, it is no longer sufficient to demonstrate inconsistency with Article III: 4 that a measure adversely affects the conditions of competition for the imported product. It must be shown that the adverse effects are due to the foreign origin of the product. If the adverse effect has a different explanation, the measure cannot be deemed to violate the national treatment obligation.

The interpretation of 'less favorable treatment' plays a key role in determining the consistency or inconsistency of policy measures adopted in renewable energy sector with the GATT obligation. The mounting interests that both the developed countries and developing ones have in boosting their renewable energy manufacturing capacity could give rise to various kinds of policy measures that

[417] Appellate Body Report, *Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef*, WT/DS161&169/AB/R, adopted on 10 January 2001, para. 137.
[418] Appellate Body Report, *Korea – Beef*, para. 138.
[419] Appellate Body Report, *Korea – Beef*, para. 137.
[420] Appellate Body Report, *EC – Asbestos*, para. 100.
[421] Appellate Body Report, *Dominican Republic – Cigarettes*, para. 96.

prioritize domestic renewable energy industrial development. For instance, the measures designed to favor only domestically manufactured solar PV and subject foreign solar PV into disadvantage in the market break the national treatment obligation. In another scenario when domestic renewable energy is favored over foreign fossil fuel out of the concern to reduce greenhouse gas emissions, could the fossil fuel producers make a challenge under the national treatment obligation?

The extensive coverage of national treatment obligation and the proliferation of trade-related renewable energy measures seem to indicate the tensions between trade regime and climate regime. It is useful to reflect on a number of issues: what forms of renewable energy measures would fail the scrutiny of Article III and thus become WTO-inconsistent? Does the national treatment obligation unduly restrict renewable energy development, particularly the objective of green industrialization? What is the role of national treatment obligation under the context of renewable energy development?

5.2.2 Government Procurement Derogation in GATT Article III: 8(a)

The carve-out for government procurement in the GATT Article III, although has not been frequently cited in WTO disputes still bear importance in exonerating some forms of green industrialization measures that might otherwise breach the WTO law.[422] The scope of Article III: 8(a) decides to what extent discriminatory renewable energy measures could pass the WTO's scrutiny, which influence the interface of international trade rules and climate change mitigation in a number of ways. Firstly, if the trade discriminatory measures adopted in renewable energy sector turn out to be desirable from climate change mitigation perspective, whether Article III: 8(a) could shelter them becomes essential. Secondly, if the trade discriminatory measures adopted in renewable energy sector turn out to be also undesirable from climate change mitigation perspective, whether Article III: 8(a) could be unavailable becomes essential. Article 8 incorporates case analysis of how Article III: 8(a) is applied in details, while this part aims to provide a brief introduction of what Article III: 8(a) is.

The GATT Article III: 8 (a) states:

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

Three requirements are set in a cumulative manner, which means any government purchase needs to meet all the requirements so as to fall under the ambit of Article III: 8(a). The failure to meet any of the requirements would render Article III: 8(a) unavailable. The Member is allowed to discriminate in favor of local suppliers of goods while availing itself of any constraints that would otherwise be imposed by the national treatment obligation.[423] It is intriguing to explore the boundaries of the provisions and map out the scope of policy space under it. To what extent Article

[422] The GATT Article III: 8(a) was revoked for the first time ever in the *Canada – Renewable Energy* dispute, which will be address in Chapter 8.
[423] Kennedy (n 360), at 23.

III: 8(a) could be used to exonerate trade discriminatory measures adopted in renewable energy area to realize green industrialization is of research interest.

This exception was initially crafted because government procurement was too close to sovereignty to be subject to regulation at that time.[424] It is well recognized that governments and public monopolies are major purchasers of goods, despite of the trade-distorting effects resulted from the practice of government procurement.[425] The rationale of government procurement exception generally tends to be, according to Uttley and Hartley, amongst other things, 'maintaining independence in defense production, supporting employment in declining industries; supporting high technology sectors.'[426] WTO negotiating parties chose to preserve their right to discriminate in this respect. GATT Article III: 8 (a) can safeguard a practice otherwise known as 'buy national' government procurement. This is where government favors its domestic industry when purchasing goods.

Under the plurilateral Agreement on Government Procurement ('GPA'),[427] national treatment obligation applies to WTO Member States that are signatories to it. WTO GPA is still widely regarded as the most comprehensive procurement regime, albeit limited in membership, scope, and coverage.[428] The two important pillars of the GATT, national treatment and most favored nation obligation, are incorporated in it and safeguarded by Article III: 1 of the GPA.[429] The applicability of GATT III: 8 (a) would be excluded when the Member is a GPA signatory. The relatively limited membership of GPA reflects perhaps the reluctance of the wider WTO membership to abandon the safe haven of preferential government procurement.[430]

Nevertheless, the language of Article III: 8(a) itself is not short of ambiguities or vagueness, which is likely to give rise to different legal interpretations. For instance, there is no precise definition as to what constitutes 'governmental agency' and what 'governmental purposes' are. The WTO adjudicators assume the important task to clarify the inherently vague terms and phrases contained in Article III: 8(a). However, this provision has not been frequently cited in the past WTO case law, which provides less than adequate guidance on how to apply and understand it. Two renewable energy WTO disputes have addressed the claims made by dispute parties concerning the application of Article III: 8(a), which will be discussed in following section. It is of research interest to measure the scope of policy space

[424] Jackson (n 230), at 225.
[425] Stephen Martin, Keith Hartley and Andrew Cox, 'Public Purchasing in the European Union: Some Evidence from Contract Awards' (1997) 10(4) International Journal of Public Sector Management 279, at 283.
[426] MRH Uttley and K Hartley, 'Public Procurement in the Single European Market: Policy and Prospects' (1994) 94 European Business Review 3.
[427] The GPA applies to any law, regulation, procedure or practice regarding any procurement by entities listed for each party in Appendix I, Annexes 1, 2 or 3 of the agreement.
[428] Kamala Dawar, 'Government Procurement in the WTO: A Case for Greater Integration' (2016) 15(4) World Trade Review 645, at 657.
[429] It requires that each party to immediately and unconditionally to provide to the products,services and suppliers of the other parties, treatment no less favorable than that accorded to domestic products, services and suppliers and that accorded to products, services and suppliers of any other party.
[430] Peter Trepte, 'The Agreement on Government Procurement' in Patrick FJ Macrory, Arthur E Appleton and Michael G Plummer (eds), *The World Trade Organization: Legal, Economic and Political Analysis* (Springer 2005), at 122.

under the GATT Article III: 8(a) for government purchase practices and particularly, these applied in renewable energy area.

5.2.3 General Exceptions in the GATT Article XX

This part discusses the general exceptions contained in the GATT Article XX, particularly several provisions that are highly relevant in addressing trade/climate debate. Some green economy measures adopted in the renewable energy area would create discriminatory impacts on the international trading system and risk being challenged under the WTO Dispute Settlement System. It may be possible for Article XX to defend climate change mitigation measures that may otherwise breach WTO obligations. However, Article XX has presented a number of challenges for parties choosing to rely on it. This part considers the prior case law concerning the application of Article XX.

5.2.3.1 The Debate on the Application of Article XX

Governments adopt legislation or take measures that constitute trade barriers, inadvertently or deliberately in order to protect legitimate social and economic interests.[431] These measures could be ruled as inconsistent with the WTO rules, and in particular, with the principle of non-discrimination. The GATT Article XX produces carve-outs for otherwise WTO-illegal measures. One can debate the coverage of these exceptions, however, it is hard to deny that they are relevant to the global commons and environmental issues.[432]

The jurisprudence on the GATT Article XX has probably been the 'most striking development' of WTO Dispute Settlement, along with its Article III jurisprudence. [433] The general exceptions are of relevance to a number of controversial issues that the WTO has had to deal within recent years, one of which is the relationship between trade-related concerns and environmental concerns. It is beyond doubt that this article becomes highly relevant when assessing the reaction of the WTO rules to renewable energy measures that aim at important climate protection objectives. The extent to which non-trade values, such as environmental protection and climate change mitigation could be accommodated by the trade regime is of critical importance.

There is ample and growing literature that touches upon the relationship between trade concerns and environmental ones through the lens of the Article XX jurisprudence. Watson observes that the Appellate Body rulings and processes, coupled with the stated environmental interests of the WTO could enable the Dispute Settlement Body to take a meaningful role in the serious discussions of environmental issues within the WTO.[434] In his view, the WTO Dispute Settlement process has engaged in more considerations of environmental matters, which is marked with the *US – Shrimp* case as a beginning point.[435] Nevertheless, he still

[431] Peter Van Den Bossche, *The Law and Policy of the World Trade Organization: Text, Cases and Materials* (2nd Ed, Cambridge University Press 2008), at 615.
[432] Steve Charnovitz, 'The World Trade Organization and Social Issues' (1994) 28(5) Journal of World Trade 17, at 19.
[433] Davey (n 369) at 201.
[434] Watson (n 305), at 218.
[435] *Ibid.*

proposes a number of reforms in light of Article XX that can improve the WTO dispute settlement operation to more actively respond to environmental needs.[436] Condon and Sinha, in their book argue that the WTO jurisprudence is an indication that the language of GATT Article XX is 'sufficiently flexible' to accommodate a variety of climate change regulations,[437] while the scope of Article XX (b) and (g) still needs to be defined in many aspects.[438] Charnovitz also recognizes that the WTO adjudication bodies have developed Article XX jurisprudence in a 'reformist' manner that respects 'the green fundamentals of the trading system'.[439]

However, criticism towards the understanding and application of Article XX is also noticeable. Gaines contends that the way Article XX is interpretation reflects the WTO's 'persistent but hesitant efforts' to resolve conflicts arising due to the interaction trade liberalization and environmental protection.[440] He argues that the WTO adjudication bodies 'unduly privileged' trade considerations and demonstrated little understanding of how environmental policy works by interpreting the Article XX chapeau in a narrow way.[441]

5.2.3.2 What is Article XX?

This section discusses the substance of Article XX provisions and engages with the WTO jurisprudence in this regard. Trade is important yet governments' persuasion of other policy goals is as well, the GATT drafters made sure to preserve the autonomy that governments have to promote non-trade policy goals. In the light of this, the drafters included a set of 'General Exceptions' in Article XX, which carves out a number of circumstances in which Members are permitted to deviate from WTO obligations. Domestic polices embodied in such measures are recognized as important and legitimate.[442] These can be called the most compelling sort of regulatory interests,[443] which are listed in sub-paragraphs (a) to (j) of Article XX:

(a) necessary to protect public morals;
(b) necessary to protect human, animal or plant life or health;
(c) relating to the importations or exportations of gold or silver;
(d) necessary to secure compliance with laws or regulations which are not inconsistent with the GATT;
(e) relating to the products of prison labour;
(f) imposed for the protection of national treasures of artistic, historic or archaeological value;

[436] *Ibid*, at 224- 229.
[437] Bradly Condon and Tapen Sinha, The Role of Climate Change in Global Economic Governance (Oxford University Press 2013), at 93.
[438] *Ibid*, at 91.
[439] Charnovitz (n 54), at 686.
[440] Sanford Gaines, 'The WTO's Reading of the GATT Article XX Chapeau: A Disguised Restriction on Environmental Measures' (2001) 22(4) University of Pennsylvania Journal of International Economic Law 739, at 740.
[441] *Ibid*, at 743.
[442] Emmanuel Opoku Awuku, 'WTO Dispute Settlement Practice and Trade-Related Environmental Measures' in Federico Ortino and Ernst-Ulrich Petersmann (eds) *The WTO Dispute Settlement System 1995-2003* (Kluwer Law International 2004), at 348.
[443] Robert Hudec, *Essays on the Nature of International Trade Law* (Cameron May 1999), at 362.

(g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption;
(h) undertaken in pursuance of obligations under any intergovernmental commodity agreement which conforms to criteria submitted to the contracting parties and not disapproved by them or which is itself so submitted and not so disapproved;
(i) involving restrictions on exports of domestic materials necessary to ensure essential quantities of such materials to a domestic processing industry during periods when the domestic price of such materials is held below the world price as part of a governmental stabilization plan; Provided that such restrictions shall not operate to increase the exports of or the protection afforded to such domestic industry, and shall not depart from the provisions of this Agreement relating to non-discrimination;
(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.

An Article XX defense must in all cases start with an assessment of whether the measure at issue is a type covered by the provision.[444] By allowing the Members to adopt or maintain measures promoting or protecting important social values, it provides an exception to, or limitation of affirmative commitments under the GATT 1994.[445] Some provisions have been invoked more frequently than others. There is detailed jurisprudence dealing with claims made under Article XX (b), (d) and (g).[446]

The absence of words 'environment' or 'climate change' in either paragraph of Article XX gives rise to divided scholarly opinions on whether these exceptions can be applied to cover environmental concerns. Charnovitz gives a review of the negotiation history of Article XX and opines that this article encompasses environmental measures. [447] The lack of a more explicit exemption for environmental concerns is because the drafters probably thought that Article XX (d) and (g) would suffice for environmental protection.[448] While on the contrary, Shrybman argues that Article XX has been interpreted in a much narrower way such that national measures for environmental protection are being undermined or abandoned for the benefit of economic development and trade liberalization.[449] It is analytically useful to base on the judicial decisions made by the WTO adjudication

[444] Appellate Body Report, *United States – Import Prohibition of Certain Shrimp and Shrimp Products*, WT/DS58/AB/R, adopted on 6 November 1998, paras. 118-121.
[445] *Ibid*, at 617.
[446] John Jackson, William Davey and Alan Sykes, *Legal Problems of International Economic Relations: Cases, Materials and Text on the National and International Regulation of Transnational Economic Relations* (5th Ed, Thomas West 2008), at 592.
[447] See, Steve Charnovitz, 'Exploring the Environmental Exceptions in GATT Article XX' (1991) 25(5), Journal of World Trade 37.
[448] *Ibid.*
[449] Steven Shrybman, 'International trade and the environment: an environmental assessment of the General Agreement on Tariffs and Trade' (1990) 25(5) International Ecologist 468, at 478.

bodies in the light of Article XX and reflect on whether environmental concerns or climate-related ones could be covered.

The second step in analyzing an Article XX defense is to examine whether the application of this measure meets the requirements of the introductory clause, which is commonly referred to as the Chapeau. The defendant assumes the burden of proof to show the application of the measure meets the requirements of the Chapeau. The Chapeau 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…'

The drafting of Article XX is a good move in demonstrating that the trade regime is capable of accommodating non-trade values. However, the wording of those provisions tends to be 'brief, vague and open-ended' so that they are by nature open to different interpretations, which also gives rise to challenges.[450] This leaves discretion in terms of interpretation to the Panel and the Appellate Body in dispute resolution. The way Article XX is understood and interpreted in the WTO disputes decides whether the international regime can be friendly or not towards non-trade issues, such as environmental protection.

Some scholars comment that the WTO adjudicators have successfully turned around the reputation of international trade laws as being insensitive to the environment.[451] However, Article XX is not a list of important societal values and the ten specific policy goals listed in this provision do not comprise all legitimate policy goals that Member States can pursue with measures covered by Article III.[452]

When it comes to the use of trade-related measures that aim at promoting renewable energy development for climate change mitigation and the transition to a green economy, not all of the listed policy exceptions would come into play. This section chooses: Article XX (a), (b), (d), and (g) since they are relevant in justifying climate change-related action.

(1) Article XX (b)

Sub-paragraph (b) provides a general exception for measures that are 'necessary to protect human, animal or plant life or health'. It covers health-related policy measures and environment-related policy measures. The WTO Panel and the Appellate Body have analyzed this provision in a number of trade and environment disputes.

One of the high-profile WTO case dealing with the meaning of Article XX (b) is the *EC – Asbestos*, which concerned a French trade ban on products containing

[450] Zleptnig (n 249), at 5 and 7.
[451] Wofford (n 24); Howse (n 41).
[452] Frieder Roessler, 'The Scope of Regulatory Autonomy of WTO Members under Article III: 4 of the GATT: A Critical Analysis of the Jurisprudence of the WTO Appellate Body' in Jullien Chaisse and Tsai-yu Lin (eds) *International Economic Law and Governance: Essays in Honour of Mitsuo Matsushita* (Oxford University Press 2016), at 32.

asbestos. Although the ruling was the products at issue were not like and the measure did not constitute violation of national treatment obligation, the Appellate Body did not exercise judicial economy and proceeded to analyze the claims. A two-step analysis approach was applied.[453] Firstly, whether the challenged measure is directed at the objectives as listed in Article XX (b); secondly, whether the measure is 'necessary' to achieve the specific public policy goal. In analyzing whether the French ban fell within the category of measures cited in Article XX (b), the Appellate Body found that more than ample evidence on the dangers of asbestos that posed a risk to human life or health proved that the measure was designed to protect health.[454]

The word 'necessary' represents another crucially important requirement under Article XX (b). However, little evidence can be found in the drafting history of the GATT in explaining the term 'necessary'.[455] Therefore, how to read 'necessary' is subject to jurisprudence developed by the Panel and the Appellate Body.

The Appellate Body's ruling in *EC – Asbestos* called into consideration a number of important issues. First, it was confirmed that each WTO Member has 'right to determine the level of protection of health that it considers appropriate in a given situation.'[456] The Appellate Body thus rejected the notion that the considerations of proportionality should be taken into account when deciding the level of protection.[457] It gives the Members rather sufficient scope of policy space in the design and enactment of measures that aim at public policy goals. The linkage between the measures enacted and the goals set needs to be clear and persuasive. Second, the Appellate Body deemed singling out the elimination of one kind of health risk as its objective while allowing the use of less risky products in place not inconsistent with Article XX (b).[458] Third, the Appellate Body refined the necessity on the basis of the Appellate Body report on *Korea – Beef*. The Appellate Body stated that 'the more vital or important the common interest or values pursued, the easier it would be to accept as necessary measures designed to achieve those ends.'[459] In this vein, France could not reasonably be expected to employ any alternative measure that might prevent France from achieving its chose level of health protection.[460]

Whether the measure is 'necessary' to achieve the policy goal involves weighing and balancing a series of factors.[461] To be specific, the first factor merits consideration is the greater the significance of the interests or values that the challenged measure is intended to protect, the more likely it is that the measure in necessary. The second one is the greater the extent to which the measure contributes to the objective pursued, the more likely that the measure is necessary. The third is the less trade restrictive impact of the challenged measure, the more

[453] See, Appellate Body Report, *Korea – Beef*, para. 157; Appellate Body Report, *Shrimp/Turtle*, para. 135.
[454] Appellate Body Report, *EC – Asbestos*, para. 163.
[455] Charnovitz (n 447), at 48 .
[456] Appellate Body Report, *EC – Asbestos*, para. 168.
[457] *Ibid.*
[458] *Ibid.*
[459] *Ibid*, para. 172.
[460] *Ibid*, para 173-174.
[461] Ibid, para 164. For discussion see Condon and Sinha (n 437), at 74.

likely the measure is necessary. If the preliminary analysis under Article XX (b) on the contribution of the measure to the objective pursued testifies to that the measure is necessary, the result needs to be confirmed by comparing the challenged measure with possible alternatives suggested by the complainants.[462] The necessity requirement has evolved from a 'least trade-restrictive' to a 'less trade-restrictive' test, which is subject to an assessment of proportionality.[463]

The *EC –Asbestos* marks the first time that the WTO adjudication bodies favored an outright trade ban for non-trade justifications. This also reflects of an increasing global awareness about environmental problems and a greater incorporation of environmental concerns in the decisions made by the WTO Panel and the Appellate Body.[464]

Article XX (b) was brought to the Dispute Settlement Body in a more recent case *Brazil – Retreaded Tyres*, in which the complainant EU challenged a Brazilian ban on imported retreaded tyres.[465] This is a classic trade and environment dispute, which sheds light on future conflicts between interests of trade liberalization and climate change mitigation. Trebilcock, Howse and Eliason argue that *Brazil – Retreaded Tyres* represents a demonstrable shift to greater sensitivity if not full deference given to domestic regulatory decision-making in light of trade and environment interaction in comparison to *EC – Asbestos* and *Korea – Beef*.[466] More attention has been given to environmental considerations through the interpretation of 'necessity' embodied into Article XX (b).[467]

The Appellate Body in *Brazil – Retreaded Tyres* made a series of clarifications regarding the necessity test after the much-debated *EC – Asbestos*. The Appellate Body rejected the EU's claim to conduct a quantitative analysis showing detailed evidence of the amount of imports that would exist on Brazilian market without the import ban but decided to find a causality link or a 'genuine relationship of ends and means between the objective pursued and the measure at issue.'[468] The Appellate Body clarified that the contribution of the measure could be demonstrated in both/either quantitative and/or qualitative way.[469] It is not necessary to quantify precisely how much a trade restrictive measure could contribute to the objective. In this vein, the contribution of a measure to the realization of the objective pursued by it has been interpreted in a rather flexible manner. In this regard, the Appellate Body translated the sensitivity into the legitimacy and competence of government actions.[470]

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[462] See, Appellate Body Report, *US – Gambling*; Appellate Body Report, *China – Certain Publications and Audiovisual Entertainment Products*.
[463] McDonald (n 335), at 153.
[464] Awuku (n 442), at 351.
[465] See, Appellate Body Report, *Brazil – Retreated Tyres*, WT/DS332/AB/R, adopted 17 December 2007.
[466] Trebilcock, Howse and Eliason (n 52), at 682.
[467] Sebastien Thomas, Trade and Environment under WTO Rules after the Appellate Body Report in *Brazil –Retreaded Tyres* (2009) 4(1) Journal of International Commercial Law and Technology 42, at 48.
[468] Appellate Body Report, *Brazil – Retreated Tyres*, para. 145.
[469] *Ibid*, para. 151.
[470] *Ibid*.

In particular, the Appellate Body underscored that measures taken to address climate change can only be assessed 'with the benefit of time'.[471] The Appellate Body also argued that it might be difficult to isolate the contribution made by one element of a suite of policies aimed at addressing a complex problem. This reasoning will enlarge the scope of policy space for the Members in structuring and implementing domestic policies for legitimate objectives. It is worth mentioning that climate change was cited as an illustrative example to show how complex a problem could be. This argument is highly relevant in trade and climate debate because it explicitly expands the policy scope for measures taken to address climate change. It recognizes that the effects of climate change are gradual and imperceptible in the short-run. Moreover, it recognizes the legitimacy and the challenge of combating climate change in an explicit manner even in a case not addressing the subject.[472]

The Appellate Body interpreted the 'least trade restrictive alternative' in a rather loose manner that what Brazil needed to show was a reasonable ends-means relationship between the measure and the objective in question.[473] The Appellate Body required Brazil to demonstrate that a reasonable regulator could have adopted the measure as Brazil did by taking into account the considerations and issues in question in an objective and balanced way.[474] In addition, the Appellate Body stated that 'the capacity of a country to implement remedial measures that would be particularly costly, or would require advanced technologies, may be relevant to the assessment of whether such measures or practices are reasonably available.'[475] Taking proper account of costs and technological conditions enables developing countries to protect their citizen's health or natural environment within its capacity. This is highly relevant when it comes to developing renewable energy, which in some cases can be prohibitively expensive in terms of upfront cost.

As long as the 'reasonableness' of the regulator's policy choice of challenged measure is established, the burden of proof would be shifted to the complaint to show that whether a less trade-restrictive measure could be reasonably available that could attain the same level of protection sought by the regulator. In the *Brazil – Retreaded Tyres*, the Appellate Body found every alternatives proposed by the EC were not real alternatives. In practice, the difficulty, in many cases for the complainants to meet the burden tends to be quite high, considering a complex web of factors need to be accounted.[476] This works to the advantage of defendants introducing trade-related measures for health and environmental protection objectives.

The Appellate Body in this dispute seemed to have moved away from prior jurisprudence in relation to weighing and balancing test to focus on whether this restrictive measure could materially contribute to the policy goal pursued. The rather evolutionary necessity analysis in *Brazil – Retreaded Tyres* is perceived as 'a

[471] *Ibid.*
[472] IISD and UNEP (n **Error! Bookmark not defined.**), at 45.
[473] Appellate Body Report, *Brazil – Retreated Tyres*, paras. 144-149.
[474] *Ibid.*
[475] Appellate Body Report, *Brazil – Retreated Tyres*, para. 171.
[476] Trebilcock, Howse and Eliason (n 52), at 684

welcome development'.[477] The less stringent test in terms of what relationship between the measures adopted and the objective pursed could create more policy space for the Members to protect non-trade values.

Nevertheless, there is no dearth of criticism towards the Appellate Body decisions in how to assess the necessity of the challenged measure to the pursued objective. The noticeable absence of the importance of the interests or values at stake from the analysis of necessity suggests that the proportionality test adopted by the Appellate Body seems to be rather weak.[478] A more critical opinion held by Bown and Trachtman is that, the necessity test taken by the Appellate Body lacked precision, which failed to evaluate the types of concerns that an economic welfare analysis would provide.[479] They point out that the Appellate Body's decision manifested deference to the Brazilian policies without providing a clear textual rationale of this approach, such as empirical data or estimation on magnitudes on the contribution of the import ban to the objective pursued.[480]

Lang perceives necessity test as one that distinguishes between measures that have 'an inadvertent but unavoidable impact' on trade from these which have 'an inadvertent and avoidable impact' on trade'.[481] The drafters' intention to use necessity test to encourage the design of policy measure in an optimal way can minimizes their adverse trade impacts while still achieving their regulatory objectives.[482]

Future jurisprudence is hoped to add more clarities in assessing the trade restrictiveness of policies and the extent to which a given policy measure or an alternative one would contribute to non-trade policy objective. This can reduce legal uncertainty and promote a more consistent approach for on-going and future WTO disputes.

(2) GATT Article XX (a)

Sub-paragraph (a) of the GATT Article XX permits Members to adopt or enforce trade measures 'necessary to protect public morals'. Without further elaboration on what constitutes 'public morals', the scope of this clause is left to be unclear. Charnovitze finds out that this clause has remained ambiguous even from the very beginning of the drafting history.[483] Given that public morals are likely to be highly subjective and variable on the basis of geography and political boundaries,[484] the lack of a consensus on what constitutes public morals would become a problem. Does it leave the WTO Members large scope of policy space in deciding what fall

[477] *Ibid.*
[478] Epps and Green (n 4), at 147.
[479] Chad Bown and Joel Trachtman, '*Brazil – Measures Affecting Impacts of Retreaded Tyres*: A Balancing Act' (2009) 8(1) World Trade Review 95, at 133-134.
[480] *Ibid.*
[481] Lang, *World Trade Law after Neoliberalism: Re-imagining the Global Economic Order* (Oxford University Press 2011), at 265.
[482] *Ibid.*
[483] See, Steve Charnovitz, 'The Moral Exception in Trade Policy" (1998) 38 (4) Virginia Journal of International Law 689.
[484] Jeremy C. Marwell, 'Trade and Morality: The WTO Public Morals Exception After *Gambling*' (2006) 81(a) New York University Law Review 802, at 836.

into the ambit of public morals? Or does it narrow the policy space by adding more uncertainties?

The GATT Article XX (a) has not been frequently invoked by defendant parties. So there have been few interpretations that can help to clarify the meaning and scope of 'public morals'. In the absence of prior jurisprudence on this provision, two GATS disputes concerning public morals exception: *China – Publications and Audiovisual Products* and *US – Gambling* shed important light on the scope of 'public morals' within the meaning of Article XX (a). In *US – Gambling*, the Panel noted sensitivities associated with the interpretation of the term 'public morals' and 'public order' in the context of Article XIV.[485] The content of these concepts can vary in time and space and depend upon a range of factors, including prevailing social, cultural, ethical and religious values.[486] The Panel's ruling thus left a high degree of discretion to the defending Member in deciding the content of morals that could be sheltered under Article XX (a). The Panel in *China – Publications* also adopted a similarly expansive view of what constitutes public morals.[487] The influence of decisions made by the Panel and the Appellate Body in light of public morals exception under the GATS turns out to be notable in the *EC – Seal Products*.

EC – Seals Products[488] represents the very first time that the defendant's reference to the right to regulate for public morals that was upheld by the Panel and justified under Article XX (a). In this dispute, the complainants Canada and Norway brought challenges against several regulations comprising the 'EU Seal Regime'. This regime involved 'products, either processed or unprocessed, deriving or obtained from seals, including meat, oil, blubber, organs, raw fur skins and tanned fur skins, as well as articles made from fur skin and oil.'[489] The EU ban on the import of seal products was based on the 'deep indignation and revulsion' of the EU citizens and consumers towards the trade in products hunted in inhumane conditions within and outside EU territory.[490]

The Appellate Body agreed with the Panel and found that 'the principal objective of the EU Seal Regime is to address EU public moral concerns regarding seal welfare, while accommodating Inuit and other interests so as to mitigate the impact of the measure on those interests.'[491] It is not necessary for the defending Member to establish that challenged measure is solely motivated by public morals so as to fall within the scope of Article XX (a). This ruling shows consistency with the Appellate Body's decision in previous WTO disputes that a measure at issue can have multiple policy objectives.[492]

Moreover, the Panel added that the WTO Members 'are afforded a certain degree of discretion in defining the scope of 'public morals' with respect to various values

[485] Panel Report, *US – Gambling*, para. 6.461.
[486] Panel Report, *US – Gambling*, para. 6.461.
[487] Panel Report, *China – Publication*, para. 7.759.
[488] Appellate Body Report, *EC – Seal Products*, paras. 5.169, 5.215.
[489] Panel Report, *EC – Seal Products*, para. 2.6.
[490] Panel Report, *EC – Seal Products*, para. 7.395.
[491] Appellate Body Report, *EC – Seal Products*, para. 5.167.
[492] For instance, Appellate Body Report in *US – Clove Cigarettes*, *US – Tuna II*.

prevailing in their societies at a given time.'[493] Two issues are implicated in addressing the question of whether a measure truly aims to tackle public morals. As stated in the Panel Report, the first one is the existence of concern in that society and the second is the concern falls into the ambit of public morals.[494]

The next step in examining whether a challenged measure falls under the scope within Article XX (a) is to take a necessity test. Among a series of factors that determine whether the challenged measure is 'necessary', one important one is the extent to which the measure contributes to the objective of protecting public morals. As indicated by prior jurisprudence, both qualitative and quantitative evidence could demonstrate the linkage between challenged measure and its pursued policy objective.[495]

The Appellate Body rejected the asserted labeling alterative to the seal products ban, which carries great systemic importance. In addition, the Appellate Body disagreed with Canada's argument that the EU was not being consistent in enforcing its public morals because of its tolerance of animal suffering in other cases, such as inhumane production of foie gras.[496] The ruling was to confirm that being tolerant of one form of animal cruelty does not disqualify a Member from using trade restrictive measures on another. The conventionally high threshold of necessity adopted in examining whether a challenged measure falls under exception was diminished in this dispute.

The noticeable absence of complaint concerning whether the EU had the jurisdiction in regulating the way seal products are made outside of the EU suggests that the issue of jurisdictional limits is not difficult to be addressed. As the Appellate Body stated, 'while recognizing the systematic importance of the question of whether there is an implied jurisdictional limitation in Article XX (a), and, if so, the nature or extent of that limitation, we have decided in this case not to examine this question further.'[497] It sends a message that environment concerns, whether are global, trans-boundary or even local to another State, may affect the public morals of the citizens and consumers of the importing state.

The interpretation made by the Appellate Body in *EC – Seals Products* has set important milestones in understanding and applying public morals exception, which also gives rise to divided scholarly comments. It represents the very first time that an environmental measure was recognized as falling under the ambit of public morals exception. It appears that the ruling made by the Appellate Body could leave the definition of a public morals defense to a WTO Member's discretion to a larger than normally presumed extent.[498] It becomes the prerogative of the Members in determining what constitutes public morals. As Pauwelyn points out, this may suggest that Members will not even have to identify a precise standard or level of protection, nor a precise concern or risk that they are trying to protect through a

[493] Panel Report, *EC – Seal Products*, para. 7.381.
[494] Panel Report, EC – Seal Products, para. 7.383.
[495] See, Appellate Body Report, *Brazil – Retreated Tyres*, para. 145.
[496] Appellate Body Report, *EC – Seal Products*, para. 5.196.
[497] Appellate Body Report, *EC – Seal Products*, para. 5.173.
[498] Pelin Serpin, 'The Public Morals Exception after the WTO Seal Products Dispute: Has the Exception Swallowed the Rules?' (2016) 1 Columbia Business Law Review 217, at 244.

trade restriction.[499] The overtly permissive approach adopted by the Appellate Body in understanding public morals could open the 'floodgates' to all manners of protectionist legislation.[500] This will undermine the integrity and coherence of multilateral trading system and its objective to safeguard trade liberalization. On the other hand, if violating trade law to protect animal welfare is justifiable under Article XX (a), it is intriguing to ask whether policy objectives such as advancing human rights, labor rights and environment law could have a higher chance to fall within the scope.[501] Shaffer and Pabian focus on the problematic reasoning of judicial decisions rather than the outcome and underscore the failure to give any guidance to Member States as how to regulate on a moral basis without violating WTO law.[502] A number of important issues in this dispute have been left unaddressed.

The Panel Report was just issued for the dispute *Brazil – Taxation,*[503] which represents the most recent jurisprudence development in public morals exception. In this dispute, the Panel agreed with Brazil that there is a need to bridge the digital divide and promote social inclusion in Brazilian society, which falls under the scope of public morals.[504] It is noted that the Panel followed the reasoning adopted in *EC – Seals Products* that 'WTO Members are afforded a certain degree of discretion in defining the scope of 'public morals' with respect to various values prevailing in their societies at a given time.'[505] The Panel ruling in the current dispute seems to confirm that there is considerable latitude under the WTO regime for the Members to decide what constitutes 'public morals'. Whether the latitude that the Members have in defining what constitutes public morals would make the scope of exception excessively large remains to be discussed.

The importance of public morals exception to free trade is self-evident given that the original drafters listed it as the first of several exceptional clauses under the GATT.[506] However, the precise meaning and scope of public morals exception seems to be difficult to be defined in a certain manner. What becomes a question is whether objectives such as climate change mitigation and emissions reduction could fall under the category of 'public morals' within the meaning of Article XX (a).

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[499] Joost Pauwelyn, 'The Public Morals Exception After Seals: How to Keep It in Check?' International Economic Law and Policy Blog (2014), available at: http://worldtradelaw.typepad.com/ielpblog/2014/05/the-public-morals-exception-after-seals-how-to-keep-it-in-check.html, accessed on 1 September 2017.

[500] Arthur E. Appleton, 'Regulatory Autonomy and Liberalization of Trade and Investment Flows: How Are These Competing Interests Balanced by International Economic Law (Question of International law 2011), available at: http://www.qil-qdi.org/category/zoom-in/regulatory-autonomy-and-liberalization-of-trade-and-investment-flows-how-are-these-competing-interests-balanced-by-international-economic-law/, accessed on 1 September 2017.

[501] *Ibid.*

[502] Gregory Shaffer and David Pabian, 'The WTO EC – Seals Products Decision: Animal Welfare, Indigenous Communities and Trade' (2015) 109(1) American Journal of International Law 154, at 159.

[503] Panel Report, *Brazil – Certain Measures Concerning Taxation and Charges* (WT/DS472/R, WT/DS497/R) 30 August 2017.

[504] Panel Report, *Brazil – Taxation*, para. 7.565

[505] Panel Report, *Brazil – Taxation*, paras. 7.622.

[506] Mark Wu, 'Free Trade and the Protection of Public Morals: An Analysis of the Newly Emerging Public Morals Clause Doctrine' (2008) 33(1) Yale Journal of International Law 215, at 248.

The causal link between measures adopted to develop renewable energy and mitigate climate change and policy objective to protect public morals does not seem to be as strong or direct as these measures with objectives under Article XX (b) or (g). This partly explains why no defendant parties in renewable energy disputes have invoked this provision as justification for otherwise GATT-inconsistent measures. It is still not clear whether public morals exception can be successfully invoked to justify trade measures with the aim to address climate change. However, the likelihood that the Members would recourse to this exception more frequently to defend trade restrictive measures that aim for climate change mitigation cannot be underestimated.

Cottier and Payosova argue that *EC – Seals Products* ruling sets an important precedent that measure's geographical links to the territory of the importing country becomes an unnecessary factor in necessity test except for the mere fact of importation of products to the country imposing a regulation.[507] With a rather lenient approach of examining the nexus in necessity test, climate change would constitute an issue of public morals in a certain country at a certain point in time.[508] The invocation of public morals in justifying measures taken to address climate change will increasingly gain prominence and practical relevance.

As indicated in prior case law, there are two scenarios when the application of public morals exception could be tricky.[509] One is when the WTO Members design and implement trade restrictive measures on the basis of public moral claims which are not widely shared in the international community.[510] It is reasonable to assume that the more widely recognized among international community the public moral claims are, the more likely they fall within the scope of Article XX (a). If morally motivated claims are not shared by other WTO Members, such claim would be more likely to be subject to a more stringent scrutiny. The other is when the Members apply these measures extraterritorially.[511] This is to say, it is more difficult for a Member to justify the measures that are applied not on its own territory. On the contrary, it is easier if the Member enacts the measure within its own territory.

It is useful to explore firstly, whether climate change is a widely recognized issue among international community. According to Pew Research Center survey, majorities in all 40 nations polled defined climate change as 'a serious problem', and a global median of 54% considered it 'a very serious problem'.[512] Although people in different countries, regions would perceive the issue of climate change

[507] Thomas Cottier and Tetyana Payosova, 'Common Concern and the Legitimacy of the WTO in Dealing with Climate Change' in Panagiotis Delimatsis (ed), *Research Handbook on Climate Change and Trade Law* (Edward Elgar 2016), at 28.
[508] *Ibid.*
[509] Ming Du, 'Permitting Moral Imperialism? The Public Morals Exception to Free Trade at the Bar of the World Trade Organization' (2016) 50(4) Journal of World Trade 675, at 696.
[510] *Ibid.*
[511] *Ibid.*
[512] Bruce Stokes, Richard Wike and Jill Carle, 'Global Concern about Climate Change, Broad Support for Limiting Emissions' (Pew Global, 2015) available at: http://www.pewglobal.org/2015/11/05/global-concern-about-climate-change-broad-support-for-limiting-emissions/, accessed on 2 September 2017.

from different perspectives, the global public awareness and concern for it is highly notable.

As observed by Margaret, the GATT Article XX (a), rather than Article XX (b) or (g) will be increasingly relied on as defense for trade measures that address climate change due to the growing public moral and ethical concern about climate change among citizens and consumers.[513] The widespread and irreversible effects of climate change will undoubtedly give rise to increasing public concerns shared by citizens and consumes in most, if not virtually all countries around the world. Take *EC – Seal Products* as an example, evidence gathered in this dispute shows that a commitment to seal welfare protection has been increasingly recognized by international community, not just in Europe.[514] Compared with seal welfare protection, addressing climate change is a more widely shared imperative by all human kind.

The other factor that merits consideration is the territorial limit of measures taken to address climate change. This is to say, whether these measures would be applied in an extraterritorial manner. Given that climate change is a global challenge that is not bound by national borders, its effects are not limited to certain geographic space but can reach to a global level. The matter of extra-territory in invoking Article XX (a) under the context of addressing climate change becomes an easily-overcome hurdle. In this vein, to establish a linkage between protection of public morals and the use of challenged trade measures in the context of climate change mitigation could be relatively easily met.[515]

There is great potential that public morals exception could create scope of policy space under the realm of the WTO rules for measures with an aim to protect climate system. The details of policy measures designed to address climate change also need to comport with either the 'necessity' requirement of the exception and the requirements as imposed in the Chapeau. As long as the measures do not respect the rights of exporting states under the WTO Agreements in an unjustifiable or discriminatory manner, public morals exception would not be useful. Nevertheless, until such a measure is tested before the WTO's Dispute Settlement Body, it remains open whether rights to support renewable energy development and mitigate climate change could be protected under the public morals exception clause. The adjudicative decisions made in disputes concerning the application of Article XX (a) can shed light on how a measure could be designed and implemented to be consistent with Members' obligations while still offering a material contribution to climate change mitigation.

(3) Article XX (d)

Article XX (d) allows the WTO Members to adopt or enforce measures 'necessary to secure compliance with laws or regulations which are not inconsistent with the provisions of this agreement, including these relating to customs enforcement, the

[513] Margaret Young, 'Trade Measures to Address Climate Change: Territory and Extraterritoriality' in Panagiotis Delimatsis (ed.) *Research Handbook on Climate Change and Trade Law* (Edward Elgar 2016), at 350.
[514] Katie Sykes, 'Sealing Animal Welfare into the GATT Exceptions: the International Dimension of Animal Welfare in WTO Disputes' (2014) 13(3) World Trade Review 471, at 480–481.
[515] *Ibid.*

enforcement of monopolies operated under paragraph 4 of Article II and Article XVII, the protection of patents, trademarks and copyrights, and the prevention of deceptive practices.' Article XX (d) does not contain an exhaustive list of the laws, regulations that come under its purview.

Article XX (d) has a broad coverage in the sense that 'laws or regulations' are not confined to certain areas. In other words, these concerning environment, labor right, human right can all be qualified under this provision as long as they meet the definition of 'laws or regulations'. The rather expansive coverage of Article XX (d) would easily make the WTO Panel and the Appellate Body inclined to adopt a more restrictive interpretative approach for other constituent elements, such as 'necessary to' under this provision. The claims made under Article XX (d) have been rejected normally on the ground that these measures are not necessary.

The necessity requirements under Article XX (b) and (d) were drafted with the same wording. Whether the meaning of 'necessary to' in the two paragraphs could be understood in an identical way is a question. The treaty text of Article XX (d) does not offer much guidance on how the necessity test could be implemented in practice. While the WTO case law suggests that 'necessary to' under Articles XX (b) and (d) has been interpreted in an analogous manner to a large extent. The Panel and the Appellate Body in several disputes have repeatedly transposed interpretations developed under each provision to the other.

As a classic example in analyzing Article XX (d), *Korea – Beef* provided the WTO adjudication bodies an opportunity to clarify the meaning of 'necessary to'. Korea defended the challenged measure under Article XX (d) on the ground that it was necessary to protect consumer against fraudulent practices condemned by its Unfair Competition Act, which 'is a law not inconsistent with the provisions of GATT' as required by Article XX (d).[516] The Appellate Body paid particular attention on whether the challenged Korean beef regulation was necessary to the objectives being pursued.[517] At first, the Appellate Body referred to the dictionary meaning of the word 'necessary', which is capable of encompassing a continuum of varying degree of necessity, ranging from 'indispensable for' to merely 'making a contribution to' a legitimate policy goal.[518] The Appellate Body moved on to explain that a necessary measure 'is located significantly closer to the pole of indispensable than to the opposite pole of simply making contribution to.'[519] The Appellate Body confirmed that the more vital or important the common interests of values that the measure is intended to protect, 'the easier it would be to accept as 'necessary' a measure designed as an enforcement instrument.'[520] In addition, the greater the contribution that a measure makes to the achievement of these common interests or values, the more easily these measures could be deemed as 'necessary'.[521] A useful clarification from the Appellate Body Report that sheds light on how to implement a necessity test reads:

[516] Appellate Body Report, *Korea – Beef*, para. 25.
[517] *Ibid.* para. 158.
[518] *Ibid.*
[519] *Ibid*, para. 161.
[520] *Ibid*, para. 162.
[521] *Ibid*, para. 163.

The Appellate Body introduced a balancing test in assessing whether the measure could be deemed as 'necessary'. [522] The determination of necessity would no longer solely be a technical question of whether it is the least trade restrictive means of achieving a legitimate regulatory objective. A more complex and holistic 'weighing and balancing' test of the trade restrictiveness of the measure against the importance of non-trade values at stake and the measure's effectiveness in pursuing these values is required.[523] As Neumann and Turk note, the Appellate Body's introduction of 'weighing and balancing' test seems to be an attempt substantively to relax the necessity test.[524] Hilf also argues that the use of a 'sensitive balancing process' would ensure that all relevant interests and principles at stake would be given due weight, none of which would be 'left to redundancy or inutility'.[525] As one of the benefits of balancing analysis, all interested parties have a chance to articulate their views, which subsequently could be taken into account.[526]

The balancing test in assessing 'necessary' has been faithfully followed by the Appellate Body in a series of disputes.[527] As Regan observes, the approach adopted in necessity test is not about cost-benefit balancing because the Appellate Body recognized that the Members could choose their own level of protection.[528] He argues that when the Member has an eccentric view, the WTO adjudicating bodies need to show deference.[529] Therefore, in assessing the importance of the objective as required in necessity test under Article XX (b), the focus is how important the objective pursued to the Member instead of in the eyes of the Appellate Body. It is the importance of objective to the Member that matters and should be decided by the Members themselves. This interpretative approach is compatible with both treaty text and based on sound economic theory,[530] which also at the same time enlarges the scope of policy space for the Members in pursing their own public policy objectives.

Sykes points out that the necessity test is essentially about identification of the least restrictive means, which is a 'crude cost-benefit analysis'.[531] The past Appellate Body decisions reflect that more deference would be given to objectives that are of more vital importance, such as protection of human health.[532] In other words, it would be more difficult for measures aiming for objectives that are not vitally important to meet the necessity test and thus be justified under Article XX (d). It is

[522] *Ibid*, para. 164.
[523] Lang (n 399), at 321.
[524] Jan Neumann and Elisabeth Turk, 'Necessity Revisited: Proportionality in World Trade Organization Law after *Korea – Beef*, *EC – Asbestos* and *EC – Sardines*' (2003) 37(1) Journal of World Trade 199, at 210.
[525] M Hilf 'Power, Rules and Principles: Which Orientation for WTO/GATT Law' (2001) 4(1) Journal of International Economic Law 111, at 120.
[526] Mads Andenas and Stefan Zleptnig, 'Proportionality: WTO Law: in Comparative Perspective' (2007) 42(3) Texas International Law Journal 371, at 378-379 and 422-423.
[527] For instance, *EC – Asbestos* involved GATT Article XX (b), *US – Gambling* involved GATS XIV (a) and *Korea – Beef* involved GATT Article XX (d).
[528] Donald H. Regan, 'The Meaning of 'Necessity' in GATT Article XX and GATS Article XIV: The Myth of Cost-Benefit Balancing' (2007) 6(3) World Trade Review 347, at 353.
[529] *Ibid*, at 352-353.
[530] *Ibid*, 369.
[531] Alan Sykes, 'The Least Restrictive Means' (2003) 70(1) University of Chicago Law Review 403, at 410.
[532] *Ibid*, at 419.

hardly contested that the imperative to reduce global warming emissions and tackle climate change is of vital importance to almost every country on earth, especially developing countries and leas developed ones that are very vulnerable to any possible adverse effects resulted from climate change. In this sense, it is reasonable to assume that the Members could be given policy space in structuring policy measures that aim at climate change mitigation.

It is interesting to compare the assessment of 'necessary' made by the Appellate Body in the present dispute with *EC – Asbestos*. The way the Appellate Body conducted a necessity test in two disputes testified to that a health-related measure is more likely to be viewed as 'necessary' than an enforcement tool as used by the defendant in *Korea – Beef*.[533] The Appellate Body confirmed the Panel's reasoning that protection of human health and life against disease 'is vital and important in the highest degree' and the 'aim of protecting the environment is important'.[534] This is to say, in the case when the policy goals to be pursued are important and the measure in question makes a significant contribution to the goal, the measure is more likely to pass the WTO scrutiny.[535] Nevertheless, it remains less than clear on what basis the Appellate Body assesses the 'importance' of the particular interests or values, which the challenged measures seek to protect.[536]

In Davey's view, the low likelihood of making an successful Article XX (d) defense can be attributable to the reality that the protected interests seem to not be that significant and the alternative measures could be less trade restrictive yet equally effective in achieving the goals pursued.[537] It is not surprising that the deference that the WTO adjudication bodies would give to policy goals as listed in Article XX (b) appears to be higher than that given to the goals listed in Article XX (d). Governments that seek justification by means of Article XX (d), compared to the situation under the GATT Article XX (b) or (g), would be afforded with less deference and second-guessed as to the availability of acceptable alternative measures.[538] It is worth mentioning the analysis of necessity could open the door to ranking non-trade values on the basis of their 'importance'.[539]

Another intriguing point with respect to the application of Article XX (d) under the context of climate change is whether climate change agreements negotiated by countries at international level can fall under the ambit of 'laws and regulations' within the meaning of Article XX (d). As the symbolic treaty making in international climate regime, the UNFCCC deserves a close examination. However, it is hardly contested that the UNFCCC imposes relatively few legally binding commitments, particularly on developing countries. In addition, this framework convention lacks a strong enforcement and compliance mechanism, which casts doubt on whether UNFCCC articles qualify as 'laws and regulation'.

[533] Davey (n 369), at 204.
[534] Appellate Body Report, *Brazil – Retreaded Tyres*, para 179.
[535] Lang (n 399), at 321.
[536] Howse and Turk (n 46), at 283-328.
[537] Davey (n 339), at 295.
[538] *Ibid.*
[539] For a discussion of the proportionality test applied in analyzing necessity in the WTO law, see Andenas and Zleptnig (n 526).

If the provisions and obligations as established under the UNFCCC constitute 'laws or regulations' within the meaning of Article XX (d), the following question would be whether measures at issue are 'to secure compliance' with the UNFCCC. To establish a linkage between challenged measure and compliance with the UNFCCC obligations is a must-be. It would be useful to examine whether trade restrictive measures are prescribed or permitted under the UNFCCC regime. Whether the international climate agreements specify under what circumstances governments may adopt trade-related measures that have restrictive or discriminatory effects to promote climate-related objectives becomes relevant.

The UNFCCC lays down the foundation for international cooperation on addressing climate change, which does not prohibit the Parties from taking measures that would affect international trade. As an illumination of the relationship between respecting trade disciplines and fulfilling climate related objectives, the Article 3.5 of the UNFCCC sets forth the principle:[540]

'The Parties should cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties, thus enabling them better to address the problems of climate change. Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.'

This provision borrows the wording from the WTO preamble. It clearly does not imply that the Parties are prohibited from taking any action that would produce discriminatory or restrictive implications on international trade. The UNFCCC, like the WTO, acknowledges the legitimate purpose of climate-related measures, even when they generate restrictions on the international trading system. However, there is a clear line to be drawn between discrimination that is arbitrary or unjustifiable and discrimination that is not arbitrary nor unjustifiable. When climate-related measures that are taken to create arbitrary or unjustifiable impacts on trading system, the UNFCCC would not endorse. However, the UNFCCC does not provide information on how and where such a dividing line should be drawn with respect to the design and structure of climate measures.

More specifically, Article 2.3 of the Kyoto Protocol declares that the Parties 'shall strive to implement policies and measures in such a way as to minimize adverse effects, including effects on international trade.' It is reasonable to assume that the international climate regime recognizes the importance of using trade-related measures in addressing climate change problems as well as ensuring these trade practices being fair and non-discriminatory. From the legal perspective, the term of 'shall' used in this provision suggests in a strong tone the Parties to the Kyoto Protocol to reduce the impacts of their implementation of climate-related action on international trade. The expression of 'strive to implement' could be interpreted that certain 'adverse effects' on international trade is acceptable in the eyes' of negotiators.

[540] See, Article 3.5 of the UNFCCC.

The Paris Agreement however, as the latest development of the multilateral efforts in climate change area, does not make direct reference to trade or dictates the Parties to take any specific trade related measures to achieve climate-related goals. Rather, it commits the Parties to come up with their own individually determined plans for realizing the overall objective of the Agreement and the UNFCCC. The 'bottom-up' approach to international climate policy making as agreed under the Paris Agreement holds potentially considerable implications for international trade, since the resulting flexibility seems to allow a wide range of policy tools that could have trade impacts.[541] The Parties are left with sovereign discretion in determining the details of implementing policies and focusing on the areas of policy that work best to their individual national priorities.[542] The Paris Agreements does not set legally binding emissions reduction targets for individual countries and will be implemented in a 'facilitative, non-intrusive and non-punitive manner.'[543] This leaves unaddressed the desirability and legitimacy of using policy tools that may be controversial among trading partners.[544] The likelihood that the Parties resort to discriminatory trade measures so as to achieve climate-related goals merits close attention. Meanwhile, the lack of enforceability in the Paris Agreement also amounts to a barrier in fulfilling these emissions reduction targets.

However, it is acknowledged that international environmental law principles that are relevant to climate change are not incompatible with the WTO law, such as sustainable development, the duty to cooperate to address trans-boundary and global environmental problems.[545] Some scholars argue it is easier for measures designed to reduce GHG emissions and address climate change to be justified if they are specifically and precisely prescribed by international climate agreement.[546] However, the somehow vague language or even silence in these international climate agreements fails to provide sufficient information on what trade restrictive measures can be accommodated by the climate regime and what cannot. Governments have yet to agree to any principles, rules or guidelines defining the interaction between trade policies and climate policies. There is no interpretative framework that would help to resolve disputes concerning the legitimacy of trade measures that can be justified on a global climate imperative. Problems may arise when trade-related measures adopted by governments that may be restrictive are not clearly mandated in the climate agreements. A wide variety of possible ways for countries to fulfill the climate-related commitments can become the ground for potential conflicts between the climate regime and the trade regime.

Nevertheless, climate legislation at national and sub-national levels turns out to be legally binding. The 2014 Global Climate Legislation Study provides a review of

[541] Susanne Droege et al., 'The Trade System and Climate Actions: Ways Forward under the Paris Agreement' (Climate Strategies Working Paper 2016).
[542] Aaron Cosbey, 'The Trade Implications of the Paris COP 21 Agreement', International Trade Working Paper 2016/17, at 7.
[543] European Environment and Sustainable Development Advisory Councils, 'Role and Functioning of National and Sub-national Climate Change Legislation and Climate Committees in Implementing the Paris Agreement: Case Studies and Best Practices' (EEAC, July 2016), available at: http://eeac.eu/wp-content/uploads/2016/04/Reflection-and-Mainline-summery.pdf, accessed on 30 July 2017.
[544] *Ibid.*
[545] Condon and Sinha (n 437), at 231.
[546] Green (n 28), at 187.

climate change legislation in 99 countries, which are estimated to produce 93% of world emissions.[547] The study shows that by the end of 2014 there were 804 climate change laws and policies, approximately half of which were passed by the legislative branch and half by the executive branch.[548] Generally, climate legislation is aimed at cutting emissions or encouraging the growth of clean and low-carbon technologies, such as renewable energy technologies. With the proliferation of international and national climate laws and regulations, the relevance of Article XX (d) in trade and climate debate is bound to increase and thus should not be underestimated.

(4) Article XX (g)

Article XX (g) provides an exception for measures 'relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption.' This provision does not apply to all environment-related issues since it focuses on conserving 'exhaustive natural resources'. Ascertaining the scope of exhaustive natural resources is of critical importance in applying this exception. Article XX (g), coupled with Article XX (b) play an important role in in determining the reaction of the WTO rules to environment-related policy measures that might have restrictive impacts on trade.

With respect to the first element of the test under Article XX (g) that the measure must relate to the 'reservation of exhaustive natural resources', it is important to have a close look at the decisions made in *US – Shrimp*. The Appellate Body in *US – Shrimp* adopted a teleological approach. Because Article XX (g) had been drafted decades ago, its interpretation must be made 'in light of contemporary concerns of the community of nations', such as protection and conservation of the environment.[549] 'Exhaustible natural resources' and renewable resources should not be held as mutually exclusive, both living and non-living natural resources were included in the Appellate Body's interpretation of 'exhaustible natural resources'. [550] It is reasonable to assume that resources may be living and renewable, which does not prevent them also being exhaustible. This is, indeed an evolutionary interpretation approach, reverting to the preamble of the WTO Agreement to read the term 'exhaustible natural resources'.

Howse argues that it is logical from the perspective of the WTO law that the interpretation of a generic term like 'exhaustible natural resources' should reflect the evolving efforts to define the meaning and scope of sustainable development in the preamble.[551] Although preambular language does not have legally binding effects on adjudication, the impacts it could have on jurisprudence should be

[547] See, Michal Nachmany et al, The 2015 Global Climate Legislation Study: A Review of Climate Change Legislation in 99 Countries Summary for Policy-Makers (Grantham Research Institute on Climate Change and Environment, The Global Legislation Organization and Inter-Parliamentary Union, 2015). For full study, please see, http://www.lse.ac.uk/GranthamInstitute/climate-change-laws-of-the-world/.
[548] *Ibid*, at 12.
[549] Appellate Body Report, *US – Shrimp*, para. 129.
[550] *Ibid.*
[551] Robert Howse, 'Adjudicative Legitimacy and Treaty Interpretation in International Trade Law: The Early Years of WTO Jurisprudence' in Joseph H. Weiler (ed) *The EU, The WTO, and the NAFTA: Towards A Common Law of International Trade* (Oxford University Press 2000), at 56-57.

recognized. Expanding the coverage of 'exhaustible natural resources' by means of adjudicative decision is consistent with Article 31 of Vienna Convention.[552] A preference for dynamic or evolutionary interpretation approach over originalist interpretation was reflected in the Appellate Body decisions. Following these general interpretive norms of public international law can enhance the legitimacy of the WTO Dispute Settlement organs, especially when it comes to adjudicating competing values.[553]

The Panel's decision that a measure cannot be considered as falling within the scope of Article XX if it operates so as to affect other governments' policies in a way that threatens the multilateral trading system was rejected in appellate stage.[554] The Appellate Body ruled that most measures that can be justified by Article XX would have the characteristics of affecting other governments' policies by conditioning access into the importing country's market.[555] With regards to the territorial issue such as the location of the natural resource to be protected by the US, the Appellate Body deemed it was not necessary to consider whether or not there is an implied territorial limitation in Article XX. Instead, the Appellate Body held there was 'a sufficient jurisdictional nexus between migratory sea turtles and the United States' because turtles spent part of their migratory life cycle in American water.[556] The Appellate Body strategically avoided answering the tricky question regarding whether the territorial scope of Article XX (g) is limited. As the first WTO dispute that addressed question of extraterritoriality, *US – Shrimp* has largely expanded the coverage of Article XX (g). The decision is of significance not only because of the outcome but also jurisprudential technique used by the Appellate Body.[557]

It is hardly contested that the Appellate Body decisions, which were based on a generous construction of Article XX (g), represents 'an important watershed' in the evolution of WTO law, particularly in the sphere of trade and environment.[558] The rigidness in confining the application of Article XX (g) to matters within a certain territorial scope has been reduced to a large extent, which is of relevance when it comes to assessing trade-related measures taken to combat climate change. Given the globally wide spread effects that climate change has inflicted, it is not hard to establish a sufficient jurisdictional nexus between WTO Members' need to deal with climate change and the measures adopted for the pursued objective.

The Panel in *US – Gasoline* ruled that clean air is a natural resource, which could be depleted. As a consequence, a policy to reduce the depletion of clean air qualifies as a policy to conserve a natural resource within the meaning of Article XX (g). The coverage of 'exhaustible natural resources' has been broadened. Not only the judicial decisions made to define the meaning and coverage of 'exhaustible natural resources' but also the underlying reasons in reaching these decisions

[552] Howse (n 41), at 518.
[553] Robert Howse, *The WTO System: Law, Politics & Legitimacy* (Cameron May, 2007), at 33.
[554] Panel Report, *US – Shrimp*, para. 7.51.
[555] Appellate Body Report, *US – Shrimp*, para. 121.
[556] *Ibid*, para. 133.
[557] Charnovitz (n 54), at 689.
[558] Joanne Scott, 'On Kith and Kine (and Crustaceans): Trade and Environment in the EU and WTO' in Joseph H. Weiler (ed) *The EU, The WTO, and the NAFTA: Towards A Common Law of International Trade* (Oxford University Press 2000), at 141.

demonstrate a growing awareness that the WTO adjudicators have to realize 'some rapprochement between the interests of trade and those of the environment.'[559]

The relevance of Article XX (g) with the promotion of renewable energy with even trade-restrictive measures can be illustrated by the recognition that clean air qualifies as 'exhaustive natural resources'. The connection between policy measures for renewable energy development and 'conservation of natural exhaustible resources' can be established because substitution of fossil fuel with renewable energy is conducive to the conservation of clean air. It is argued that clean air can be exhausted, within a certain area, when there is no possibility of remediating this situation with the actually existing technologies.[560] This is indeed, a welcome decision viewed from the perspective of climate change mitigation.

Another constituent element under this provision is the phrase 'relating to', which has not been further elaborated with respect to its meaning and methodology in legislation. As a consequence, it is left to the WTO adjudicators to determine the exact meaning and coverage of it. The requirement of fulling a 'relating to' test is different from that of a necessity test. A number of questions emerge regarding how to read 'relating to' in disputes: how close the linkage between measure and objective pursued must be? How to deal with the case when the challenged measure aims for a number of objectives and only one of which fits within the meaning? In semantic sense, 'relating to' has a broader coverage than 'necessary'.

The Appellate Body in *US – Gasoline* followed the interpretation made by the Panel in *Canada – Herring and Salmon* in adopting a phraseology test of 'primarily aimed at' the conservation of exhaustible nature resources.[561] However, the Appellate Body pointed out that this phrase 'was not itself treaty language and was not designed as a simple litmus test for inclusion or exclusion from Article XX (g).'[562] In addition, the Appellate Body rejected the Panel's reading of 'a least-restrictive-means' test into Article XX (g) and contended that wordings 'necessary' and 'relating to' on their ordinary meaning did not imply the 'same kind or degree of connection between the measure under appraisal and the state interest or policy to be promoted or realized.'[563] A 'substantial relationship' between the challenged measures and the policy objective pursued is required to exist to testify to the 'relating to' requirement.[564] Another important clarification the Appellate Body in *US – Gasoline* made is that in applying Article XX (g), it is the measures as a whole, and not simply the otherwise WTO-illegal element that need to be considered to examine the underlying aim.[565] The scope of measures to be examined represents another essential issue in the application of this and any other relationship test, which appears to be a 'crucial undervalued issue'.[566] The first

[559] Macmillan (n 245), at 101.
[560] Victoria H Imperiale, 'Characterizing Air As An Exhaustible Natural Resource' in John Jackson, Edith Brown Weiss and Nathalie Bernasconi-Osterwalder (eds), *Reconciling environment and trade: Second edition* (2nd Ed, Brill Academic 2008), at 249.
[561] Appellate Body Report, *US – Gasoline*, p 17.
[562] *Ibid*, at 19.
[563] *Ibid*, at 17.
[564] *Ibid*, at 18.
[565] *Ibid*, at 13-14.
[566] Waincymer (n 251), at 159.

Appellate Body Report made clear that the WTO Members have the right to favor non-trade values as long as the measures at issue meet the conditions of Article XX.

The 'primarily aimed at' test, as argued by Macmillan has raised the threshold for some environmental measures by requiring that the main purpose of the measure must be conservation of exhaustible natural resources, rather than simply that this should be a purpose.[567] In the defense for the rather strict interpretation, Charnovitz argues that it provides 'a constructive way to screen out measures with only a collateral relationship to conservation.'[568] On the other hand, Waincymer contends that a 'primarily aimed at' test sets the bar too high and render a large number of measures fall outside of this test.[569] In this vein, reading a less stringent relationship test under Article XX (g) and relying on the Chapeau requirements to filter out measures only incidentally related to conservation of exhaustive natural resources might be a more appropriate option.[570]

In a following dispute *US – Shrimp*, the Appellate Body expanded the interpretation of 'relating to' as meaning 'reasonably related to the ends'.[571] This requires an examination of the 'general design and structure' of the measure and its relationship to the objective, which needs to be 'close and real'.[572] In comparison to 'primarily aimed at' test, this one seems to lower the threshold of relationship between challenged measure and pursued objective. The Appellate Body also noted that the design of the measure in question was 'not disproportionately wide in its scope and reach in relation to the policy objective.'[573] This means a reasonable relationship needs to be established between the measure and the objective pursued. It is noted that the Appellate Body left the 'disproportionate' test largely undefined. However, a challenged measure is found to be too broad for the underlying objective it pursues when there are other equally effective but less trade restrictive measures.[574] It is a remarkable progress towards protecting non-trade values since the Appellate Body recognized the right of the WTO Member to take even unilateral trade restrictive measures so long as a balance of rights and obligations is maintained.[575]

It is argued that international climate change agreements could evidence that measures designed to reduce global warming emissions relate to the protection of climate system.[576] For instance, measures such as imposing favorable tariff levels on renewable energy sourced electricity could fall under the ambit of Article XX (g) on the condition that the general structure and design of the measure and the policy goal of reducing emissions manifests a close and real relationship. It would be easier to meet Article XX (g) as well as Article XX (d) if the design and structure of trade related measures is based on specific obligations in an international climate change agreement. However, the availability of explicit

[567] Macmillan (n 245), at 100.
[568] Charnovitz (n 447), at 50.
[569] Waincymer (n 251), at 156.
[570] *Ibid.*
[571] Appellate Body Report, *US – Shrimp*, para. 141
[572] *Ibid.*
[573] *Ibid.*
[574] Epps and Green (n 4), at 150 and 154.
[575] Appellate Body Report, *US – Shrimp*, para. 156.
[576] Condon and Sinha (n 437), at 73.

obligations as specified in international climate change agreements in Article XX (g) may not be as essential as they are in Article XX (d).

The third constituent element of the Article XX (g) is an additional requirement that the measures be 'made effective in conjunction with restrictions on domestic production or consumption.' This refers to a requirement of 'evenhandedness' with respect to the imposition of trade restrictive measures on both imported and domestic products. The Appellate Body in *US – Gasoline* understood it not as 'identical treatment' of domestic and imported products but an 'even-handed' treatment of these products.[577] In the case when no restrictions on domestic like products are imposed, the measures cannot be deemed as primarily or even substantially designed for the objectives pursued,[578] which does not meet the second requirement of Article XX (g). Whether the measures imposed on domestic products are 'made effective' was interpreted by the Appellate Body as referring to a government measure being 'operative,' as 'in force', or 'come into effect.'[579] The Appellate Body rejected reading an empirical 'effects test' in the present dispute on practicality grounds but conceded that the predictable effects of a measure may be of relevance in some cases.[580] For instance, if a certain measure cannot make any positive conservation effect, then it would normally fail to satisfy the relationship test.

The Appellate Body in *China – Raw Materials* followed the Appellate Body interpretation in *US – Gasoline* and upheld for no requirement that trade measures be primarily aimed at making domestic restrictions effective.[581] It seems that a low threshold for this provision has been established and there is no requirement for assessing alternative policies for trade impacts. As long as the regulating country makes efforts with respect to its own risks, this requirement can be satisfied. In effect, empirical evidence suggests that this 'even handedness' requirement does not pose a significant hurdle.[582]

The case law in the application of Article XX (g) suggests the increasing recognition of the development of international environmental law and policy subsequent to the 1947 GATT, which implied that treaty interpretation need to be made in accordance with the Vienna Convention and the preamble to the WTO Agreement.[583]

(5) The Chapeau to the Article XX

For measures that are provisionally justifiable under Article XX, it is a following requirement to prove the consistency with the Chapeau requirements. The Chapeau is concerned with the manner in which the measure is applied,[584] rather than focusing on the measure *per se*. Measures that can be justified on their face by means of Article XX could still aim for protectionist objectives, such as favoring

[577] Appellate Body Report, *US – Gasoline*, at 19 and 21.
[578] *Ibid*.
[579] *Ibid*, at 20.
[580] *Ibid*, at 21 and 22.
[581] Appellate Body Report, *China – Raw Materials*, para. 356.
[582] Imperiale (n 560), at 252.
[583] Charnovitz (n 447), at 37.
[584] See, for example, Appellate Body Report, *US – Shrimp*, para. 160.

domestic producers or discriminating against foreign products. The purpose of the Chapeau is to weed out measures that are implemented in a way deviates from the aims listed in the sub-paragraphs. This test operates as an important qualification on the right of the Member to take measures for non-trade objectives.

In the case when arbitrary or unjustifiable discrimination occurs, there are three elements being applied in a cumulative manner: (i) the application of the measure results in discrimination; (ii) discrimination is arbitrary or unjustifiable; and (iii) the discrimination occurs between countries where the same conditions prevail. The WTO jurisprudence shows that a finding of arbitrary or unjustifiable discrimination would also imply a finding of disguised restrictions on international trade.[585]

The Appellate Body in *US – Shrimp* made a number of important legal clarifications to the Chapeau, making the Article XX exemptions 'limited and conditional'.[586] The Chapeau has a rather broad coverage in the sense that it protects 'both substantive and procedural requirements.'[587] For instance, the US measure was flawed from the procedural perspective because complainants were not given an opportunity to be heard, to respond to arguments, to receive reasons or to have an avenue of appeal.[588] The failure to meet 'certain minimum standards for transparency and procedural fairness' under the GATT could fail the requirements set in the Chapeau.[589] Therefore, it is worth mentioning that concerns of fairness, good faith and due process need to be ensured when imposing requirements on imports from other countries so that measures would not create protectionist effects and thus cannot recourse to Article XX. Scott perceives the incorporation of procedural considerations in applying Article XX chapeau as a way to inform, other than supersede the application of relevant substantial obligations, the significance of which should be paid with adequate attention.[590] She argues these procedural considerations could ensure the dispute settlement process to be 'democratic' and moreover, make decision-making more responsive to the global contexts and consequences of domestic decisions.[591]

In a more recent dispute *Brazil – Retreaded Tyres*, the Appellate Body expanded the interpretation of chapeau requirements by ruling that if there is discrimination between countries when applying the measure, the alleged rationale of discriminatory treatment should relate to the pursuit of objective.[592] Regardless of the effects of discrimination at issue, there should be a rational relationship between the reason for the discrimination and the objective it pursues so as to pass the scrutiny of the chapeau. This is to say, one of the most important factors in determining arbitrary or unjustifiable discrimination under the Chapeau is to examine whether discrimination can be reconciled with, or is rationally related to,

[585] Appellate Body Report, *US – Gasoline*, para. 23; Appellate Body Report, *Brazil – Retreaded Tyres*, para. 239.
[586] Appellate Body Report, *US – Shrimp*, para.157.
[587] *Ibid*, para. 160.
[588] *Ibid*, para. 180.
[589] *Ibid*, paras 182 and 183.
[590] Scott (n 558), at 166-167.
[591] *Ibid.*
[592] Appellate Body Report, *Brazil – Retreaded Tyres*, para. 227.

the policy objective.[593] If the discriminatory measure at issue could demonstrate a rational linkage with pursed policy objective, the measure will avail itself of the WTO exception and thus become WTO-consistent.

Striking a balance between allowing the WTO Members to pursue legitimate policy goals despite possible negative trade effects and preventing them from using these that can abuse the GATT obligations is of critical importance.[594] The exceptions being interpreted too broadly could enable law makers to disguise the intention and hide protectionist policies while in the case when they are interpreted too narrowly, Member States' autonomy in adopting policies for legitimate policy goals that only incidentally affect trade could be unduly limited.[595] The WTO has struggled with the task of how to distinguish between measures which adversely affect international trade, but has no protectionist motive and measures that are designed for protectionist purposes, which of course restrict trade to the detriment of imported goods suppliers.[596]

The manner in which the measure is applied can be most often discerned from 'the design, the architecture, and the revealing structure of a measure.'[597] The past jurisprudence suggests that there are a number of factors that need to be assessed so as to determine whether a challenged measure constitutes a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail. One of the most important factors in this respect is whether the discrimination is rationally related to or goes against the policy objectives as listed under Article XX.[598] There are also a few other factors that offer guidance in assessing arbitrary or unjustifiable discrimination. To be specific, it is useful to examine the 'vagueness of the measure' and 'the incidentally broad discretion' that would be applied along with the implementation of measure.[599] In addition, the rigidity and inflexibility in how the measure is applied as well as due process concerns need to be taken into consideration.[600] Whether the WTO Member State makes any effort to pursue cooperative arrangements with other Members for market access becomes another factor to be accounted.[601]

The difficulty of meeting the chapeau requirements is evidenced by a number of high-profile WTO disputes concerning trade-related environmental measures,[602] most of the challenged measures were deemed to fail to meet the chapeau. Indeed, the decisiveness of the chapeau test in finding a challenged measure to be violation of WTO law is evident.

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[593] Michael Trebilcock, *Advanced Introduction to International Trade Law* (Edward Elgar 2015), at 174.
[594] Simon Lester, Bryan Mercurio and Arwel Davies, *World Trade Law Text, Materials and Commentary* (2nd Ed, Hart Publishing 2012), at 364.
[595] *Ibid.*
[596] Verhoosel (n 366), at 2. For an illustrative case study, see Bryan Mercurio and Justin Wong, 'Low Carbon Emission Standards and the WTO: Do Californian Measures targeting Greenhouse Gas Emissions Unfairly Discriminate against Canadian Oil' (2012) 45(2) University of British Columbia Law Review 451.
[597] Appellate Body Report, *Japan – Alcohol*, p. 29.
[598] Appellate Body Report, *US – Shrimp*, para. 165.
[599] *Ibid*, para. 181.
[600] *Ibid*, paras. 177 and 182.
[601] Appellate Body Report, *EC – Seal Products*, para. 5.337.
[602] See, Appellate Body Reports, *US – Gasoline*, *US – Shrimp*, *Brazil – Tyres*.

Macmillan contends that the utility of GATT Article XX exceptions in justifying the WTO inconsistent measures is subject to great constraint in two ways.[603] One is the restrictive interpretation of the relevant paragraphs, the other is similarly restrictively interpreted Chapeau, which arguably to be rather 'trade-biased'.[604] Marceau and Wyatt hold a different opinion that a rather strict interpretation of the Chapeau, in comparison to a relaxing reading of the paragraphs of GATT Article XX can assist the WTO to mature into a balanced system.[605] This not only respects non-trade priorities such as environmental and health protection but also retains its role of combating trade protectionism.[606] It remains to be seen the way the chapeau has been interpreted, particularly in disputes involving the conflict of trade interests and environmental ones.

5.2.3.3 Conclusive Analysis on the Application of Article XX

There is ample and growing WTO jurisprudence pursuant to Article XX dealing with cases that involve trade and non-trade interests. Among these cases brought to the dispute settlement process regarding environmental considerations, the majority of them have not entirely concentrated on environmental interests but rather involved a complex web of trade and environmental objectives. In McRae's view, these make 'bad' cases, because the challenged measures could either turn out to be blatant protectionism under the banner of environmental regulation, or they aim for a legitimate environmental objective to the point that 'the environmental value being upheld could be disproportionate to the trade-restrictive effects.'[607] These cases cannot constitute a proper basis for judicial making concerning trade and environment intersection, as a consequence, 'bad' cases give rise to 'bad' law.[608] The risks exists when jurisprudence developed by the adjudication bodies in rejecting claims made on environmental grounds could be translated as lack of sensitivity towards important non-trade concerns under the WTO regime.[609] A similar idea is shared by Macmillan, who argues that the narrow scope of Article XX might be attributable to the cases that have given rise to the interpretations of relevant provisions.[610] To be specific, early-stage cases, such as *US – Gasoline* and *Thai – Cigarettes* are 'bad' cases in the sense that they attempted to justify protectionist measures by means of Article XX.[611]

Nevertheless, the WTO jurisprudence does not remain unchanged. The prevailing view before the *US – Tuna* that Article XX of the GATT would favor free trade rules over environmental norms when adjudicating any conflicts between the two has been gradually shifted. The evolving thinking as expressed in other treaties and

[603] Macmillan (n 245), at 8.
[604] *Ibid.*
[605] Gabrielle Marceau and Julian Wyatt, 'Trade and the Environment: the WTO's Efforts to Balance Economic and Sustainable Development' in TrigoTriandade et al. (eds) *Économie, environnement, éthique: de la responsabilité sociale et sociétale : Liber amicorum Anne Petitpierre-Sauvain* (Schulthess 2009), at 235.
[606] *Ibid.*
[607] Donald McRae, 'Trade and the environment: the development of WTO law' (1998) 9(2) Otago Law Review 221, at 237.
[608] *Ibid*, at 238.
[609] *Ibid.*
[610] Macmillan (n 245), at 27.
[611] *Ibid.*

agreements, such as international environmental law as well as international climate change agreements also play a role in influencing the WTO jurisprudence.[612] It is reasonable to assume that the interpretation of Article XX is 'living and organic'.[613] The past WTO jurisprudence indicates that the trade regime has shown an increasing openness towards environmental concerns.[614] However, the case law testifies to the fact that the requirement as elaborated in Article XX chapeau is by no means easy to be met. For measures that can provisionally be proved to fall under the ambit of any paragraph of Article XX, whether they could pass the scrutiny of the Chapeau represents a big hurdle.

It is worth mentioning that climate change mitigation-related measures include more than simply emission reduction standards or renewable energy quota system. Policy measures that aim at increasing domestic renewable energy manufacturing capability also can be employed to address climate change. Protectionist objectives could be disguised as measures aiming at climate change mitigation and seek justification under Article Empirical evidence suggests that it is not always straightforward to draw a clear line between non-protectionist policy measures and protectionist ones.[615] In some cases, protectionism measures are embedded in the manner in which a measure that has a genuine non-protectionist basis is administered.[616] The concerns in light of environmental protection and climate change may become the legitimate cover for what actually boils down to flat-out protectionism needs to be subject to stringent scrutiny.

To sum up, it is unrealistic and erroneous to rely on the application of Article XX to provide policy space for every renewable energy measure as long as it self-claims to promote renewable energy development regardless of the impacts measure can impose on trading system. To strike a balance between upholding the right of the Members to purse legitimate non-trade public policy objectives and maintaining the fundamental principles of international trading system is ever increasingly prominent. The end goal is to work toward a world of effective climate change mitigation that is simultaneous free of trade protectionism.

5.3 The Agreement on the Subsidies and Countervailing Measures

This part focuses on the WTO subsidy rules and the relevant jurisprudence in clarifying the meaning and scope of specific term and phrases. Compared with assessing the compatibility of discriminatory renewable energy measures with non-discrimination obligation under the GATT, analyzing the measures' consistency with subsidy rules could turn out to be more complicated.

Particularly when the status of certain forms of renewable energy measures under the subsidy rules remains unclear, it is highly controversial to proceed. Therefore, it is analytically important to explore what a subsidy is within the meaning of SCM

[612] Adrian Henry Macey, 'How Trade Policies Can Support Global Efforts to Curb Climate Change' (*The Conversation*, 28 July 2017) available at: http://theconversation.com/how-trade-policies-can-support-global-efforts-to-curb-climate-change-81029, accessed on 30 July 2017.
[613] Gaines (n 440), at 859.
[614] See, John Jackson, *The Jurisprudence of GATT and the WTO* (Cambridge University Press 2000), at 121.
[615] Trebilcock, Howse and Eliason (n 52), at 665.
[616] *Ibid.*

Agreement. The constituent elements of subsidy definition are subjected to the interpretation given by the WTO adjudicators. In other words, how the WTO Panel and more importantly, the Appellate Body understand and apply the subsidy definitional elements play a key role in determining the scope of policy space under the SCM Agreement.

5.3.1 The Purpose and Objective of the SCM Agreement

Subsidies have become a rather sensitive matter in international trade relations since they can be used by governments to purse important social and economic objectives while they can also have adverse effects on the interests of trading partners.[617] In the case when subsidies give an artificial competitive advantage to exporters or import-competing industries, trade flows can be distorted to the detriment of a fair trade.[618] This explains why subsidization is commonly regarded to be unfair trade practices. However, in many WTO Member States, subsidies are employed as an instrument to realize a wide range of public policy objectives, including addressing climate change.[619]

The use of subsidies by the Members could give rise to issues under the GATT 1994, the Agreement on Agriculture and the Agreement on Subsidies and Countervailing Measures ('SCM Agreement'). Subsidization behavior is subjected to an intricate set of WTO rules, including the SCM Agreement. As one of the most important achievements that Uruguay Round negotiations made, the establishment of the SCM Agreement forms part of Annex 1A to the WTO Agreements. Prior to that, the multilateral trading system did not contain any enforceable legal disciplines on domestic subsidies. The SCM Agreement represents an improvement in terms of transparency, clearness and procedural fairness over the subsidy provisions of GATT 1947 and the Tokyo Subsidy Code.[620]

Disputes over the use of subsidies have become a prominent feature of the world trading system,[621] particularly in strategic economic sectors. Statistics shows that after the GATT and Antidumping Agreement, the SCM Agreement had been invoked most frequently in formal trade disputes between 1995 and 2015.[622] Hufbauer and Erb uphold that protective policies, such as national subsidies can undermine world prosperity and it is useful to distinguish between acceptable and unacceptable national subsidy measures as well as subject them to disciplines.[623]

[617] Van Den Bossche (n 431), at 557.
[618] WTO Secretariat, *World Trade Report 2006: Exploring the Links between Subsidies, Trade and the WTO* (WTO, 2006), at xxii, available at https://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report06_e.pdf, accessed on 12 December 2016.
[619] See, WTO, *World Trade Report 2006 Exploring the Links Between Subsidies, Trade and the WTO* (WTO, 2006), at 66-104.
[620] M Rafiqul Islam, *International Trade Law of the WTO* (Oxford University Press 2006), at 310.
[621] Kyle Bagwell and Robert Staiger, 'Will International Rules on Subsidies Disrupt the World Trading System?' (2006) 96(3) American Economic Review 877, at 882.
[622] Kara Leitner and Simon Lester, 'WTO Dispute Settlement 1995-2015 – A Statistical Analysis' (2016) 19(1) Journal of International Economic Law 289, at 294.
[623] See, Gary Hufbauer and Joanna Shelton-Erb, *Subsidies in International Trade* (Institute for International Economics 1984).

The absence of a purpose clause in the SCM Agreement is noticeable, which is likely to compound the consistency of interpretation in jurisprudence. The WTO Panel and the Appellate Body have repeatedly ruled that the objective and purpose of the SCM Agreement is to subject subsidies that distort international trade to multilateral disciplines.[624] The Panel in *Canada – Aircraft* clarified that the SCM Agreement is to establish multilateral disciplines 'on the premise that some forms of government intervention distort international trade or have the potential to.'[625] The Panel in *US – Export Restraints* also confirmed this viewpoint.[626]

The Appellate Body in *US – DRAMs* gave a more comprehensive explanation of the objective and purpose of the SCM Agreement. They affirmed that the SCM Agreement is agreed simply 'to strengthen and improve GATT disciplines relating to the use of both subsidies and countervailing measures, while recognizing at the same time, the right of the Members to impose such measures under certain conditions' and 'this reflects a delicate balance between the Members that sought to impose more disciplines on the use of subsidies and those that sought to impose more disciplines on the application of countervailing measures.'[627] Therefore, the WTO subsidy regulation is not meant to undermine the Members' right to use subsidies for legitimate purposes.

The interpretation of objective and purpose of the SCM Agreement in the prior jurisprudence can shed some light on how renewable energy measures could be dealt with under this agreement. Although it is widely recognized that governments are entitled to make subsidies as a policy instrument to promote the development of renewable energy, the possible trade distorting impacts that renewable energy subsidies can incur should not be left unregulated. The WTO rules come into play when the use of renewable energy subsidies lead to unfair trade and disturb the 'level playing field' among renewable energy producer countries.

It becomes a sensitive question whether the strengthening of multilateral subsidy rules would narrow the Members' scope of policy space in making use of subsidies as a development instrument. The current subsidies regulation does not pay adequate attention to the economic rationale behind renewable energy support measures but adopts a one-size-fits-all approach by putting all subsidies in the same basket.[628] The categorization of subsides into three forms: permissible, actionable and prohibited seems to lack sense from an economics perspective.[629] For instance, some scholars focus specifically on export subsidy rules and point out a 'basic dilemma' since the prohibition runs counter to the essential purpose of international trade agreements' to expand trade volumes beyond unilateral levels.[630] Economists

[624] Panel *Report, Brazil – Aircraft*, para. 7.26.
[625] Panel *Report, Canada – Aircraft*, para. 9.119
[626] See, Panel Report, *US – Export Restraints*, para. 8.63
[627] Appellate Body Report, *US – DRAMs*, para. 115.
[628] Elena Cima, 'Caught Between WTO Rules and Climate Change: The Economic Rationale of 'Green' Subsidies' in Klaus Mathis and Bruce R. Huber (eds) *Environmental Law and Economics* (Springer 2017), at 402.
[629] See, Bagwell and Staiger (n 621), at 883.
[630] Merit E. Janow and Robert W. Staiger, 'US – Export Restraints United States – Measures Treating Export Restraints as Subsidies' in Horn Henrik and Petros Mavroidis (eds) *The WTO Case Law of 2001: The American Law Institute Reporters' Studies* (Cambridge University Press 2004), at 205.

generally regard subsidies as less trade distorting than other restrictive trade measures, such as product bans. If the WTO regime provides policy space for extremely trade distorting measure such as ban on foreign products, why the use of subsidies is subject to even more stringent WTO discipline than trade ban? In addition, no provision exists in the SCM Agreement that allows the use of subsidies that further legitimate public policy objectives, which would otherwise constitute violations of the WTO rules.

The skeptics towards the WTO subsidy rules reflects the conundrum whether the WTO subsidy rules can properly differentiate between legitimate subsidies that primarily aim to contribute to social and economic objectives and these distort trade flows. This is to say, it is difficult to distinguish between legitimate government activities and trade distorting subsidies.[631] An ideal scenario is trade-distorting subsidies can be deterred and welfare increasing ones be permitted under the WTO regime. The current WTO subsidy rules seem to present a mixed picture in this respect.

Sykes argues that the task of distinguishing the good from the bad is 'extremely complex as a practical matter' and existing subsidies disciplines 'do a poor job' in this regard.[632] The inquiry whether the use of subsidies should be subject to discipline is now moot since arguments for some disciplines of subsidies are stronger than arguments taken from an opposite side.[633] In Horlick and Peggy's analysis, the essential question becomes how to make international subsidies disciplines an important part of international trade system for achieving the goal of sustainable development.[634] In this thesis, one focus is to explore whether the WTO subsidy rules could be consistent with the goal of climate change mitigation.

As discussed in previous chapter, the use of subsidies in renewable energy area has the potential to increase the competitiveness of renewable energy and thus, contribute to the goal of climate change mitigation. When it comes to assessing renewable energy subsidies that can address climate change, it is recognized that these subsidies differ in type and purpose, which can be reflected by their structure and design. The underlying issue is how to evaluate and measure the impact of renewable energy subsidies in light of their implications on trading system as well as climate system. The subsidy rules would come into play when the use of subsidies gives rise to restrictive trade implications. To what extent renewable energy subsidies contribute to climate protection objectives become another important factor that needs to be considered when assessing the subsidies at issue. Whether the current subsidies regulation framework under the WTO regime is desirable in providing sufficient policy space for subsidies that aim at climate protection objectives and deterring subsidization behavior that favor domestic industries to the detriment of international trade needs to be examined. The specific characteristics of renewable energy development render necessary a framework that

[631] Jackson, Davey and Sykes (n 446), at 941.
[632] Sykes (n 73), at 516.
[633] Gary Horlick and Peggy Clarke, 'Rethinking Subsidies for the Future' (E15 Initiative, ICTSD) 2016.
[634] *Ibid.*

allows considerable room for policy support while enforcing international trade disciplines specifically tailored to the use of subsidies.[635]

Coppens, in his thoroughly written book on multilateral subsidy rules argues the WTO subsidy concept seems to be 'sufficiently broadly formulated' and explained by the WTO jurisprudence so as to capture the most common forms of subsidization.[636] In light of this, 'a fundamental overhaul' of the subsidy disciplines seems not realistic or warranted.[637] Nevertheless, he recognizes the need to rebalance the existing subsidy rules with respect to a number of specific elements, such as reactivation of non-actionable subsides.

The section discusses the current subsidy rules as contained in the SCM Agreement. The vast amount of case law dealing with governments' subsidization actions is integrated into this legal analysis and reflected critically. Grasping and evaluating the WTO treaty language and case law is useful in understanding government measures in renewable energy sector that could be deemed as subsidies within the meaning of the SCM Agreement The

5.3.2 Definition of Subsidy

The SCM Agreement has introduced 'a fairly sophisticated definition' of subsidy in Article 1 for the first time in the GATT/WTO history.[638] . The Panel in *US – FSC* perceived the inclusion of subsidy definition as 'one of the most important achievements of the Uruguay Round in the area of subsidy disciplines.'[639] The definition of subsidy under the SCM Agreement operates as 'the gatekeeper' to the subsidy disciplines.

Article 1.1 of the SCM Agreement defines subsidy as 'a financial contribution' by a government or any public body within the territory of a Member or 'any form of income or price support' that confers a benefit. Furthermore, Article 1.2 of the SCM Agreement provides that the WTO rules on subsidies and subsidies trade only apply to 'specific' subsidies. The efforts to define subsidy in a certain way reflects the recognition that the WTO system should not be concerned about a vast universe of governmental activity that can be possibly defined as 'subsidy'.[640] Instead, a subset of certain types of subsidies would fall under the scope of the SCM Agreement.

However, the constituent elements of subsidy, for instance, 'financial contribution', 'income or price support', 'benefit' are not defined clearly in the text. The definition of subsidy becomes an area filled with continuing controversies and lacking clarity, which adds to the uncertainty in regulating subsidy.[641] How to understand and interpret these terms is of critical importance in determining the

[635] Cima (n628), at 388.
[636] Dominic Coppens, *WTO Disciplines on Subsidies and Countervailing Measures: Balancing Policy Space and Legal Constraints* (Cambridge University Press 2014), at 608
[637] *Ibid*, at 613
[638] Luca Rubini, *The Definition of Subsidy and State Aid: WTO and EC Law in Comparative Perspective* (Oxford University Press 2009), at 108.
[639] Panel Report, *US – FSC*, para. 7.80.
[640] Jackson (n 614), at 293.
[641] Rubini (n 638), at 419.

existence of subsidy and moreover, decides the scope of policy space that the Member can have in making use of subsidy as a development tool.

Advancing the dual objective of the SCM Agreement supports a broad as well as a narrow interpretation of this subsidy definition.[642] One objective is to strengthen subsidy disciplines, which correspondently suggests a broad interpretation, while the other objective is to limit the reach of countervailing duties, which supports a rather narrow interpretation.[643] In the Appellate Body's words, 'considerations of the object and purpose of the SCM Agreement do not favor either a broad or a narrow interpretation' of the subsidy definition.[644] Therefore, before moving to WTO case law in this regard, it is useful to explore textual meaning of subsidy within the meaning of the SCM Agreement.

5.3.2.1 Subsidy Definitional Element One: Financial contribution

Article 1.1(a)(1) of the SCM Agreement requires that for a subsidy to exist there must be a 'financial contribution' by a government or any public body. It also contains an elaborative list of various forms of financial contribution:

(i) a government practice involves a direct transfer of funds (e.g., grants, loans and equity infusion) and potential transfers of funds (e.g., loan guarantees),

(ii) government revenue that is otherwise due is forgone or not collected (e.g., fiscal incentives such as tax credits),

(iii) a government provides goods or services other than general infrastructure, or purchases goods,

(iv) a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the types of function in (i) to (iii) above which would normally be vested in the government.

The list is perceived to be 'exhaustive',[645] which implies that other government measures generating similar effects are not covered under the SCM Agreement. It provides useful insights on how to understand financial contribution. The various elements of the financial contribution requirements are relatively straightforward and have not been the source of extensive controversy compared with other definitional elements.[646]

The Appellate Body in *US – Softwood Lumber IV* interpreted 'financial contribution' as involving 'consideration of the nature of the transaction through which something of economic value is transferred by the government.'[647] Similarly, in the Panel Report on *US – Export Restraints*, the focus of the challenged issue is

[642] Coppens (n 636), at 39.
[643] *Ibid.*
[644] Appellate Body Report, *US – Anti-Dumping and Countervailing Duties*, para. 303.
[645] Appellate Body Report, *US – Large Civil Aircraft*, para. 613.
[646] Andrew Green and Michael Trebilcock, 'The Enduring Problem of WTO Export Subsidies Rules' in Kyle Bagwell, Petros Mavroidis and George Bermann (eds), *Law and Economics of Contingent Protection in International Trade* (Cambridge University Press 2009), at 123-129.
[647] Appellate Body Report, *US – Softwood Lumber IV*, para. 52,

whether export restraint could amount to a financial contribution within the meaning of Article 1.1 (a)(1)(iii) and (iv) of the SCM Agreement.[648] The Panel ruled that the determination of whether a financial contribution exists must concentrate on the examination of the nature of the government action and not on its effects.[649] Effects-based analysis would indicate reading the financial contribution requirements out of the SCM Agreement, which is against the purpose of the agreement in regulating only certain forms of governmental action that have distorting implications on international trade.

The emphasis on the nature of government action instead of the effects occurred within the meaning of 'financial contribution' excludes some regulatory measures from the scope of the SCM Agreement. As Jackson explains, the failure of a government to provide certain levels of regulation, such as the requirement of environment protection or labor standards cannot be deemed as subsidy.[650]

However, Nobel Laureate economist Joseph Stiglitz raises the idea that the government's failure to internalize negative externality, such as not participating in the Kyoto Protocol to pay the cost of carbon emissions from the production of products amounts to a subsidy to producers of such products.[651] He furthered to propose that this kind of subsidy could be offset by means of a high tax imposed by other WTO Member States or even a strict trade ban so as to level the playing field.[652] It is noted that most WTO legal scholars who commented on Stiglitz's proposal have not accepted it as a valid argument under the SCM Agreement.[653] The inclusion of a requirement of a financial contribution can effectively limit the applicability of this provision of the SCM Agreement to policy measures. The non-expansive interpretation of subsidy definition can be traced back to the negotiating history of the SCM Agreement, which shows that the Parties did not mean for all regulatory measures introduced by governments to be subject to subsidy rules.[654] Hufbauer also contends that the narrowly drafted subsidy definition in the negotiating history of the SCM Agreement aims to exempt government regulation from being considered a subsidy.[655]

Nevertheless, Howse and Eliason agree with Stiglitz's proposal with respect to the allocation of allowances for carbon emissions since they contend that if the government does not charge market price of carbon for this allowance or entitlement, a benefit is conferred.[656] An adjusted market price in a country that has

[648] Panel Report, *US – Export Restraints.*
[649] Panel Report, *US – Export Restraints*, para. 5.17.
[650] Jackson (n 614), at 293.
[651] Joseph Stiglitz, 'A New Agenda for Global Warming' (2006) 3(7) The Economists' Voice 1, at 2.
[652] *Ibid.*
[653] For instance, see, Bhagwati and Mavroidis, 'Is Action against US Exports for Failure to Sign Kyoto Protocol WTO-Legal?' (2007) 6(2) World Trade Review 299, at 302. Bhagwati and Mavroidis argue that a subsidy exists only if a government has made a financial contribution or has incurred a cost. The argument that the United States policy is a 'hidden subsidy' is irrelevant and cannot justify an EU action under the SCM Agreement."
[654] Panel Report, *US – Exports Restraints*, para 8.65
[655] Gary Hufbauer, Steve Charnovitz and Jisun Kim, *Global Warming and the World Trading System* (Peterson Institute for International Economics 2009), at 62.
[656] Robert Howse and Antonia Eliason, 'Domestic and International Strategies to Address Climate Change: An Overview of the WTO Legal Issues' in Thomas Cottier, Olga Nartova and Sadeq Z.

installed emissions trading market could be used as benchmark.[657] Even if incentives which fall outside the definition of subsidy and the SCM Agreement as a whole, other WTO provisions such as Article III of the GATT might come into play.

As an alternative to financial contribution, the SCM Agreement provides that 'any form of income or price support in the sense of Article XVI of GATT 1994' can constitute for a financial contribution. GATT Article XVI addresses a subsidy 'which operates directly or indirectly to increase exports…or to reduce imports of any product.' This refers to the effect of the subsidy in increasing the exports or decreasing its competitors' imports, which regulates measures different from those considered as 'financial contribution' under Article 1.1 (a)(1).[658] The Appellate Body in *US – Softwood Lumber IV* also noted 'this range of government measures capable of providing subsidy is broadened still further by the concept of income or price support.'[659] To what extent the expression of 'any income or price support' could broaden the coverage that the WTO adjudication bodies have not directly addressed subsidy.

The inclusion of this second alternative in the definition of subsidy is essential because it considerably broadens the scope of subsidies to include any form of income or price support with an impact of trade distortion.[660] While Wouters and Coppens disagree in this aspect by contending that such a broad interpretation could render the first alternative meaningless because all financial contributions might have an impact on the income of the recipient, in a direct or indirect way.[661] An expansive reading of 'income or price support' would resemble an effect-based test with the potential to cover almost any government action that confers a benefit and causes trade distortion.[662]

It is analytically useful to refer to relevant WTO case law. The Panel in *US – GOES* considered a narrow interpretation could more be appropriate because this alterative is not 'intended to capture all manner of government measures that do not otherwise constitute a financial contribution, but may have an indirect effect on a market, including on prices.'[663] The focus of 'income or price support' should be 'on the nature of government action, rather than upon the effects of such action,'[664] which is similar to the understanding of financial contribution. The Panel in *US – Export Restraints* also adopted a similarly narrow interpretation of the scope of 'income or price support' by denying an effect-based approach.[665]

Bigdeli (eds) *International Trade Regulation and the Mitigation of Climate Change* (Cambridge University Press 2009), at 73-76.

[657] *Ibid.*

[658] Rubini (n 638), at 123.

[659] Appellate Body Report, *US—Softwood Lumber IV*, para 52.

[660] Gustavo Luengo, *Regulation of Subsidies and State Aids in WTO and EC Law* (Kluwer Law International 2006), at 120-123.

[661] Jan Wouters and Dominic Coppens, 'An Overview of the Agreement on Subsidies and Countervailing Measures' in Kyle Bagwell, George Bermann and Petros Mavroidis (eds) *Law and Economics of Contingent Protection in International Trade* (Cambridge University Press 2010), at 25.

[662] *Ibid.*

[663] Panel Report, *US – GOES*, para 7.85.

[664] *Ibid.*

[665] Panel Report, *US – Export Restraints*, paras 8.63-8.72.

The definitional element of 'financial contribution' has a relatively broader coverage than 'income or price support'. It is noted that the exhaustive list of Article 1.1 (a) (1) can capture 'a wide range of transactions'.[666] The coverage of subsidy definition determines what renewable energy supportive measures would be subject to the SCM Agreement disciplines and even been prohibited. The first step in discussing the reaction of the SCM Agreement rules to government measures in renewable energy sector is to examine whether these measures fall into the ambit of subsidy.

5.3.2.2 Subsidy Definitional Element Two: Subsidizing Entity

An essential feature of subsidies is that financial contributions should be directly or indirectly made by the government in a narrow sense or 'public body'. Since the concept of 'public body' is not defined in the treaty, its meaning has to be developed via case law.

The Panel in *US – Countervailing Duty Measures on Certain Products* adopted a broad interpretation of 'public body' by regarding government ownership as highly relevant.[667] However, in the appellate stage, the Appellate Body reversed the interpretation and narrowed the scope of 'public body': it must be 'an entity that possesses, exercises or is vested with governmental authority'.[668] In addition, 'the precise contours and characteristics of a public body are bound to differ from entity to entity, State to State, and case to case'.[669] 'A proper evaluation of the core features of the entity concerned, and its relationship with government' is required in order to determine the existence of a 'public body'.[670]

5.3.2.3 Subsidy Definitional Element Three: Conferred Benefit

A financial contribution, income or price support made by government or a public body must confer a benefit to the recipient to be considered as a subsidy within the meaning of the SCM Agreement. Financial contribution as well as income or price support and benefit are separable legal elements that both of them need to be satisfied for a measure to fall under the ambit of subsidy. The Panel in *Korea – Commercial Vessels* articulated that the rationale for including the requirement of a benefit is that it can filter out commercial conduct.[671]

The existence of a benefit amounts to a crux in subsidy determination and the conferral of benefit requires facts-intensive analysis. Yet, the SCM Agreement does not specify on how the benefit element should be read, which is likely to give rise to uncertainties and controversies.

[666] Appellate Body Report, *US – Softwood Lumber IV*, para. 52.
[667] Panel Report, *US-Countervailing Duty Measures on Certain Products*, WT/DS437/R, paras 8.94 and 8.134.
[668] Appellate Body Report, *US-Countervailing Duty Measures on Certain Products*, paras. 290 and 317.
[669] *Ibid.* paras, 317 and 345.
[670] *Ibid*, para. 317.
[671] Panel Report, *Korea – Commercial Vessels*, para. 7.28.

Nevertheless, there is an ample and growing body of WTO jurisprudence that deals with benefit issue. The Appellate Body in *Canada – Aircraft* explained that a 'benefit does not exist in the abstract, but must be received and enjoyed by a beneficiary or a recipient.'[672] In addition, since the financial contribution element focuses on the role of government, in the determination of a benefit, the focus should be directed toward the recipient of the contribution.[673] In light of this, the cost to the government is excluded from being considered as relevant in this determination.[674] The Appellate Body highlighted that a benefit indicates when and if the financial contribution has made 'the recipient better off than it would otherwise have been, absent that contribution.'[675] What is crucial in this decision is that the determination of benefit conferral should not focus on whether the recipient is better off in comparison to its competitor in a market place. Instead, the key point is whether a recipient is better off than it would otherwise have been absent the financial contribution.[676]

The Panel in *Japan – DRAMS* also decided that 'the concept of benefit is defined by reference to the market,' for instance, a financial contribution confers benefit when 'it is made available on terms that are more favorable than the recipient could have obtained on the market.'[677] A comparison between the terms of the financial contribution and the terms available to the recipient on the private market is necessary to examine the existence of benefit.

The existence and importance of distinguishing between a 'financial contribution' and a benefit has been highlighted in prior case law.[678] Although the two elements can be mistakenly perceived to be tantamount, the former examination occurs from the perspective of donor while the latter analysis takes place from the perspective of the recipient.[679] If the distinction was not recognized, government measures that confer benefits would all be deemed subsidies.[680] In this vein, the government behavior that does not confer an advantage over what is available on the market would be impossible to give rise to a trade distorting potential.[681] It is reasonable to assume that no benefit can occur if no contribution took place. These are the important background findings to keep in mind in order to fully grasp the meaning of subsidy.

Some legal scholars express their critical views towards the requirement of benefit conferral under the subsidy definition. For instance, Howse points out that the concept of benefit has inherent instability that is likely to lead to legal uncertainty in the application of subsidy definition.[682] Identifying an appropriate market benchmark requires fact-intensive analysis from both legal and economic perspectives, which can be highly contested in some cases. The failure to find a

[672] Appellate Body Report, *Canada – Measures Affecting the Export of Civilian Aircraft*, para. 154.
[673] *Ibid*, 156.
[674] *Ibid.*
[675] *Ibid*, para. 157.
[676] *Ibid.*
[677] Panel Report, *Japan – DRAMs*, para. 7.275.
[678] Appellate Body Report, *Brazil – Aircraft*, para. 157.
[679] Panel Report, *EC – Countervailing Measures on DRAM Chips*, para. 7.212.
[680] Appellate Body Report, *US – DRAMs*, para. 114.
[681] *Ibid*, para. 7.175.
[682] Howse (n 78), at 89.

market benchmark as applicable in subsidy analysis would make benefit test a failure. All the length that benefit analysis is imposed with can potentially undermine the effectiveness of the multilateral subsidy discipline.[683]

When the market is heavily influenced by extensive government intervention, the complexity in correctly identifying a benefit could be a very complex matter.[684] For instance, the high-profile case between the US and Canada regarding softwood lumber gave rise to a series of issues, particularly the very issue concerning the relevant market for comparison. The Appellate Body made clear that prevailing market prices, which were distorted couldn't be used as a comparison to determine the existence of a benefit.[685] The distorted market benchmark can easily lead to a false negative finding since the price on the private market is suppressed. An alternative benchmark is needed as a replacement to the price on the heavily distorted market.

The other scenario when recourse to an alternative benchmark is warranted is when a government creates the market. For instance, renewable energy market, in some Member States, is created and shaped to a large extent by government interventions. The traditional market benchmark for conducting the benefit analysis seems not readily applicable since it would lead to false positive findings. This is to say, the creation of markets by means of government interventions would give rise to subsidies within the meaning of SCM Agreement. Therefore, it is important to recourse to an alternative benchmark. The following section on WTO renewable energy disputes would discuss how to identify an alternative benchmark when a government creates the market.

The WTO case law indicates that the adjudication bodies tend to be rather cautious in selecting a proper market benchmark to compare the terms of financial contribution, which to some extent ensures that the determination of benefit is subject to stringent discipline. Without finding the existence of benefit or completing benefit determination, measures fall outside of the ambit of subsidy and escape the SCM Agreement disciplines. It provides leeway for policy-makers to devise and enact supportive measures for renewable energy development as long as these measures do not alter competitive conditions to the advantage of domestic producers.

5.3.3 Specificity of Subsidies

When the existence of subsidies is proven, specificity becomes another threshold matter. In the SCM Agreement, a dividing line is drawn between specific subsidies and non-specific ones since only the former is subject to the SCM Agreement discipline. Non-specific subsidies can be neither challenged nor countervailed. The rationale underlying the specificity requirement is that a subsidy, which is generally available throughout an economy falls out of the ambit of WTO subsidy rules.

[683] Rolf H Weber and Rika Koch, 'International Trade Law Challenges by Subsidies for Renewable Energy' (2015) 49 Journal of World Trade 757.
[684] Robert Howse and Petrus Van Bork, 'WTO Disciplines and Biofuels: Opportunities and Constraints in the Creation of a Global Marketplace' International Food and Agricultural Trade Policy Council Discussion Paper (October 2006), at 17.
[685] Appellate Body Report, *US – Lumber IV*, paras. 100-103.

Given the pervasive use of direct or indirect government support in most, if not virtually all industries, setting the requirement of specificity is useful in limiting the intrusion of subsidies disciplines into general governmental activities.[686] The specificity test comes into play when assessing actionable subsidies.

Three types of subsidies are deemed as 'specific': (i) subsidies to certain companies within a designated region within the jurisdiction of the granting authority;[687] (ii) import substitution subsidies; [688] (iii) export contingent subsidies; [689] SCM Agreement Article 2.1 reads in relevant parts how to decide specificity:

(a) Where the granting authority, or the legislation pursuant to which the granting authority operates, explicitly limits access to a subsidy to certain enterprises, such subsidy shall be specific.

(b) Where the granting authority, or the legislation pursuant to which the granting authority operates, establishes objective criteria or conditions [690] *governing the eligibility for, and the amount of, a subsidy, specificity shall not exist, provided that the eligibility is automatic and that such criteria and conditions are strictly adhered to. The criteria or conditions must be clearly spelled out in law, regulation, or other official document, so as to be capable of verification.*

(c) If, notwithstanding any appearance of non-specificity resulting from the application of the principles laid down in subparagraphs (a) and (b), there are reasons to believe that the subsidy may in fact be specific, other factors may be considered. Such factors are: use of a subsidy programme by a limited number of certain enterprises, predominant use by certain enterprises, the granting of disproportionately large amounts of subsidy to certain enterprises, and the manner in which discretion has been exercised by the granting authority in the decision to grant a subsidy.[691] *In applying this subparagraph, account shall be taken of the extent of diversification of economic activities within the jurisdiction of the granting authority, as well as of the length of time during which the subsidy programme has been in operation.*

The Appellate Body in *US – Anti-Dumping and Countervailing Duties* understood the SCM Agreement Article 2 in a two tier structure: the first tier frames the 'central inquiry as a determination as to whether a subsidy is specific to certain enterprises within the jurisdiction of the granting authority.'[692] The second tier specifies the principles that could assist in determining the specificity. The application of these principles as enumerated in Article 2.1 may not by itself be

[686] See, Pietro Poretti, *The Regulation of Subsidies Within the General Agreement on Trade in Services of the WTO* (Kluwer Law International 2009), at 121; Jackson (n 614), at 297.
[687] See, SCM Agreement Article 2.2.
[688] See, SCM Agreement Article 2.3.
[689] *Ibid.*
[690] footnote 2 in the original: Objective criteria or conditions, as used herein, mean criteria or conditions which are neutral, which do not favour certain enterprises over others, and which are economic in nature and horizontal in application, such as number of employees or size of enterprise.
[691] Footnote 3 in the original: In this regard, in particular, information on the frequency with which applications for a subsidy are refused or approved and the reasons for such decisions shall be considered.
[692] Appellate Body Report, *US – Anti-Dumping and Countervailing Duties*, para. 366.

determinative in reaching a conclusion that a particular subsidy is specific or not.[693] It is noted that export contingent and import substitution subsidies, which constitute the so-called 'prohibited' category are automatically deemed specific. The WTO case law suggests that a prohibited subsidy, for instance an export subsidy is likely to be sector or product specific.[694]

The concept of specificity contained in this agreement encompasses two distinct types: *de jure* and *de facto* specificity. A subsidy is deemed *de jure* specific if access to the subsidy in question is explicitly limited to a certain enterprises, industry, or group of enterprises by the legislation or the granting authority;[695] and *de facto* specificity in subsidy means the manner in which the subsidy is used and benefits distributed favors certain enterprises or industries regardless of the neutrality of its terms of access.[696] Geographic targeting may also be a basis for a finding of specificity in accordance with Article 2.2. Any determination of specificity must be 'clearly substantiated' on the basis of positive evidence.[697]

However, the provision does not provide clear information as to what number of enterprises or industries constitute a group, which would make it fall into the ambit of 'specific', if targeted with a subsidy program.[698] A review of the WTO jurisprudence in addressing specificity indicates that it is relatively easy for challenged subsidies under the SCM Agreement to be deemed specific.[699] The denominators of specificity, as used by the WTO adjudication bodies merit close attention, which can shed light on future judicial making in this aspect. The Panel in *US – Upland Cotton* suggested that 'specificity is a general concept, and the breadth of or narrowness of specificity is not susceptible to rigid quantitative definition.'[700] Therefore, the Panel based on the fact that the subsidy programmes at issue were 'not even generally available to the industry which can be categorized as the agricultural industry' to deem its specificity.[701] The Panel in *US – Lumber IV* followed prior decision and decided that a subsidy targeting a large industry could still be deemed as specific.[702] The possibility exists that a subsidy is deemed specific even if it might target a large number of products and industries. It is clear that the jurisprudence in this respect involves 'a certain amount of indeterminacy at the edges.'[703] The rather strict interpretation of specificity would make many forms of subsidies vulnerable to be subjecting to the WTO subsidy discipline.

The concept of specificity is unique to the WTO Agreements and not commonly used in the relevant literature,[704] which has given rise to intense debate among

[693] *Ibid.*
[694] Steve Charnovitz, 'Green Subsidies and the WTO' (EUI Working Paper RSCAS 2014/93, 2014), at 14.
[695] Poretti (n 686), at 122.
[696] *Ibid.*
[697] SCM Agreement Article 2.4.
[698] Bigdeli (n 79), at 179.
[699] *Ibid.*
[700] Panel Report, *US – Upland Cotton*, para. 7.1142.
[701] Panel Report, *US – Upland Cotton*, para. 7.1150.
[702] Panel Report, *US – Lumber IV*, para. 7.120.
[703] Appellate Body Report, *US – Anti-Dumping and Countervailing Duties*, para. 373.
[704] WTO Secretariat, *World Trade Report 2006: Exploring the Links Between Subsidies, Trade and the WTO* (WTO, 2006), at 196, available at

economists and lawyers. Economically speaking, subsidies that are granted to a specific recipient are more likely to create trade-distorting impacts than general ones do.[705] However, others remain skeptical of the abovementioned economic rationale and argue that the practical reason for including specificity test is to avoid a review of all programs.[706] Measures targeting market failures should differentiate between a wide range of industries and be as specific as possible so as to be effective.[707]

The specificity requirement presents a mixed rationale, which is partly based on an economic grounding and partly on political considerations.[708] It is hardy contested that the specificity requirement is discretional and flexible in the application, the predication of which tends to be highly uncertain as a result.[709] An examination of the WTO law seems to confirm that the definition of specificity is rather broad and can capture many measures. Meanwhile, the judicial making also implies a degree of expansiveness in interpreting the specificity.

How to avoid renewable energy subsidies falling into the ambit of specific subsidies is crucially important. Subsidies that are provided to renewable energy users across the economy or renewable energy technologies are not specific. However, in some cases when renewable energy subsides are not generally granted, the issue of specificity emerges. To be specific, renewable energy subsidies can be made to give advantage to several undertakings and sectors, which would be specific. The case law shows that even a broad scope of subsidization may nevertheless be considered as specific. It is yet clear the extent to which the expansiveness of renewable energy subsidies is sufficient to prove the generality. It is simply unrealistic from the perspective of political considerations that renewable energy subsidies can cover each and every sector in each and every region to be non-specific. The risk that subsidies granted towards renewable energy sector meet specificity requirement should not be underestimated.

5.3.4 Categories of Subsidies

Depending on the real or anticipated effects of subsidies, SCM Agreement divides them into three categories: prohibited subsidies, actionable subsidies and non-actionable subsidies. They are known as a 'red light', 'yellow light' and 'green light' subsidies. The category of non-actionable subsidies pursuant to Article 8 of SCM Agreement was included in this agreement only on a provisional basis and lapsed in 2000 because the Members failed to agree on an extension.[710]

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https://www.wto.org/english/res_e/booksp_e/anrep_e/world_trade_report06_e.pdf, accessed on 12 December 2016.

[705] Jackson (n 614), at 288-289.

[706] Luca Rubini, 'The International Context of EC State Aid Law and Policy: The Regulation of Subsidies in the WTO,' in Andrea Bondi, Piet Eeckhout and James Flynn (eds.), *The Law of State Aid in the European Union* (Oxford University Press 2004), at 173.

[707] Luca Rubini, 'Climate Change Subsidies in the WTO: A Few Notes for Law Reform' (Biores, 2012), available at: https://www.ictsd.org/bridges-news/biores/news/climate-change-subsidies-in-the-wto-a-few-notes-for-law-reform, accessed 12 June 2017.

[708] Rubini (n 638), at 376.

[709] *Ibid.*

[710] See, SCM Agreement Article 31, which stipulates, 'The provision of Article 8 shall apply for a period of five years, beginning with the date of entry into force of the WTO Agreement. Not later than 180 days before the end of this period, the Committee shall review the operation of those

5.3.4.1 Prohibited Subsidies ('Red Light' Subsidies)

There are two types of subsidies that are covered in the 'prohibited subsidies' category: export subsidies and domestic content subsidies or import substitution subsidies. Matsushita and others point at the wording of 'prohibited' in this provision since this word rarely is used in WTO law.[711] This indicates that these subsidies are subject to the most stringent discipline under the SCM Agreement. Member States are entitled to complain to the WTO dispute settlement system to seek for a ruling directing the Member to eliminate the subsidy or face sanctions. The underlying principle of the WTO regime is to ban the promotion of domestic industry at the expense of foreign competitors. Article 3.1 sets out the definition of prohibited subsidies:

(a) subsidies contingent, in law or in fact, whether solely or as one of several other conditions, upon export performance;

(b) subsidies contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods.

The categorization of prohibited subsidies into two parts corresponds to a taxonomy of many of unfair trade claims that presently have popularity, as argued by Hudec.[712] He made a distinction between what he named 'offensive unfairness' and 'defensive unfairness'. Offensive unfairness refers to these policy measures adopted by governments in exporters' countries of origin with an aim to provide unfair advantages in competing in import-country markets or in third country markets. Such policy measures easily fall under the ambit of export subsidies as prohibited by Article 3.1(a) of the SCM Agreement. Defensive unfairness refers to these policy measures adopted by governments to unfairly favor domestic products to the disadvantage of foreign producers. Such policy measures easily fall under the ambit of import substitution subsidies as prohibited by Article 3.1 (b) of the SCM Agreement.

Export subsidies, as illustrated in Article 3.1 (a) favor domestic products that are exported over competing foreign products in export markets and encourage the export with clear impacts on international trade. A competitive advantage therefore, will be given to domestically manufactured goods by discriminating in favor of domestic goods as compared to goods made by foreign counterparts.[713] With the clear intention to assist domestic producers against its competitors in foreign markets, this type of subsidy is considered to be so pernicious to be prohibited automatically without showing any evidence of adverse effects pursuant to SCM Agreement Article 3. GATT Article XVI explains that granting an export subsidy may have harmful effects for other exporting or importing parties and may hinder

provisions, with a view to determining whether to extend their application, either as presently drafted or in a modified form, for a further period.'

[711] Matsushita et al. (n 304), at 329.

[712] Robert Hudec, 'Mirror, Mirror on the Wall: The Concept of Fairness in United States Foreign Trade Policy' in *1990 Proceedings of the Canadian Council on International Law* 88, at 100.

[713] Simon Lester, 'The Problem of Subsidies as a Means of Protectionism: Lessons from the WTO *EC — Aircraft Case*' (2011) 12(2) Melbourne Journal of International Law 97, at 102.

the achievement of GATT objectives.[714] The prior jurisprudence clarified the meaning of 'contingent', the Appellate Body in *US – Upland Cotton* understood it as 'conditional or dependent' or 'tied to' the export performance.[715]

Contingency on export can be manifested either *de jure* or *de facto*. In the former scenario, contingency can be easily and straightforwardly determined by a single document or regulation, while *de facto* contingency is more difficulty to establish. As footnote 4 in Article 3.1 (a) of the SCM Agreement explains:

'This standard is met when the facts demonstrate that the granting of a subsidy, without having been made legally contingent upon export performance, is in fact tied to actual or anticipated exportation or export earnings. The mere fact that a subsidy is granted to enterprises which export shall not for that reason alone be considered to be an export subsidy within the meaning of this provision.'

The Appellate Body in *Canada – Aircraft* referred to the different evidential standards required to demonstrate the existence of a *de jure* or a *de facto* export subsidy and stated that the latter one 'is a much more difficult task.'[716] There are three different substantive elements as determinative of *de facto* export contingency: first, the granting of a subsidy; second, the granting of subsidy is tied to exportation; and the third, actual or anticipated exportation or export earnings.

The relationship between the granting of a subsidy and actual or anticipated export performance needs to be contemplated carefully to determine whether *de facto* export contingency exists. It is advised to take a holistic approach to examine the facts and establish the relationship. The mere fact of exportation does not necessarily prove the existence of prohibited subsidies. For example, in the case of a small country, which lacks a sizable domestic market, subsidies that go to production would be predominantly for export. It is largely up to the WTO adjudication bodies to weigh and balance facts in any given case.

A key issue in examining export subsidies is that the complaint has to show that the state measure at issue skews market conditions in order to define support measures as prohibited export subsidy. If it cannot be shown that a subsidy is employed to induce more exports, which is contrary to market conditions, the subsidy would not qualify as a prohibited subsidy but a regular actionable subsidy.[717] The Appellate Body in *EC – Aircraft* ruled for the first time that the decisive criterion for de facto export subsidies 'is the favoring of exports contrary to market conditions over products destined for domestic consumption.'[718] It indicates that whether the subsidy would change the regular export-import ratio that would have developed under conditions of normal supply and demand needs to be considered as a prioritized factor.

The rather stringent discipline towards the use of export contingent subsidies, as argued by Trebilcock and Howse is due to the intent of these subsidies, which is

[714] See, GATT Article XVI: 2.
[715] Appellate Body Report, *US – Upland Cotton*, para. 572.
[716] Appellate Body Report, *Canada – Aircraft*, para. 167.
[717] Matsushita et al. (n 304), at 334.
[718] Appellate Body Report, *EC – Aircraft*, para. 1053.

clearly protectionist and difficult to be justified with legitimate objectives.[719] In addition, the pervasive use of export contingent subsidies tends to cause political tensions and subsidy races or even trade wars.[720] Subsidizing export contingent renewable energy industries would easily be deemed as illegal under the SCM Agreement and subject to immediate prohibition.

The other category of prohibited subsidies is domestic content subsidies or import substitution subsidies. Article 3.1 (b) of SCM Agreement reads as follow:

Except as provided in the Agreement on Agriculture, the following subsides, within the meaning of Article 1, shall be prohibited:(b) subsidies contingent, whether solely or as one of several other conditions, upon the use of domestic over imported goods.

It is noted that the drafters omitted the dichotomy of *de jure* contingency and *de facto* contingency with respect to domestic content subsidies. Does it mean that *de facto* contingency on the use of domestic goods over imported ones would fall outside the ambit of domestic content subsidies? The Appellate Body in *Canada – Autos* dealt with the issue and stated that domestic content subsidies could be contingent on, either legal determination to use only domestic content, or factually be made to serve the same purpose.[721] The finding that Article 3.1 (b) catches only *de jure* contingency upon the use of domestic over imported goods would be contrary to the object and purpose of the SCM Agreement because it would 'make circumvention of obligations by the Members too easy.'[722] The examination of *de facto* contingency tends to be a more demanding legal test imposed on not only complaining parties but also WTO adjudication bodies. Moreover, the legal standard of contingency in the case of domestic content subsidies is considered similar to that under the export contingency standard.[723]

Domestic content subsidies within the meaning of Article 3.1 (b) clearly amount to the breach of the GATT national treatment provision because the measures at issue discriminate between domestic and foreign input supplying industries. In addition, domestic content subsidies are covered by the Illustrative List of the Agreement on Trade-Related Investment Measures that are inconsistent with national treatment provision as contained in the GATT Article III: 4. Demonstrating a violation of the TRIMs Agreement and the GATT is easier than that under the SCM Agreement because the latter requires to meet the subsidy definition at first. The application of specific GATT, TRIMs and SCM Agreement rules in the case of using domestic content requirements will be discussed in details in the following section.

Export contingent subsidies and domestic content subsidies being subjected to stringent disciplines reflects that the effects of these types of subsides are inherently trade-discriminatory that they should be banned automatically.[724] There is no need to examine the adverse effects or the specificity of these types of subsidies. The

[719] Trebilcock and Howse (n 30), at 263.
[720] Rubini (n 638), at 370.
[721] Appellate Body Report, *Canada – Autos*, paras. 139-143.
[722] *Ibid.*
[723] *Ibid*, para. 123.
[724] Lester, Mercurio and Davies (n 594), at 444.

past jurisprudence is indicative of the rather strict interpretation of prohibited subsidies, which sheds light on the use of renewable energy subsidies and urges policy-makers to be very cautious in the design and enactment of subsidies. Regardless of the underlying motives of any renewable energy subsidy, the SCM Agreement does not provide any ground for justification once the subsidy falls into the category of prohibited subsidies. The prescribed remedy to prohibited subsidies is to withdraw them without delay.

5.3.4.2 Actionable Subsidies ('Yellow Light' Subsidies)

The second category is actionable subsidies, in which most subsidies would fall. However, the WTO does not define what constitutes 'actionable' subsidies, which gives rise to ambiguity. Actionable subsidies are defined by default, because they are neither prohibited nor non-actionable. Actions can be brought to challenge such subsidies when they cause adverse effects on the interests of another Member State. The creation of a category of actionable subsidy, which is not automatically subject to WTO condemnation, is partly because there is little or no impetus to prohibit or curtail the use of such subsidies since they are useful and popular tool of governments for allocation of public resources.[725] Same with prohibited subsidies, actionable ones can be either challenged in the WTO Dispute Settlement System or subject to countervailing measures.[726]

The trade effects in question are laid down in Article 5, which reads:

No Member should cause, through the use of any subsidy referred to in paragraph 1 and 2 of Article 1, adverse effects to the interests of other Members, i.e.:

(a) injury to the domestic industry of another Member;

(b) nullification or impairment of benefits, in particular the benefits of concessions;

(c) serious prejudice.

Three types of 'adverse effects' are listed here as criteria in assessing whether the challenged subsidies are actionable. Not every specific subsidy will cause adverse effects and be deemed as actionable.[727] The Panel in *US – Cotton Subsidies* further clarified that, 'a fundamental tenet of the subsidy disciplines enshrined in the SCM Agreement is that Members are permitted to grant or maintain specific subsidies to the extent that they do not cause adverse effects within the meaning of Article 5 and 6 of the SCM Agreement.'[728]

In terms of 'injury', footnote 11 to the SCM Agreement clarifies that The term 'injury to the domestic industry' is used here in the same sense as it is used in Part V dealing with countervailing duties. Footnote 45, in Part V of the SCM Agreement understands 'injury' shall, unless otherwise specified, 'be taken to mean material injury to a domestic industry, threat of material injury to a domestic industry or

[725] Horlick and Clarke (n 77), at 867.
[726] See, SCM Agreement, Article 9.
[727] Panel Report, *US – Cotton Subsidies*, para. 7.1179.
[728] *Ibid.*

material retardation of the establishment of such an industry and shall be interpreted in accordance with the provisions of this Article.' The first dispute in which a WTO Panel was asked to examine adverse effects in terms of 'injury' was *EC – Large Civil Aircraft*, which involved a US challenge to a number of EC and EU Member State measures providing support to Airbus.

The term 'nullification and impairment' is clarified in footnote 12 to the SCM Agreement, which explains that this term is used in the same sense as it is used in the relevant provisions of GATT 1994, and the existence of such nullification or impairment shall be established in accordance with the practice of application of these provisions.

'Serious prejudice' is a new conception of harm that did not exist in the prior GATT law. It usually arises as a result of adverse effects in the market of the subsidizing Member State or in a third country market. Footnote 13 explains that 'serious prejudice' is used in the same sense as it is used in GATT Article XVI: 1 and that it includes 'threat' of serous prejudice. The assessment of 'serious prejudice' is highly facts-intensive.

Article 6.3 of the SCM Agreement explains scenarios where serious prejudice may occur:

(1) the effect of the subsidy is to displace or impede the imports of a like product of another Member into the market of the subsidizing Member;

(2) the effect of the subsidy is to displace or impede the exports of a like product of another Member from a third country market;

(3) the effect of the subsidy is a significant price undercutting by the subsidized product as compared with the price of a like product of another Member in the same market or significant price suppression, price depression or lost sales in the same market;

(4) the effect of the subsidy is an increase in the world market share of the subsidizing Member in a particular subsidized primary product or commodity as compared to the average share it had during the previous period of three years and this increase follows a consistent trend over a period when subsidies have been granted.

When the 'adverse effects' alleged constitute 'serious prejudice' within the meaning of Article 6, the requirement to identify a 'like product' exists explicitly with respect to serious prejudice due to price undercutting.

The Panel in *US – Cotton Subsidies* stated that a sufficient basis for finding serious prejudice is established if any of these four scenarios is met.[729] The Panel in *Korea – Commercial Vessels* also concluded that 'the situations listed in Article 6.3 (a) – (d) in themselves constitute serious prejudice'.[730]

[729] Panel Report, *US – Cotton Subsidies*, paras 7.1368-7.1390.
[730] Panel Report, *Korea – Commercial Vessels*, paras. 7.581-7.587.

The possibility that renewable energy subsides could be challenged based on their 'adverse effects' on imports of competing renewable energy should be recognized. While the determination of actionable subsidies with adverse effects can be highly fact-dependent and give rise to legal uncertainties. The prescribed remedy to actionable subsidies causing adverse effects is to remove the adverse effects or to withdraw the subsidy. Nevertheless, Charnotivz argues that pragmatically speaking, the scope for remedies other than withdrawing the actionable subsidies is rather limited.[731] It calls to reflect the consequences when renewable energy subsidies are deemed as actionable and what actions should the defendant governments take to comply with the WTO subsidy rules.

5.3.4.3 Non-actionable Subsidies ('green light' subsidies)

Part IV of the SCM Agreement sets aside a limited group of non-actionable subsidies, which cannot be challenged multilaterally or be subjected to countervailing action. However, these provisions lapsed after a trial period of five years after the WTO's entry into force without being renewed, which means their green light status was extinguished.

Article 8.1 specifically notes that, in addition to non-specific subsidies, subsidies which meet one of three sets of conditions described in Article 8.2 are non-actionable. Article 8.2 set the specific requirements for non-actionable subsidies.

(a) assistance for research activities conducted by firms or by higher education or research establishments on a contract basis with firms if: the assistance covers not more than 75 per cent of the costs of industrial research or 50 per cent of the costs of pre-competitive development activity and provided that such assistance is limited exclusively to: (i) costs of personnel (researchers, technicians and other supporting staff employed exclusively in the research activity); (ii) costs of instruments, equipment, land and buildings used exclusively and permanently (except when disposed of on a commercial basis) for the research activity; (iii) costs of consultancy and equivalent services used exclusively for the research activity, including bought-in research, technical knowledge, patents, etc.; (iv) additional overhead costs incurred directly as a result of the research activity; (v) other running costs (such as those of materials, supplies and the like), incurred directly as a result of the research activity.

(b) assistance to disadvantaged regions within the territory of a Member given pursuant to a general framework of regional development and non-specific (within the meaning of Article 2) within eligible regions provided that listed conditions were met;

(c) assistance to promote adaptation of existing facilities to new environmental requirements imposed by law and/or regulations which result in greater constraints and financial burden on firms, provided that the assistance: (i) is a one-time non-recurring measure; and (ii) is limited to 20 per cent of the cost of adaptation; and (iii) does not cover the cost of replacing and operating the assisted investment, which must be fully borne by firms; and (iv) is directly linked to and proportionate to a firm's planned reduction of nuisances and pollution, and does not cover any

[731] Charnovitz (n 694), at 18.

manufacturing cost savings which may be achieved; and (v) is available to all firms which can adopt the new equipment and/or production processes.

A notification requirement was imposed for such non-actionable subsidies in accordance with Article 8.3, providing a right to other governments to request information about those programs with the assistance of the Committee and the WTO Secretariat. However, during the five years in which the category of non-actionable subsidies was in effect, not once did any WTO Member notify the SCM Committee of a non-actionable subsidy.[732] WTO Members differed to a large extent as to whether non-actionable subsidies need to be renewed or not after the expiration. The group that have opposed the renewal of non-actionable subsidies in the existing form contained several developing countries, such as India and Brazil since they contended that it only reflected the interest of developed countries.[733] On the contrary, developed countries, such as Canada and the EU favored the continuation of non-actionable subsidies.[734] While the US presented mixed views on the use of Article 8. The rather divergent views held by the WTO Member States also reflects that creating a safe harbor for even a limited group of subsidies can be highly controversial.

If reactivation of Article 8 or creation of another category of non-actionable subsides seems remote at the current stage, it is useful to find out if the lapsed Article 8 could still have influence. The Panel in *US – Cotton Subsides* stated that Article 8 can be 'instructive in understanding the overall architecture with respect to the different types of subsidies it sought and seeks to address.'[735]

Of particular attention are the two forms of non-actionable subsidies as stipulated in sub-paragraph (a) and (c): research and development subsidies and environmental subsidies. Legal Scholars such as Robert Howse advocates for a revisit of the existing subsidy disciplines and creates a non-actionable carve-out under the SCM Agreement.[736] He thinks a 'safe haven' of defined non-actionable subsidies can deliver the promises to improve the WTO subsidy disciplines.[737] Charnovitz also concerns that the current WTO subsidies rules do not take into account any policy justifications, which implies that a subsidy justified as economically or socially rational cannot get any legal deference in the SCM Agreement.[738] If Article 8 was still in effect, renewable energy subsidies used to address climate change could be sheltered without facing challenge. Reactivating the green light status of well-defined R&D, environmental and regional subsidies should be considered by the Member States so as to increase legal certainty to which subsides are acceptable.[739] Otherwise, the lack of exceptions for subsidies that aim at legitimate objectives becomes ground for the clash between trade regime and climate regime.

5.3.5 Preliminary Conclusion

[732] See, WTO, Notification Requirements Under the Agreement On Subsidies and Countervailing Measures Background Note by the Secretariat, G/SCM/W/546/Rev. 2, 26 April 2011, para. 17.
[733] *Ibid*, paras. 21 and 36.
[734] *Ibid*, paras 25 and 39.
[735] Panel Report, *US – Cotton Subsidies*, para. 7.907.
[736] Howse (n 78), at 101-102.
[737] *Ibid.*
[738] Charnovitz (n 694), at 10.
[739] Coppens (n 636), at 610.

There is no dearth of perplexing issues presented in this section. The detailed subsidy rules as contained in the SCM Agreement have a broad coverage. Bagwell and Staiger argue that the SCM Agreement disciplines on domestic subsidies could have a chilling effect on the willingness of governments to undertake tariff negotiations.[740] They emphasize that governments should retain sufficient policy space to offer domestic subsidies so as to correct market failures.[741] It is beyond the scope of this work to explore the underlying rationale of the WTO subsidy rules and whether they make perfect economic and legal sense. Instead, the aim of this section is to give a background on which the reaction of the WTO subsidy rules to renewable energy measures could be discussed.

A variety of specific subsidies within the meaning of the SCM Agreement are subject to the SCM Agreement disciplines. While two types of subsidies, namely export contingent subsidies and import substitution subsides, are categorically rejected by the agreement. All other subsidies are not prohibited automatically but actionable, depending on whether they produce adverse effects. However, it is not always straightforward to determine whether a government policy falls under the ambit of subsidy or not, as evidence by the WTO case law.

Since the expiration of non-actionable subsidies, the SCM Agreement is merely concerned with the effects that subsidies incur on trade relations with other WTO Member States. The desirable economic and social objectives that subsidy are designed to pursue are ignored by the subsidy rules.[742] It poses a question as to whether the SCM Agreement provides sufficient scope of policy space for the Members in designing and enacting subsidies that primarily aim at non-trade social values, for instance, climate change mitigation.

The SCM Agreement rules represent the general discipline of subsidies, which apply to any sector of the economy, except for services. The generality of these rules can be reflected in some definitional elements, such as financial contribution, benefit conferral. Given the complexity and particularity of renewable energy sector as well as government supportive measures in this sector, how the WTO subsidy rules react to these measures calls for attention.

It is widely acknowledged that renewable energy subsidies are an effective tool to improve the industrial competitiveness and market shares of renewable energy products. However, like any type of regulatory intervention enacted by regulating governments, subsidies in renewable energy sector is likely to have an adverse effect on competition in some cases.[743]

As discussed in the beginning of this part, the challenging task for the SCM Agreement is to differentiate between good subsidies and bad ones. How to make a distinction between subsidies that aim at promoting renewable energy development to realize green economy transition and subsides that are disguised protectionist policies remains a crucial issue.

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[740] Bagwell and Staiger (n 621), at 883.
[741] *Ibid.*
[742] Wouters and Coppens (n 661), at 82.
[743] Michael Kuhn, *The Greening of Markets: Product Competition, Pollution, and Policy Making in a Duopoly* (Edward Elgar Publishing 2005), at 34.

5.4 Agreement on Trade-Related Investment Measures

As discussed in Chapter 3, some forms of green industrialization measures, such as local content requirements are imposed to regulate investments with the intention to enhance domestic manufacturing and creating local employment. Investors are ensured to not buy cheaper imports from other countries but equipment manufactured locally or domestically. As integral part of performance requirements imposed on foreign investors, the use of LCRs would implicate the application of the Agreement on Trade-Related Investment Measures ('TRIMs').

The TRIMs engages 'to promote the expansion and progressive liberalization of world trade and to facilitate investment across international frontiers so as to increase the economic growth of all trading partners, particularly developing country members, while ensuring free competition.'[744] The TRIMs is deemed as 'the first, albeit modest, and so far the only, multilateral agreement to discipline government-imposed investment restrictions.' [745] This agreement applies to investment measures related to trade in goods only. The TRIMs Agreement does not create any new rules or disciplines, but refers to existing provisions under the GATT, particularly Article III and Article XI of the GATT.

Article 2 of TRIMs Agreement makes references to GATT Article III and specifies that TRIMs are subject to the national treatment principle as set in the GATT:

'Without prejudice to other rights and obligations under GATT 1994, no Member shall apply any TRIM that is inconsistent with the provisions of Article III or Article XI of GATT 1994.'

The TRIMs Agreement includes an illustrative list, which provides the scenarios that are inconsistent with the obligation of national treatment as set in GATT Article III. For example, the Members cannot require 'the purchase or use by an enterprise of products of domestic origin or from any domestic source.'[746] The TRIMS Agreement also prohibits Members from requiring that 'enterprises' purchases or use of imported products be limited to an amount related to the volume or value of local products that it exports.'[747]

The Members are required to provide national treatment to investors and must not impose quantitative restrictions or performance requirements on investments. Nevertheless, there are exceptions that can be used to justify otherwise TRIMs-inconsistent measures. As provided by TRIMs Agreement Article 3, the GATT Article XX exceptions can be applied to the TRIMs agreement in an identical way to the GATT.[748]

The explicit prohibition of local content requirements by means of TRIMs Agreement illustrative list signals that some forms of green industrialization measures would face difficulty in passing the scrutiny of TRIMs. What remains to

[744] See, the Preamble to the TRIMs Agreement.
[745] Matsushita et al. (n 304), at 774.
[746] See, TRIMs Annext: Illustrative List 1(a).
[747] See, TRIMs Annext: Illustrative List 1(b).
[748] See, TRIMs Article 3.

be examined is whether the GATT general exceptions could be revoked to justify otherwise illegal renewable energy measures in the form of performance requirements.

5.5 Conclusive Analysis

This chapter provided a review of certain WTO rules that could be cited in the trade/climate disputes. These rules decide to what extent the Members' action in facilitating green economy transition and climate change mitigation could be circumscribed by the WTO regime.

The use of green industrialization measures is subjected to the regulation of the GATT and the TRIMs because it is the obligation of non-discrimination that these measures could possibly breach. The use of de-carbonization measures is mainly concerned about passing the scrutiny of the SCM Agreement because these measures might fall under the ambit of subsidy and be subjected to subsidy rules. Although prior case law would not remain unchanged, it still sheds important light on how relevant WTO provisions are applied and understood by the adjudicators. It is of research interest to touch upon how the adjudicators make interpretations in trade/climate disputes.

It is clear that some of the provisions are elusively drafted with ambiguities and uncertainties in terms of meaning and scope. A difficult and lengthy negotiation and drafting process involving many parties with divergent interests contributes to the conundrum. [749] When questions arise as to the understanding of vaguely drafted provisions, the WTO adjudicators are confronted with a challenging task of ascertaining their meanings in order to apply them in individual disputes.

The way these provisions are interpreted and applied in pertinent WTO disputes plays an increasing important role in developing the WTO case law and influences the interaction between trade regime and climate regime. Some basic questions are: whether these provisions should be interpreted in a broad way or a narrow way; whether the meanings of these provisions should be determined with primary considerations given to the original drafting history or to contemporary social developments that were not foreseen by the drafters of the treaty decades ago.

The following section covers the disputes that have been brought to Dispute Settlement System concerning the use of green economy measures in renewable energy sector, which have implications on international trading system. It is undisputed that legitimate non-trade values such as climate change mitigation can and should be accommodated by the WTO regime as long as they are not embedded in protectionist measures. The degree, however, to which non-trade values should influence and be applied in the WTO dispute settlement, is subject to intense debate. Whether the consideration of climate change mitigation can be accorded with attention during the dispute settlement is of importance.

[749] Michael Lennard, 'Navigating by the Stars: Interpreting the WTO Agreements' (2002) 5(1) Journal of International Economic Law 17, at 59.

Chapter 6: WTO Renewable Energy Disputes

The development of renewable energy can be traced back a few decades ago, even with trade-related measures.[750] However, it is not until the latest decade that the WTO Members have started to litigate in front of the DSB concerning the compatibility of these renewable energy measures. Not only developed countries that have been a pioneer in this area but also developing ones that are later-comers have resorted to the WTO dispute settlement in this regard.

The silence of governments within a relatively long time in challenging a foreign measure in the renewable energy sector can be partly explained by the fear that resulting jurisprudence is likely to come back and haunt them.[751] This might turn out to be precedent against its own policies on relevant issues in future.[752] Given the explosive growth of climate-related policy adopted in renewable energy area over the last two decades, such that it impacts increasingly on international trade, it is perhaps not surprising that those trade disputes over renewable energy development have risen in prominence.

Asmelash attributed the increasingly prominent litigiousness in renewable energy area to two reasons.[753] The first is the likelihood of success in winning a dispute concerning the use of discriminatory renewable energy measures against trading partners. The very nature of some renewable energy measures being trade-restrictive is self-evident in violating the WTO obligation and thus condemned by the WTO law. The second is the pressure from domestic interest groups, such as politically active and influential renewable energy equipment manufacturing industries. These groups are inclined to petition their governments to initiate investigation or file a formal WTO dispute against other Members. The so-called 'glasshouse' effect does not constrain government's move against others' renewable energy initiatives anymore.[754]

This chapter offers a succinct description of all the renewable energy disputes that have been filed with the WTO Dispute Settlement Body, which include the dispute facts, claims raised by the parties and the decisions made by the adjudicating bodies if there were. Nevertheless, this chapter would not provide an analytical discussion of the adjudicating decisions, which will be analyzed in details in Chapters 7 and 8. A review of all the basics of renewable energy disputes is necessary in clarifying the controversy between international trade rules and the Members' action in developing renewable energy and addressing climate change.

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[750] For a discussion of renewable energy polices and measures, IEA/IRENA, Joint Policies and Measures Database, https://www.iea.org/policiesandmeasures/renewableenergy/.
[751] Marc Busch, 'Overlapping Institutions, Forum Shopping, and Dispute Settlement in International Trade', (2007) 61(4) International Organization 735, at 743.
[752] *Ibid.*
[753] Henok Birhanu Asmelash, 'Energy Subsidies and WTO Dispute Settlement: Why Only RenewableEnergy Subsidies Are Challenged?' (2015) 18(2) Journal of International Economic Law 261, at 267.
[754] 'Glasshouse' effect refers to the phenomenon that the Member States are not interested in raising a claim and risking a highly probable counterclaim.

6.1 *Canada – Renewable Energy* (DS412&DS426)

As the first case that has ever been filed with the WTO to deal with the use of trade-related measures that support the development of renewable energy, *Canada – Certain Measures Affecting the Renewable Energy Generation Sector* and *Canada – Measures Relating to the Feed-in Tariff Program* (*Canada – Renewable Energy*)[755]carries considerable jurisprudential weight. This is evidenced by the fact that eight different third parties have submitted arguments in the Appellate Body Report.[756] The decisions made by the Panel and particularly, the Appellate Body not only have given rise to heated scholarly debate, but also would be of far-reaching implications on future jurisprudence. This part begins with detailing the facts of dispute as well as legal complaints made by the complainants.

6.1.1 Facts of Dispute

Complainants in *Canada-Renewable Energy* challenged measures that had been adopted by the Canadian Province of Ontario, which aimed at promoting the consumption of renewable energy. On the basis of the Green Energy and Green Economy Act, 2009 ('GEA') the government of Ontario launched the Feed-in Tariff program ('FIT'), which became the first wide-scale FIT program in North America.[757] The Ontario Power Authority ('OPA') instructed the creation of the FIT Program, which aimed at delivering energy from renewable energy into grid both from commercial producers of energy and individual home owners.

The Province of Ontario would enter into contractual arrangements with producers of solar and wind energy via FIT, and micro FIT contracts. The Panel pointed out that FIT Programme had two objectives: diversify supply mix and reduce emissions; stimulate investment in renewable energy equipment manufacturing sector.[758] The Appellate Body also noted that local content requirements were conditions for entities to enter into FIT contracts and get enumerated.[759]

In the challenged FIT Program, local content requirement mandated the use of a minimum of domestic content ranging from 25% to 60% in large installations.[760]

[755] WTO Request for Consultations by Japan, *Canada – Certain Measures Affecting the Renewable Energy Generation Sector*, WT/DS512/1, submitted on 13 September 2010; WTO Request for Consultations by the European Union, *Canada – Certain Measures Affecting the Renewable Energy Generation Sector*, WT/DS512/1, submitted on 11 August 2011.

[756] Section 2.7 of the Appellate Body Report mentions arguments were made by Australia, Brazil, China, India, Norway, Saudi Arabia, Turkey and the United States.

[757] Lea Cameron, 'Feed-in Tariffs Accelerating Renewable Energy Project Development in Ontario' (Market Insights 2011), available at: https://www.marsdd.com/wp-content/uploads/2011/02/MaRSReport_FIT_Cleantech.pdf, accessed on 12 March 2018.

[758] Panel Report, *Canada – Renewable Energy*, paras. 7.216-19.

[759] WTO Appellate Body Report, *Canada – Certain Measures Affecting the Renewable Energy Generation Sector*; *Canada – Measures Relating to the Feed-In Tariff Program* (*Canada – Renewable Energy*), WT/DS412/AB/R; WT/DS426/AB/R, adopted 6 May 2013, paras. 4.20-4.21.

[760] Those levels range from 25% for wind projects over 10 kilowatts in 2009 to 2011 to 60% for solar projects over 10 kilowatts starting in 2011. For instance, if a company producing wind power wants to receive the price guarantees and grid access granted by the FIT, it needs to ensure that at least 25% of the equipment used to produce that energy, including wind turbine and other equipment, and respective services comes from Ontario.

As a whole policy package, its objectives were threefold.[761] The first objective was to support climate change initiative in North America by phasing out coal-fired electricity generation by 2014 and improve air quality. The second one was to create renewable energy industries and employment opportunities. The third one was to boost Ontario's economic activity and the development of renewable energy technology.

The effectiveness of FIT program in realizing the prescribed objectives can be reflected from its two-year review report. The FIT program was estimated to have increased the amount of renewable energy in Ontario's supply mix and assisted the plan to replace coal-fired generation, thus contributing to reducing greenhouse gas emissions and better health conditions for local people.[762] In addition, the program attracted a large amount of investment, which exceeded $20 billion and created thousands of direct and indirect job opportunities.[763] The contracted electricity generation has the potential to power 1.8 million homes each year.[764] It is worth emphasizing again that a fixed rate was paid contingent on the use of local content renewable energy equipment.

6.1.2 The Legal Complaints

In September 2010, Japan filed the litigation concerning the FIT Program adopted by the Ontario government with the WTO, requesting consultations with Canada under the WTO's Dispute Settlement System. Later in August 2011, the European Union also requested consultations with Canada of the same measures complained by Japan. Due to the failure of consultations between the two sides, the case found its way to the WTO Panel stage. With the identical measure at dispute, the Panel decided to combine the two litigations into one.

The complaining parties challenged the consistency of the FIT program adopted by the Ontario government under the GATT, the TRIMs, and the SCM Agreement, respectively. In a nutshell, Japan and the EU claimed that the measure constituted a violation of national treatment principle, as set out in Article III: 4 of the GATT and Article 2.1 of the TRIMs. The challenged measure was a trade-related investment measure with an attached requirement to use locally manufactured equipment to produce renewable energy, which discriminated foreign producers. In addition, a financial contribution made by the government was taking place to compensate the users of Canadian renewable energy equipment, which evidenced the existence of a subsidy. Given the condition of granting the subsidy was fulfilling a local content requirement, therefore, the measure constituted a prohibited subsidy in accordance to Article 3 of the SCM Agreement.

6.1.3 Legal Decisions

[761] See, Ontario Ministry of Energy, 'Feed-in Tariff Program Two-Year Review', available at: http://www.energy.gov.on.ca/en/fit-and-microfit-program/2-year-fit-review/, accessed 07 June 2017.
[762] *Ibid.*
[763] *Ibid.*
[764] *Ibid.*

In November 2012, the WTO Panel found that the challenged measures in Ontario's program violated Article III: 4 of the GATT.[765] The Panel also found that the FIT provisions violated Article 2.1 of the TRIMs as an investment measure inconsistent with GATT Article III: 4.[766] The majority of the Panel ruled that the complainants did not establish the existence of a WTO-prohibited subsidy.[767] The Appellate Body in May 2013 issued the final ruling on the case by deciding that Canada's FIT program violated the GATT and TRIMs rules.[768] The detailed analysis of the WTO rulings in this dispute will be examined in Chapters 7 and 8.

6.2 *India –Solar Cells and Modules* (DS456)

The US filed a formal challenge at the WTO DSB against India concerning certain measures relating to domestic content requirements[769] under the Jawaharla Nehru National Solar Mission ('NSM') for solar cells and solar modules.[770] The *India – Certain Measures Relating to Solar Cells and Solar Modules* (*India – Solar Cells*) was the second dispute that the WTO adjudicators addressed concerning the legality of renewable energy measures. It came amid an era featured with increasingly intensified frictions among WTO Members over the use of supportive measures in renewable energy area with implications on the international trading system.

6.2.1 Facts of Dispute

India's program, known formally as the Jawaharlal Nehru National Solar Mission was launched in 2010 with the target set initially to deploy 20,000 MW of grid connected solar power by 2022.[771] The target of 20,000 MW has been revised later to 100,000 MV by the year 2021 to 2022 under the NSM.[772] It is estimated that a sustainable domestic manufacturing industry in solar sector can save India USD 42 billion.[773] India's policy makers have attached 'strategic importance' to the domestic solar manufacturing industry.[774] According to the India's Ministry of New and Renewable Energy, 'long-term policy, large-scale deployment targets, aggressive research and development, and domestic production of the necessary raw materials and components' would together contribute to reducing the cost of solar power generation in India.[775] The stated objective of the NSM is 'to establish

[765] Panel Report, *Canada – Feed-in Tariff*, at 7.113.
[766] Panel Report, *Canada – Feed-in Tariff*, at 7.113.
[767] Panel Report, *Canada – Feed-in Tariff*, at para. 7.313.
[768] Appellate Body Report, *Canada – Feed-in Tariff*, at paras. 6.1 and 6.2.
[769] Domestic content requirements are used interchangeably with local content requirements. For the sake of clarity and consistency, this thesis adopts the phrase of local content requirements (LCRs).
[770] WTO Request for Consultations by United States, *India – Certain Measures Relating to Solar Cells and Solar and Solar Modules*, WT/DS456/20, submitted on 6 February 2013.
[771] See, 'Ministry of New and Renewable Energy - Scheme / Documents', *Government of India Ministry of New and Renewable Energy* (2012), available at: http://www.mnre.gov.in/solar-mission/jnnsm/introduction-2/, accessed on 07 July 2017.
[772] *Ibid.*
[773] KPMG, 'Solar Manufacturing in India,' (2015) Energética India, January/February 2015, at 4.
[774] *Ibid.*
[775] *Ibid.*

India as a global leader in solar energy, by creating the policy conditions for its diffusion across the country as quickly as possible.'[776]

The Panel report identified that the government of India entered into long-term power purchase agreements ('PPAs') with solar power developers.[777] A guaranteed rate for a 25-year term at which the electricity generated by the solar power developers would be brought by the central government.[778] It is the two Indian electricity regulatory commissions, the Central Electricity Regulatory Commission at the national level, and the State Electricity Regulatory Commission at each state level that determine the guaranteed rate of electricity produced under the PPAs.[779]

India's NSM adopted three successive Phases (Phase I, Phase II and Phase III), with each phase being further divided into Batches.[780] A mandatory LCR was imposed on solar power developers participating in both Phase I and Phase II of the NSM. However, the scope and coverage of the LCR measures in Phase I and Phase II differed. Under Phase I (Batch 1), it was mandatory for all projects based on crystalline silicon (c-Si) technology to use c-Si modules manufactured in India, while the use of foreign c-Si cells and foreign thin-film modules or concentrator photovoltaic ('PV') cells was permitted.[781] Under Phase I (Batch 2), it was mandatory for all projects based on C-Si technology to use c-Si cells and modules manufactured in India, while the use of domestic or foreign modules made from thin-film technologies or concentrator PV cells was permitted.[782] Under Phase II (Batch 1-A), any solar cells and modules used by the solar power developers had to be made in India, irrespective of the type of technology used.[783] The access to preferential rate of tariff for electricity and other forms of supportive schemes under the NSM has been conditioned on the use of solar equipment components made in India.

It is estimated that more than half of solar projects under the NSM relied on solar thin film technologies, which made up most of US' solar exports to India.[784] The mandatory requirement of using domestically manufactured solar thin film under the Phase II of NSM has by every means severely curtailed the exports from the US. It has become difficult for the US companies export thin film modules to India market. The US Trade Representative spokesman contended that solar exports from

[776] See, Government of India, Ministry of New and Renewable Energy, Resolution No. 5/14/2008, Jawaharlal Nehru National Solar Mission, available at: http://www.mnre.gov.in/solar-mission/jnnsm/resolution-2/, accessed on 01 July 2017.
[777] Panel Report, *India – Certain Measures Relating to Solar Cells and Solar Modules* (*India – Solar Cells*), WT/DS456/R, adopted in 22 February 2016, para. 7.2.
[778] Panel Report, *India – Solar Cells*, para. 7.2.
[779] Panel Report, *India – Solar Cells*, para. 7.2.
[780] The 11th Plan and first year of the 12th Plan (up to 2012-13) has been considered as Phase I, the remaining 4 years of the 12th Plan (2013-17) are included as Phase II, and the 13th Plan period (2017-22) is envisaged as Phase III. There will be an evaluation of progress, review of capacity and targets for subsequent phases, based on emerging cost and technology trends, both domestic and global.
[781] Panel Report, *India – Solar Cells*, para. 7.8.
[782] Panel Report, *India – Solar Cells*, para. 7.9.
[783] Panel Report, *India – Solar Cells*, para. 7.10.
[784] 'US Lodges WTO Challenge Over India Renewable Energy Incentives' Biores (13 February 2013), available at: http://www.ictsd.org/bridges-news/bridges/news/us-lodges-wto-challenge-over-india-renewable-energy-incentives, accessed on 5 December 2016.

the US to India had fallen by more than 90% due to the LCR measures used in NSM.[785] Without question, the expansion of LCR measures to cover solar thin film has worsened the already-strained trade relationship between the India and the US in renewable energy sector. As a response to LCR measures enacted during the Phase II, the US requested supplementary consultation with the India.

The NSM is set to create a policy and regulatory environment that provides a predictable incentive structure that enable large-scaled development of national solar industry. With a wider context of policy objectives, the mission also aims 'to promote ecologically sustainable growth, addressing India's energy security challenge and meet the challenges of climate change.'[786] A gradual shift from fossil fuels based economy to one based on non-fossil fuels and from reliance on non-renewable and depleting sources of energy to renewable sources of energy is called upon.[787] Considering the large amount of coal consumption in India,[788] a radical transformation away from coal-based energy consumption pattern is imperative yet challenging. While from environment perspective, the reliance on renewable energy instead of dirty fossil fuels can benefit not only India but also the world as a whole. As stressed by India, NSM will 'constitute a major contribution by India to the global effort to meet the challenges of climate change.'[789]

6.2.2 The Legal Complaints

On 6 February 2013, the United States requested consultations with India concerning certain measures of India relating to domestic content requirements under the Jawaharlal Nehru National Solar Mission for solar cells and solar modules. Later in 2014, the US requested supplementary consultations concerning certain measures of India relating to domestic content requirements under 'Phase II' of the Jawaharlal Nehru National Solar Mission for solar cells and solar modules.

The US claimed that the LCR measures for solar cells and solar modules under the NSM constituted violations of the GATT Article III: 4 and Article 2.1 of the TRIMs since these measures accorded less favorable treatment to foreign solar cells and modules than that accorded to like domestic products.[790] The conditions of competition would be modified in favor of solar cells and modules manufactured in India to the detriment of imported ones. In addition, the US included the subsidy

[785] 'US Emerges Victorious Over India in WTO Solar Panel Dispute' Daily News and Analysis (17 September 2016), available at: http://www.dnaindia.com/money/report-us-emerges-victorious-over-india-in-wto-solar-panel-dispute-2255915, accessed 16 June 2017.
[786] 'National Solar Mission' India Power Sector (30 November 2010), available at: http://indianpowersector.com/home/electricity-regulation/national-solar-mission/, accessed 5 December 2016.
[787] This shift was highlighted in the statement made by the Prime Minister of India, Dr. Manhoman Singh.
[788] India is currently the world's third largest energy consumer and this position will be consolidated over the coming years, driven by a multitude of factors. According to the World Coal Association, in 2012 45% of total primary energy demand and 72% of generated electricity demand was met by coal. India currently has approximately 205 GW of coal-fired electricity generation capacity and this will soon be augmented by 113 GW of new coal-fired capacity currently under construction.
[789] 'National Solar Mission' India Power Sector (30 November 2010), available at: http://indianpowersector.com/home/electricity-regulation/national-solar-mission/, accessed on 5 December 2016.
[790] Panel Report, *India – Solar Cells*, para. 7.39.

claims pursuant to Articles 3.1 (b), 3.2, 5(c), 6.3(a), 6.3(c) and 25 of SCM Agreement in its first consultation request, but withdrew them in the second consultation request.[791] The absence of subsidy claims is nothing but coincidental, which would be touched upon in following chapter.

6.2.3 Legal Decisions

The Appellate Body in this dispute upheld the findings of the Panel, having established that local content requirements for solar cells and modules as a prerequisite for the sale of electricity to the government, constituted violation of the GATT Article III: 4 and the TRIMs Agreement.[792] The details of the dispute decisions and critical analysis would be given in Chapter 8.

6.3 *China–Wind Power Equipment* (DS419)

The United States initiated the WTO dispute against China's Special Fund for Industrialization of Wind Power Equipment.[793] The disputed fund provided grants to Chinese wind turbine manufacturers that used locally produced input rather than foreign imports.[794] According to the United States Trade Representative ('USTR'), individual grants ranged from US 6 millions to 22 million, with hundreds of millions more being spent since the inception of the programme in 2008.[795] These measures, as indicated by the US would be inconsistent with Article 3 of the SCM Agreement since they amounted to illegal subsidies for China's production of wind power equipment. Moreover, the US alleged that China had not notified the WTO of the wind power equipment subsidies, which resulted in inadequate transparency.[796] This gave rise to an violation of Article XVI: 1 of the GATT 1994 and Article 25 of the SCM Agreement, as claimed by the US.[797]

This dispute ended in an amicable way during the consultation stage with China's commitment to eliminating local content requirements in wind manufacturing in February 2011.[798] However, it reflects the increasingly intensified competition among WTO Member States in wind power area. China replaced the US as the country with the highest installed wind energy capacity in 2010, which added to the

[791] See, Marc Benitah, 'India-Solar Cells: The Strange Absence of The SCM in the US Claim' in International Economic Law and Policy Blog, available at: http://worldtradelaw.typepad.com/ielpblog/2016/02/india-solar-cells.html, accessed on 27 December 2016

[792] See, India – Solar Cells Case Summary, available at: https://www.wto.org/english/tratop_e/dispu_e/cases_e/1pagesum_e/ds456sum_e.pdf.

[793] This dispute arose out of an investigation initiated in response to a petition filed by the United Steelworks (USW) under Section 301 of the Trade Act of 1974.

[794] WTO Request for Consultations by the United States, *China- Measures Concerning Wind Power Equipment*, WT/DS419/1, submitted on 22 December 2010.

[795] USTR, 'China Ends Wind Power Equipment Subsidies Challenged by the United States in WTO Dispute', available at: https://ustr.gov/about-us/policy-offices/press-office/press-releases/2011/june/china-ends-wind-power-equipment-subsidies-challenged, accessed on 01 June 2017.

[796] *Ibid.*

[797] WTO Request for Consultations by the United States, *China - Measures Concerning Wind Power Equipment*, WT/DS419/1, submitted on 22 December 2010.

[798] ICTSD, 'US Proclaims Victory in Wind Power Case; China Ends Challenged Subsidies' (June 2011), available at: https://www.ictsd.org/bridges-news/bridges/news/us-proclaims-victory-in-wind-power-case-china-ends-challenged-subsidies, accessed on 12 December 2017.

US anxiety concerning its economy in generating more jobs and addressing unemployment problem.[799] This explains why the US decided to initiate dispute against China's wind power supportive measures via the WTO Dispute Settlement System.

Since this dispute was resolved without a dispute settlement panel, no judicial decisions had been made in assessing the facts of disputes. It is, indeed a missed opportunity to test the scope of policy space under the WTO regime for Member States to support domestic renewable energy development. Nevertheless, it is still worth reflecting on whether challenged measures as localization requirements imposed in renewable energy area can possibly be exempt from being WTO-inconsistent. If so, the following question is what provisions can be invoked successfully to justify such deviation from the WTO obligations.

Howse commented on this dispute by arguing the challenged measures could be justified by means of the WTO general exceptions in the GATT 1994.[800] As a first step, it is necessary to examine the distinct circumstances that China is facing. China isnot only a developing country with limited possibility for technology transfer but also exceptionally great demands for renewable energy as well as the life and death environmental situation needs.[801] In this vein, all of these constitute good grounds for China to take measures to ensure it has 'an adequate domestic industry' in renewable energy area.[802] Howse seems to suggest that China's unique situation, which urgently calls for domestic renewable energy development can take precedence over trade obligations such as non-discrimination. However, if China could make use of its distinct circumstances as valid justifications, what about other Member States, such as India, which shares similar imperatives with China? Should India's own national circumstances also be prioritized over the WTO obligations?

In the early stage of discussion, China claimed that the measures were compatible with the WTO rules as they would be 'beneficial to resource conservation and environmental protection and contribute to overcome the climate change and global warming.'[803] The focus of China's counterarguments on the benefits that these measures could possibly bring to climate regime indicates the increasingly intertwined trade regime and climate regime. Meanwhile, the US also made subsidy claims. It would have given the WTO Dispute Settlement Body an opportunity to touch upon the perplexity whether subsidies designed for environmental objectives, such as climate change mitigation can be justified under the SCM Agreement.[804]

6.4 *EU–Renewable Energy Generation Sector* (DS 452)

China brought a challenge against the EU and certain members (Italy and Greece) concerning domestic content requirements attached in FIT Programs that affected

[799] Doug Palmer and Leonora Walet, 'China Agrees to Halt Subsidies to Wind Power Firms' (Reuters, 2011), available at: http://www.reuters.com/article/us-china-windpower-idUSTRE7561B920110607, accessed on 12 June 2017.
[800] See Robert Howse's speech given on 30 March 2011, at the expert panel 'Climate Change, China and the WTO', Columbia University Law School, New York.
[801] *Ibid.*
[802] *Ibid.*
[803] Asmelash (n 753), at 277.
[804] *Ibid.*

the renewable energy generation sector.[805] These measures were enacted under the powers delegated to EU Member States by Directive 2009/28/EC of the European Parliament and of the Council.[806] China alleged that the various measures were unfair trade practices in the solar sector since only electricity produced by EU-made solar components benefited from favorable feed-in tariffs in some countries, which hurt the interests of Chinese manufacturers.[807] Along with citing the Articles I, III: 1, III: 4 and III: 5 of the GATT 1994 and Articles 2.1 and 2.2 of the TRIMs Agreement, China also claimed these measures at issue were inconsistent with Articles 3.1(b) and 3.2 of the SCM Agreement.[808]

This case was similar to an earlier WTO dispute, *Canada – Renewable energy* in light of challenged measures and allegations made by the complainant, but it has not yet proceeded beyond consultation stage. It remains to be seen how these renewable energy measures be dealt with by the WTO. What becomes clear is in the wake of WTO rulings against Ontario's FIT programme in *Canada – Renewable Energy*, more disputes concerning the use of local content requirements are likely to be challenged before the WTO in following years. Given that WTO judicial decisions can have *de facto* precedential effects, the possibility for the challenged EU FIT program to avoid being WTO-inconsistent is not likely to be positive. However, this dispute still represents as a good opportunity for the WTO to define the scope of policy discretion that Member States can have in designing trade measures out of concerns for environment protection.

6.5 *United States –Renewable Energy Sector* (DS 510)

It seems that 'tit-for-tat' trade disputes are at the heart of mercantile trading regime.[809] Soon after India lost a case brought by the United States concerning the LCR measures in India's National Solar Mission, India initiated another WTO lawsuit against the US regarding its government programmes that protected domestic renewable energy manufacturers.[810] This dispute also marks the latest development in a long-running debate over how to design and enact supportive policy measures for the development of renewable energy without running afoul of the WTO rules.[811]

[805] WTO Request for Consultations by China, *European Union and Certain Member States –Certain Measures Affecting the Renewable Energy Generation Sector*, WT/DS452/1, submitted on 5 November 2012.
[806] *Ibid.*
[807] ICTSD, 'China Launched Solar Case against EU at WTO' (Bridges, 2012), available at: http://www.ictsd.org/bridges-news/bridges/news/china-launches-solar-case-against-eu-at-wto, accessed 17 June 2017.
[808] *Ibid.*
[809] Ravi Kanth Devarakonda, 'India Challenges WTO Ruling Against Solar Technology Development' (The Wire, 2016), available at: https://thewire.in/39217/india-challenges-wto-ruling-against-solar-technology-development, accessed on 07 July 2017.
[810] WTO Request for Consultations by India, the *United States – Certain Measures Relating to the Renewable Energy Sector*, WT/DS510/1, submitted on 19 September 2016. The eight US states include Washington, California, Montana, Massachusetts, Connecticut, Michigan, Delaware and Minnesota.
[811] ICTSD, 'India Files WTO Challenge against US State Programmes for Renewable Energy' (Bridges, 2016), available at: http://www.ictsd.org/bridges-news/bridges/news/india-files-wto-challenge-against-us-state-programmes-for-renewable-energy, accessed on 02 July 2017.

India alleged that the measures unfairly provided less favorable treatment to imported products than domestically manufactured ones by means of localization requirements. India brought claims by referring to Article III: 4 and Article XVI: 1 of the GATT 1994, Article 2.1 of the TRIMs Agreement, Articles 3.1 (b), 3.2, 5(a), 5(c), 6.3(a), 6.3 (c) and Article 25 of the SCM Agreement as well as Article XVI: 4 of the Marrakesh Agreement.[812]

What makes this dispute intriguing is because the US recently complained about India enacting the same measures at the WTO Dispute Settlement System and was ruled to win. To what extent the judicial decisions made in *India – Solar cells* would be applied in the current dispute would be of interest. If the WTO adjudication bodies in this dispute would show full deference to the decisions made in *India – Solar cells* and *Canada – Renewable Energy*, the challenged measures would be ruled as violating non-discrimination obligations. India also made claim under the SCM Agreement, which US withdrew in prior case, it remains to be seen how the WTO adjudication bodies conduct subsidy analysis of renewable energy measures.

6.6 Conclusion

This chapter provided an overview of all the disputes that have been brought to the WTO Dispute Settlement Body concerning the legality of supportive renewable energy measures. The WTO has become an important international forum to tackle complaints concerning the interface of trade rules and climate-related interests, although climate change litigation can possibly be made in other international venues. Nevertheless, this provides the WTO a great opportunity to balance interests from trade and non-trade areas.

The treaty provisions, coupled with relevant case law help to clarify how the WTO rules react to renewable energy measures that may be conducive for climate protection objectives. In spite of the slow progress within the current Doha Round of negotiations, the WTO still represents as a highly effective international organization because of its strong Dispute Settlement System. It is critically important to analyze these judicial decisions that have been made by the WTO adjudication bodies with respect to the legitimacy of trade related renewable energy measures.

The interpretations made by the Panel and the Appellate Body *in Canada – Renewable Energy* and *India – Solar Cells* can shed light on the scope of policy space that the Members have in designing and enacting renewable energy measures. However, judicial decisions made in the two disputes are not short of unresolved problems, particularly in the *Canada – Renewable Energy*. It also, from another perspective reflects the need to make amendment to current WTO rules that are relevant in determining the legitimacy of climate related measures, especially these concerning the development of renewable energy. With the prospect of a formal and fundamental change to the WTO rules being dim, the task of accommodating trade interests and non-trade ones mainly lies on the shoulder of the WTO judges. It presents a challenge as well as an opportunity for future case law to address the conflicts between trade regime and climate regime.

[812] *Ibid.*

Whether the WTO regime can accommodate climate-related interests that are reflected in various forms of renewable energy measures needs close examination. The scope of policy space for renewable energy measures that aim at climate change mitigation objectives need to be analyzed on a case-by-case basis. It depends, mostly if not entirely on what manner the trade-related renewable energy measure is designed and enacted in practice as decisive factor in assessing its consistency. The policy driver of renewable energy measures, in many cases can be the mitigation of climate change is apparently relevant for justifying the violations of WTO obligations, but may not predetermine that result.[813] Some renewable energy measures would contribute to climate change mitigation in a trivial extent yet still largely restrict international trade.. Protecting domestic industry under the disguise of addressing climate change is one of the most common forms of trade protectionism in renewable energy sector. This will not only fail to achieve the goal of climate change mitigation but also undermines trade obligations.

The reaction of the WTO regime to climate interests should be assessed not only by the policy space that the WTO offers for trade-related renewable energy measures that make contribution to climate change mitigation but also the detection of measures that fail to mitigate climate change yet obstruct international trade. The latter of which has been traditionally ignored as an important effort that the trade regime can make to the benefit of climate interests as well as trade ones. This work proposes to give due appraisal to the role that WTO rules as well as its adjudication bodes have played in subjecting trade distorting renewable energy measures under the disguise of climate change mitigation to stringent trade discipline. The obstacles to the expansion of renewable energy technologies and the reduction of renewable energy price thus, would be removed. While it remains more difficult to assess the WTO consistency of less trade restrictive renewable energy measures which could contribute to climate protection objectives. How to weigh and balance climate-related benefits and trade-related restrictions that these measures can possibly manifest via the WTO regime remains to be examined.

[813] Francesco Sindico, 'National Measures and WTO Consistency – Border Measures and Other Instruments to Prevent Carbon Leakage and Level the Carbon Playing Field' in Kevin R. Gray, Richard Tarasofsky, Cinnamon Carlarne (eds) *The Oxford Handbook of International Climate Change Law* (Oxford University Press 2016), at 319.

Chapter 7: De-carbonization and the WTO Rules

This chapter aims to elaborate on how the WTO rules react to trade-related measures taken primarily for the objective of de-carbonization and thus, maps out the scope of policy space that the WTO Member have in developing renewable energy so as to de-carbonize the economy. As discussed in Chapter Three, one of the widely used de-carbonization measures is feed-in tariff adopted to support renewable energy sourced electricity. It is analytically important to examine the consistency of FITs with the WTO rules. Since FITs and other forms of de-carbonization measures are designed to primarily aim at expanding renewable energy sourced electricity, the main concern occurs with respect to the discipline the WTO subsidy rules. To put it differently, whether the design and implementation of de-carbonization measures could pass the scrutiny of subsidy rules becomes a crucial point.

It is apparent that the WTO subsidy law does not object to subsidies in themselves, as discussed in Chapter Four. Subsidies are subjected to objection only when they cause some form of restrictive impacts on trading system, as defined in the SCM Agreement. In the light of it, assessing the trade effects that de-carbonization measures would create becomes a necessity in this part.

Canada – Renewable Energy represents the first dispute involving the adjudication of de-carbonization measure adopted in renewable energy area. The way the adjudication bodies applied the WTO subsidy rules in assessing the facts and legal claims in this dispute is indicative of the policy space for feed-in tariffs and other de-carbonization measures. It is fair to say that the decisions could be impactful on future jurisprudence. Moreover, it sheds light on how the Members should design de-carbonization measures in various forms without running afoul of the WTO law. Therefore, it is not only the legal outcome of *Canada – Renewable Energy* but also the l reasoning that the Panel and the Appellate Body developed that merits close attention.

The first part of this chapter maps out the Panel and the Appellate Body's rulings made in *Canada – Renewable Energy* with respect to subsidy claims. The following part analytically reflects on the decisions and their implications on future jurisprudence as well as the Members' policy making with respect to de-carbonization. The last part analyzes whether the scope of policy space under the SCM Agreement is sufficient for de-carbonization measures and possible options on improving the mutual supportiveness between the WTO subsidy rules and climate-related objectives.

7.1 Feed-in Tariffs in *Canada – Renewable Energy*

As the first landmark dispute concerning the use of renewable energy supportive policy measures, *Canada – Renewable Energy* presented a number of highly controversial issues that both the Panel and the Appellate Body went great length in dealing with. Although the Panel and the Appellate Body reached the same ruling as to the legal status of challenged measures under the SCM Agreement, they disagreed on a few important analytical points. Therefore, it is useful to reflect on the split between the Panel and the Appellate Body.

The complainants in the present dispute claimed that the Ontario FIT contracts with minimum required domestic content level attached violated the SCM Agreement Article 3.1 (b) and should be considered as prohibited subsidy.[814] As discussed in Chapter Five, the first step in subsidy analysis is to find out whether the challenged measure falls into the ambit of subsidy. If the challenged measure were not deemed as a subsidy at the first place, it would not be subject to subsidy rules. The SCM Agreement defines a subsidy as requiring the two prongs of a financial contribution or any form of income or price support from the government and a benefit conferred to a recipient.[815] Therefore, it is a prerequisite to examine whether the challenged measure constituted a 'financial contribution' or 'income or price support'.

7.1.1 The Determination of 'A Financial Contribution'

The Panel started by examining whether the complainants have established that the challenged measures constituted a 'financial contribution' and/or 'income or price support'. The Panel found that Ontario FIT Program amounted to a financial contribution in the form of government purchases of goods under the terms of Article 1.1 (a)(1)(iii) of the SCM Agreement.[816]

Japan argued that the FIT Programme also constituted a 'direct transfer of funds' or a 'potential direct transfer of funds' under the definition of a financial contribution. However, the Panel rejected this argument by stating that a purchase of goods could not simultaneously be a 'transfer of funds'.[817] In the light of the Panel's reasoning, the same measure could not constitute more than one forms of financial contribution under Article 1.1(a)(1) of the SCM Agreement. The measure being ruled as 'purchases of goods' rules out the possibility that it could also been deemed as 'transfer of funds' under the category of 'a financial contribution'.

In exercising judicial economy, the Panel did not answer whether the FIT Programme constituted 'income or price support' as argued by Japan. [818] As an alterative to 'a financial contribution', 'income or price support' is another important constituent of the WTO subsidy definition. However, the Panel did not seize the opportunity to develop the law by interpreting the phrase 'income or price support' with clarity.

The Appellate Body upheld the Panel's ruling that the FIT contracts manifested government purchase of goods, and therefore, met the definition of 'a financial contribution'.[819] However, the Appellate Body rejected the Panel's reasoning that a measure cannot be covered by more than one paragraphs of the definition of financial contribution as 'moot and of no legal effect'.[820] Because the meaning of 'a

[814] Panel Report, *Canada-Renewable Energy*, at pages 5 and 6.
[815] A detailed analysis of subsidy definition is in Chapter 5.3.
[816] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.110-5.113.
[817] Panel Report, *Canada-Renewable Energy*, paras. 7.245-7.246.
[818] Panel Report, *Canada-Renewable Energy*, para. 7.249.
[819] Appellate Body Report, *Canada-Renewable Energy*, para. 5.128.
[820] Appellate Body Report, *Canada-Renewable Energy*, para. 5.121.

financial contribution' does not explicitly exclude that a transaction could be covered by more than one paragraphs of the definition.[821]

Nevertheless, the Appellate Body did not agree with Japan that the challenged measure could also be defined as 'a direct transfer or a potential transfer of funds.'[822] The classification of the measure under Article 1.1(a) of the SCM Agreement, in Appellate Body's understanding 'may have implications for the manner in which the assessment of whether a benefit is conferred is to be conducted.'[823] Put differently, the existence and the calculation of 'benefit' depends on the way in which the challenged measure was characterized under Article 1.1(a)(i). If the FIT were defined as a 'transfer of funds' or 'income or price support' from the Ontario government, it would be easier to prove the existence of benefit. As a consequence, the finding of benefit would have been almost 'automatic'.[824]

It is not the aim of this part to second-guess the underlying reason why the Panel and the Appellate Body chose to categorize the FIT Programme as 'government purchases' instead of 'transfer of funds' or 'income or price support'. The characterization of FIT put forward by both the Panel and the Appellate Body, intentionally or unintentionally, had the effect of sheltering the challenged measure from being deemed as subsidy within the meaning of SCM Agreement.

'A financial contribution' is by itself a broad concept that can cover a wide range of government measures adopted to incentivize renewable energy development and de-carbonize the economy. The role the interpretation of this term plays in deciding the scope of renewable energy policy measures that would be subjected to subsidy rules should not be underestimated. With a broad interpretation in place, the coverage of 'a financial contribution' would be expanded. While if the adjudicators adopt a narrow interpretation, more renewable energy supportive policy measures would be given a 'free pass' under the SCM Agreement.

To conclude, the interpretative approach of 'a financial contribution' adopted in *Canada – Renewable Energy* saved the FIT Programme from falling into more than one paragraphs of Article 1.1 of the SCM Agreement. This interpretative approach reduced the possibility of the challenged measure being found to confer a benefit. However, it remains unclear whether FIT or other forms of pricing support mechanisms in renewable energy sector would still be ruled as 'purchases of goods' instead of 'income or price support' or 'transfer of funds'. There is still possibility that FIT would be ruled as 'price support' by adjudicators in future disputes. In that case, the next step in analyzing whether there would be benefit conferred by the measure seems to be easier to prove.

7.1.2 The Determination of 'Benefit'

If a government support measure qualifies as a financial contribution, the next step is to examine whether the financial contribution conferred a benefit to a recipient

[821] *Ibid.*
[822] *Ibid.*
[823] Appellate Body Report, *Canada – Renewable Energy*, para. 5.130.
[824] Charnovitz and Fischer (n 92), at 202.

within the meaning of Article 1.1(b) of the SCM Agreement. The objective of benefit analysis is to capture those measures that have trade-distorting effects. This requires an assessment of the measure's effect on the recipient, which became the crux of legal analysis in *Canada – Renewable Energy* and gave rise to heated debate. As noted in the Chapter five, the SCM Agreement was not drafted to provide a clear definition of 'benefit'. To map out the parameters of benefit has been left to the adjudicators when taking into consideration the facts in specific subsidy disputes.

The complainants raised two arguments for the existence of a benefit.[825] Firstly, they contended that the FIT price exceeded various wholesale electricity market price benchmarks, either inside or outside Ontario. Secondly, they noted that the very nature and objectives of the FIT Programme was to facilitate private investment in renewable sourced electricity generation, which the market otherwise would have not provided. This exactly evidenced the existence of a benefit. Hence the wholesale market price was perceived as the appropriate benchmark price for the benefit analysis. While Canada, on the defending position argued that, in the light of FIT's objective of encouraging renewable energy, the benchmark price should be the market for electricity produced from wind and solar PV generation technologies.[826]The determination of 'benefit' normally requires the interaction between legal analysis and economic analysis.[827]

The matter of identifying the existence of benefit turned out to be highly controversial that a split occurred during the Panel stage. The Panel majority leaned towards the argument raised by Canada, which denied the existence of benefit. While the dissenting panelist argued for the opposite side that a benefit was conferred out of the FIT Programme. Therefore, it is analytically useful to examine the decisions made by the Panel majority and the dissenting Panelist and to critically reflect on their divergent opinions.

The Panel majority decided that the wholesale electricity market price proposed by the complainants couldn't be used as benchmark price.[828] Because it would be rare that generators could be remunerated in a competitive wholesale electricity market so as to secure a reliable electricity system or fulfill other fundamentally important objectives such as protection of human health and environment.[829]

The Panel majority underscored that the electricity market was created by comprehensive government interventions with an aim to secure an electricity supply from different technologies.[830] This kind of supply could be 'safe, reliable and sustainable in the long term' and contribute to 'the smooth functioning of all modern economies'.[831]

[825] Panel Report, *Canada-Renewable Energy*, paras 7.250-7.258.
[826] Panel Report, *Canada-Renewable Energy*, para. 7.22.
[827] Rubini (n 90), at 904.
[828] Panel Report, *Canada-Renewable Energy*, para. 7.309.
[829] Panel Report, *Canada-Renewable Energy*, para. 7.309.
[830] Panel Report, *Canada-Renewable Energy*, paras. 7.279 and 7.284.
[831] Panel Report, *Canada-Renewable Energy*, paras. 7.279 and 7.284.

The Panel majority went on to elaborate on how to identify an appropriate market benchmark in order to make a comparison with Ontario market.[832] The Panel majority pointed out the impossibility of identifying a competitive energy market in Ontario since no competitive market would even hypothetically attract the type of supply of energy.[833] In the Panel majority's view, the existence of a subsidy should be assessed with consideration of its economic and policy justifications. The Ontario government's decisions of supply-mix created a market that otherwise would not have existed.[834] Therefore, the Panel majority rejected various benchmarks put forward by Japan and the EU.

However, the dissenting panelist argued that the FIT contracts conferred a benefit due to the very nature and objective of the FIT Programme, which could also be evidenced by comparing the FIT prices with a competitive wholesale price for electricity that could exist in Ontario.[835] The FIT Programme introduced 'the high-cost and less efficient energy producers into the wholesale electricity market, when they would otherwise not be present.'[836] This means that the difference in production costs from competing producers on the market can be considered as evidence of the presence of subsidization. By making an uncompetitive good competitive with existing goods on the market, the government's financial contribution constituted a subsidy. The dissenting panelist seems to be not convinced that the fact of a market not being perfect in its operation or cannot meet the objectives that a government might have could shield financial contributions which take place in the market from the benefit analysis.[837]

It is clear that unlike the majority panelists, the dissenting one chose to use a counterfactual method to prove the existence of benefit, which was more straightforward and consistent with prior case law. The case law is supportive of a 'but for' approach, which identifies the marketplace as the relevance focus of a benefit analysis, regardless of its particular characteristics or imperfections.[838] While the divergent rulings made by the Panel majority and the dissenting panelist also reflects the controversy of subsidy issue in the present dispute.

The Appellate Body differed from both the Panel majority and the dissenting panelist in defining what constituted a relevant market benchmark in the present dispute. At first, the Appellate Body reasoned that the appropriate legal standard for a benefit was whether the FIT recipient had received the financial contribution on terms more favorable than those available to the recipient in the market.[839] The question became whether the FIT contracts provided more than 'adequate remuneration' to generators of renewable electricity in Ontario, who were recipients under the FIT contracts.[840] In other words, the dividing line for FITs in the present dispute was whether the remuneration was adequate or not. However, the criteria to determine the adequacy of the level in terms of remuneration were

[832] Panel Report, *Canada-Renewable Energy*, para. 7.322.
[833] Panel Report, *Canada-Renewable Energy*, para. 7.309.
[834] Panel Report, *Canada-Renewable Energy*, para. 7.309.
[835] Panel Report, *Canada-Renewable Energy*, paras. 9.10-9.16.
[836] Panel Report, *Canada-Renewable Energy*, para. 9.23.
[837] Panel Report, *Canada-Renewable Energy*, para. 9.6.
[838] Panel Report, *Canada-Renewable Energy*, para. 9.6.
[839] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.193.
[840] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.194-5.196.

not explicated stated. Even so, the Appellate Body rejected the complainants' argument that the lucrative payment made by the Ontario government to the solar and wind power electricity generators provided a benefit.[841]

The Appellate Body reversed the Panel majority's analytical point in how to identify a suitable market benchmark.[842] The Panel erred in considering the wholesale market for all electricity from any sources as the relevant market benchmark.[843] In the view of the Appellate Body, the electricity market should be divided into two different segments, one of which was electricity sourced from conventional energy and the other from renewable energy.[844] The relevant benchmark market therefore, was electricity produced from wind and solar sources. The Panel's definition of an appropriate market benchmark, which was a wholesale electricity market for benefit determination, was erroneous and overturned by the Appellate Body. The dissenting panelist's ruling did not take into account concrete benchmarks against which the existence of the benefit could be evaluated, therefore, the Appellate Body did not agree with and chose a more complicated selection of price comparison.

It is of particular interest to assess the definition of an appropriate market benchmark. The market for analysis, in the Panel's view, had to be determined by supply and demand factors, and not by means of government intervention.[845] The Appellate Body agreed with the Panel that there was a high degree of substitutability between conventional and renewable energy from demand-side analysis, namely the perspective of consumers.[846]

However, the Appellate Body pointed out that the Panel prioritized too much on the preferences of final consumers while ignoring the role of government's interventions. The Appellate Body decided to sufficiently consider supply and demand side factors that were specific to the Ontario market.[847] The significance of supply-side factors in determining relevant market was underscored in the Appellate Body report. This led to the finding that electricity generated from renewable energy cannot compete with electricity generated from conventional sources in this case.[848] This was because renewable energy and conventional energy would have different cost structures and operating costs and characteristics,[849] which should be accounted in determining relevant market. Differences in production costs indicate that the two products: renewable energy sourced electricity and fossil fuel sourced electricity cannot compete in the same market.

In light of the specific circumstances of the Ontario electricity market, the Appellate Body held that the market for renewable energy sourced electricity can come into existence only because of government regulation, particularly the government's choice of the appropriate supply mix of electricity generation

[841] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.194-5.196.
[842] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.219.
[843] Panel Reports, *Canada–Renewable Energy*, para. 7.318
[844] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.176.
[845] Panel Report, *Canada–Renewable Energy*, para. 7.275.
[846] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.170.
[847] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.177.
[848] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.214.
[849] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.174.

technologies.[850] A government may choose the supply-mix by setting administered prices for technologies or request distributors to buy part of their requirements of electricity from certain generation technologies.[851] Furthermore, the Appellate Body added, 'the definition of a certain supply-mix by the government cannot in and of itself be considered as conferring a benefit within the meaning of Article 1.1 (b) of the SCM Agreement.'[852] However, the Appellate Body did not provide any reason to explain this reasoning. The finding that relevant market for determining the existence of a benefit was not the competitive wholesale market but rather the markets for wind and solar generated electricity became the cornerstone of the Appellate Body's disagreement with the Panel.[853] The Appellate Body questioned whether wind and solar electricity generators would have entered the renewable electricity market without the FIT Programme instead of the blended electricity wholesale market. The Appellate Body provided the reasoning:[854]

'Nevertheless, while introducing legitimate policy considerations into the determination of benefit cannot be reconciled with Article 1.1(b) of the SCM Agreement, we do not think that a market-based approach to benefit benchmarks excludes taking into account situations where governments intervene to create markets that would otherwise not exist. For example, governments create electricity markets with constant and reliable supply. By regulating the quantity and the type of electricity that is supplied through the network (base-load, intermediate-load, or peak-load) and the timing of such supply, governments ensure that there is a continuous supply-demand balance between generators and consumers, thus avoiding imbalances that would destabilize the network and cause interruptions of power supply. Although this type of intervention has an effect on market prices, as opposed to a situation where prices are determined by unconstrained forces of supply and demand, it does not exclude per se treating the resulting prices as market prices for the purposes of a benefit analysis under Article 1.1(b) of the SCM Agreement. In fact, in the absence of such government intervention, there could not be a market with a constant and reliable supply of electricity.'

In response to the Panel majority's decision that the pursued objective needed to be accounted to define the relevant market, the Appellate Body seems to suggest that the presence of legitimate policy objectives was not necessary.[855] Then, the Appellate Body elaborated on the distinction between creating a new market and intervening in an established market.[856] Creating a new market cannot be deemed as market distorting because the market would not exist without government's creation.[857] In this vein, creation of a market 'does not in and of itself give rise to subsidies'.[858]

The Appellate Body found that the Province of Ontario was 'establishing' a new market through FIT programme, which was different from intervening in an

[850] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.175.
[851] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.175.
[852] *Ibid.*
[853] Cosbey and Mavroidis (n 94), at 21.
[854] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.185.
[855] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.185.
[856] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.188.
[857] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.188.
[858] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.188.

existing market. It was also erroneous to use an established market as relevant benchmark for benefit test in this case. The application of the traditional market benchmark would lead to false positive findings that the creation of markets by a government would in and of itself give rise to subsidies. The Appellate Body underscored the legitimate policy considerations for providing support to renewable energy in the case.[859] The Appellate Body acknowledged the positive externalities of renewable energy electricity, such as long-term supply stability and solution to environmental problems and the negative externalities associated with fossil fuel electricity.[860] Therefore, a government definition of energy supply mix can justify governmental intervention.

Therefore, the Appellate Body ruled that a benchmark had to be found in a market created by the very same government's financial contributions as these used in Ontario market. In other words, a competitive renewable energy market, which had characteristics sufficiently similar to those in Ontario market, could qualify as an appropriate benchmark in determining the existence of benefit.[861] The average price of electricity generated from all sources was not appropriate as benchmark since this would mistakenly treat all electricity markets as the same.[862] The fact that the Ontario government defined the energy supply mix by creating markets for wind and solar generated electricity should be taken into consideration.[863] This was the market created by the government so that the supported products could be competitive with products that had already existed. If the wind and solar electricity generators would have entered the renewable electricity market given those targets as established by the Government of Ontario in the absence of the FIT Programme, a benefit was conferred. The reality in the Ontario electricity market testified to the impossibility that renewable electricity generators could enter the market without government support.

The Appellate Body also rejected the benchmarks submitted by complainants from out of province electricity markets.[864] There is no doubt that identifying an appropriate market benchmark as defined by the Appellate Body would be much more difficult than finding a benchmark price in existing Ontario wholesale market. Such a benchmark should first be sought within the solar and wind electricity market in Ontario and in the case when the benchmark was not available, an appropriate benchmark outside Ontario or a proxy may be considered as an alternative.[865] The Appellate Body declared that due to the shortage of evidence and factual findings on the Panel record that it was impossible to properly determine whether the price-setting methodology under the challenged FIT Programme yielded 'more than adequate remuneration'.[866] Nevertheless, the Appellate Body offered guidance on how to establish that FITs confer a benefit in future cases, for instance, by looking at in-country price benchmarks; or adjusted out-of-country price benchmarks; or proxy construction.[867]

[859] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.189.
[860] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.189.
[861] Cosbey and Mavroidis (n 94), at 22.
[862] Appellate Body Report, *Canada-Renewable Energy*, paras. 5.204.
[863] *Ibid*, para. 5.190.
[864] *Ibid*, para. 5.193.
[865] *Ibid*, para. 5.227.
[866] *Ibid*, para. 5.234.
[867] *Ibid*, para. 5.227.

This interpretation of market benchmark shows that the narrower the market is, the more targeted the benchmark for the benefit comparison is, and more difficult it is to find the existence of a benefit. On the contrary, had the 'competitive wholesale electricity market' been defined as the relevant market, there would have been little doubt that the challenged FIT programme conferred a benefit and constituted subsidy within the meaning of the SCM Agreement. Because the measure provided producers of wind and solar electricity with rates higher than the wholesale market rate for electricity in Ontario. These producers would not have existed if left to operate under market conditions without government intervention. In the case when the FIT programme was held to be a subsidy, it would have been prohibited as an illegal import-substitution subsidy because the guaranteed rate for wind and solar generated electricity was made conditional upon sourcing a certain percentage of locally manufactured renewable energy generation equipment.

The third definitional element of subsidy is specificity, according to Article 2 of the SCM Agreement. Because the adjudicators cannot complete the benefit test in the present case, there was no need to examine whether the FIT programme satisfied the specificity requirement.

To sum up, both the Panel and the Appellate Body reached the conclusion that it was not possible to determine whether the Ontario FIT programme constituted a subsidy as claimed by the complainants.[868] If the FIT Programme were found to be a subsidy, it would be subjected to an outright prohibition since it included the local content requirements. The undefined status of FITs under the SCM Agreement represents a big puzzle that the WTO adjudicators in future cases might have to deal with.

Compared with the policy-oriented reasoning adopted by the Panel in identifying market benchmark, the Appellate Body relied on 'more objective and economic-based criteria'.[869] In Rubini's view, this represents merely a fine-tuning exercise since the approach and the result appeared to be identical.[870] The following parts develop analytical discussions on the decisions made by the Panel and the Appellate Body.

7.2 Critical Analysis of the Panel and the Appellate Body Reports

The decisions made by the Panel and particularly, the Appellate Body in the present case would create a number of important implications on both the WTO's regulation of subsidies and how the Members design and implement supportive measures in renewable energy area. It is critically important to reflect on a number of questions inspired from the jurisprudence: what are the implications of the decisions on future jurisprudence? Is there policy space under the SCM Agreement for the Members' action to support renewable energy electricity and de-carbonize the economy? How large is the scope of the policy space? Can the SCM Agreement accommodate the need for de-carbonization? If not, what are the possible changes that can be made to the current subsidy rules?

[868] Appellate Body Report, *Canada-Renewable Energy*, para. 5.246.
[869] Rubini (n 90), at 924.
[870] *Ibid.*

The following part delves into the implications of the decisions from two perspectives. The first is to explore how the decisions implicate the understanding and application of certain subsidy rules. It is a good opportunity for the Appellate Body to clarify constituent elements of the subsidy definition and develop the law. The 'incompleteness' of the SCM Agreement could be addressed partly through jurisprudence. There is even likelihood that some key interpretations in the Appellate Body Report would be incorporated in new subsidy provisions if the Members initiate multilateral trade negotiation on subsidy agreement.[871] The second is to touch upon the potential ramifications that the decisions have on the use of renewable energy supportive policy measures to de-carbonize economy and mitigate climate change. The implications of the decisions will not be confined to the specific dispute but have the potential to influence future dispute resolution in renewable energy area. Governments need to be aware that the manner in which they use FITs and other de-carbonization policy measures will affect their vulnerability to claims under the SCM Agreement. The signal sent from the dispute resolution is of particular importance to policymakers in governments.

7.2.1 Assessing the Panel and the Appellate Body Decisions

The subsidy claims raised by disputing parties in *Canada – Renewable Energy* turned out to be highly controversial that both the Panel and the Appellate Body went through great length to address. It is not only the final outcome of the dispute but also the way the Panel and the Appellate Body made the reasoning that should be carefully examined. The implications of the legal decisions tend to be far-reaching and multifold, which requires a holistic view.

7.2.1.1 The Implications of the Legal Decisions on the Application of Subsidy Rules

The Panel and the Appellate Body engaged in a number of novel interpretative approaches in addressing subsidy issues. The Panel and the Appellate Body only addressed the question of whether a given form of renewable energy support was or not subject to the WTO subsidy rules. The subsequent question of whether such a measure is or not consistent with the WTO subsidy rules has been left open. This part assesses the innovative interpretations and discusses how they implicate the application of subsidy rules in future jurisprudence.

The most contentious part of subsidy analysis in the present dispute was how to determine the existence of 'benefit' conferred by the challenged measure. Rubini criticizes the approach adopted by the Panel majority as 'fundamentally wrong' because justifications of the subsidy and the existence of benefit are two separate questions that should not be conflated at the first place.[872] In other words, the Panel majority erroneously took into considerations of the economic and policy justifications of the subsidy. These considerations may justify the introduction of the supportive measures cannot become the basis on which the existence of benefit

[871] Shadikhodjaev (n 83), at 865.
[872] Luca Rubini, Written Submission of Non-Party Amicus Curiae on *Canada – Certain Measures Affecting the Renewable Energy Generation Sector, Canada – Measures Relating to the Feed-In Tariff Program* (WT/DS412, WT/DS426), at 5.

would be examined. The definition of subsidy, including the requirement of creating 'benefit' is to capture measures that could potentially distort trade.[873] Excessive reading of the subsidy definition by considering the underlying economic and policy justifications does not correspond to the objective of the WTO subsidy rules.

In comparison, Rubini finds the dissenting panelist's interpretation with respect to the existence of 'benefit' more convincing. He contends that the fact the Ontario market was fundamentally distorted and created by the public hand proved the existence of 'benefit'.[874] The Ontario's FIT Programme conferred a benefit in an 'indisputable, almost self-evident' manner.'[875] The counterfactual method, as suggested by the dissenting panelist and approved by Rubini can lead to the outcome that FIT programme fell under the ambit of subsidy within the meaning of SCM Agreement. A following question is: what is the outcome if the dissenting panelist's ruling were taken? Suppose the Ontario FIT Programme were ruled as subsidy, due to the incorporation of LCRs, it would fall under the ambit of prohibited subsidy and face strict prohibition as imposed by SCM Agreement, which is immediate withdrawal. Nevertheless, the dissenting panelist's broad interpretation of 'benefit' would expend the coverage of subsidy rules and subject a large number of de-carbonization policy measures to the WTO scrutiny.

In the Appellate Body's rulings, two innovative findings could be found with respect to interpreting the term 'benefit' under Article 1 of the SCM Agreement. The first is the Appellate Body's reliance on the supply-side considerations in determining market benchmark, which is an antitrust-type analysis of supply and demand factors.[876] This interpretative approach largely narrowed the benchmark market to the extent that was close to the conditions prevailing in the challenged measure at issue. By proposing a market definition less defined by supply and demand side factors and more by normative considerations influencing demand and supply, the Appellate Body insulated the FIT Programme from a violation of the SCM Agreement.[877] Therefore, it would be less likely for adjudicators to conclude that the challenged measure conferred a benefit, which was the outcome in the jurisprudence.

The other innovative finding relates to the sharp distinction between government-created market and government-intervened market.[878] The Ontario government's action to create a new market rather than to intervene in an existing market should not be deemed as market distorting. It reflects the Appellate Body's intention to factor legitimate policy considerations into benefit analysis. In the light of this, it would be hard to define policy measures adopted in a new market as subsidy due to the difficulty to identify an appropriate market benchmark. Through this interpretation, certain forms of subsidies in the renewable energy sector would be sheltered from challenge.

[873] *Ibid*, at 19.
[874] *Ibid.*
[875] *Ibid.*
[876] Rubini (n 90), at 911-912.
[877] Matsushita et al. (n 304), at 321.
[878] *Ibid.*

The conventional understanding of 'benefit', which disregarded the objective pursued by the government but focused on whether the financial contribution could alter the recipient's market position, was reversed in the present dispute. The Appellate Body's interpretation has provided more policy space for governments' creation of a new market, including renewable energy market. This offers some flexibility for FIT programme by shaping a partial 'carve-out', if not a full 'safe haven'.[879]

From the perspective of legal methodology, this interpretative approach, in Rubini's mind, is 'seriously wrong and potentially undermines the effectiveness of subsidy control as well as transparency.'[880] It seems that the way the Appellate Body read and applied the 'benefit' requirement turns out to be twisted and goes against the underlying rationale of subsidy disciplines. What is almost 'a textbook example' of a subsidy somehow turned out to not meet the subsidy definition.[881] The limited yet unwarranted shelter for certain forms of renewable energy subsidies constitutes 'a fundamental misconstruction of the law.'[882]

On the other hand, the ruling might provide crave-outs for protectionist-motived measures not only in renewable energy sector but also other sectors. This concern has been voiced in a large volume of scholarship. Charnovitz and Fischer contend that introducing policy considerations into the determination of benefit could create a 'slippery slope', which can expand beyond the case of renewable energy electricity markets.[883] Cosbey and Mavroidis warn that the decisions seems to 'have opened the door wide to infant industry protection' and to 'industrial policy unlimited.'[884] Pal argues that the WTO Members would be permitted 'to parse an existing product market into separate markets defined according to production technology, and provide support to chosen higher cost producers…without fear of repercussions under the SCM Agreement.'[885] In this vein, a wide range of trade-distorting government measures would not be captured by the SCM Agreement.[886] Rubini points out that the vagueness of the Appellate Body's language can lead to 'dangerous analogic reasoning in cases to come, and not necessarily in the clean energy sector only.'[887] The Appellate Body's distinction between the 'pre-defined supply-side mix' and market forces operating within this mix seems to be somehow artificial.[888] In the case when government supports a domestic industry that is not adequately competitive with foreign producers due to higher production costs, it seems the Appellate Body's interpretation would provide shelter.[889] Put differently, a government can always create a new market and avoid running afoul of the WTO

[879] Gracia Marin Duran, 'Sheltering Government Support to 'Green' Electricity: The European Union and the World Trade Organization' (2018) 67(1) International and Comparative Law Quarterly 129, at 144.
[880] Rubini (n 91), at 319.
[881] Rubini (n 872), at 21.
[882] Rubini (n 91), at 330.
[883] Charnovitz and Fischer (n 92), at 205.
[884] Cosbey and Mavroidis (n 94), at 26 and 28.
[885] Rajib Pal, 'Has the Appellate Body's Decision in *Canada–Renewable Energy / Canada– Feed-In Tariff* Program Opened the Door for Production Subsidies?' (2014) 17(1) Journal of International Economic Law 125, at 135-136.
[886] *Ibid.*
[887] Rubini (n 90), at 914.
[888] Coppens (n 636), at 458.
[889] *Ibid*, at 463.

rules by introducing different manufacturing methods on the 'supply-side' with subsidies to an existing market. It is never the intention of the Appellate Body to provide policy scope to governments to support uncompetitive domestic industries without limit. Nor should a narrowly interpretation subsidy become a 'free pass' for protectionism-motived policy measures.

Therefore, the Appellate Body's reading of the subsidy definition might be an approach with good policy consideration, the flaws of which are also likely to generate negative implications. The heavily criticized interpretation of the definition of subsidy, arguably contributed to the prevention of an open clash between trade rules and climate policy.[890] However, the concern that the Appellate Body went too far in interpreting subsidy definition should by no means be ignored,[891] particularly in light of the fact that the Members have, until now, reluctant to accept any replacement to the already expired non-actionable subsidies, or on the granting of favored treatment to environmental goods and services under the WTO. This hints at the possibility that the Appellate Body's novel interpretation of subsidy definition would go against the Members' intention.

7.2.1.2 Assessing the Legal Decisions from the Perspective of Climate Change Mitigation: Green or Not Green?

This part aims to examine how the legal decisions made by the Appellate Body in *Canada – Renewable Energy* implicate the Members' action taken to address climate change through developing renewable energy. Whether it is WTO-consistent to adopt trade-related renewable energy measures with an aim of de-carbonization is of significance. The Appellate Body decisions in this dispute shed important light on the design and implementation of supportive renewable energy electricity measures.

Viewed from climate change mitigation perspective, the Appellate Body decisions have sent a clear signal that some forms of government support for renewable energy electricity market are unlikely to be scrutinized under the subsidy rules. The recognition that the imperative to address climate change challenge could justify the deviation from current subsidy rules seems to become the most notable part of the Appellate Body Report in this respect.[892]

As long as an appropriate market benchmark is not identified, the policy measures at issue would not meet the definition of subsidy and thus, avoid being subjected to the subsidy disciplines. The narrowly defined subsidy concept has the potential to cast a chilling effect on potential complainants that intend to bring subsidy claims and increase the confidence of subsidizing governments that certain subsidies are less likely to be objectionable at the WTO.[893] The United States' withdrawal of subsidy claims in *India – Solar Cells* after its first submission seems to testify to

[890] Kati Kulovesi, 'Internatonal Trade Disputes on Renewable Energy: Testing Ground for the Mutual Supportiveness of WTO Law and Climate Change Law' (2014) 23(3) Review of European, comparative & international environmental law 342, at 344.
[891] See, Breckenridge (n 88); Casier and Moerenhout (n 87).
[892] Kent and Jha (n 96), at 253.
[893] Jan Bohanes, WTO Dispute Settlement and Industrial Policy (ICTSD and World Economic Forum 2015), available at: www.e15initiative.org/, at 2-3.

this assumption of chilling effects. Meyer also points out that the technicalities of bring a case under the SCM Agreement may limit its application due to a number of requirements that need to be satisfied, some of which can be difficult.[894] The Appellate Body added more difficulties to the identification of market benchmark. In this vein, the policy space that the Members can have in employing de-carbonization policy measures in renewable energy area is expanded by means of jurisprudence

Kent and Jha also argue that an evolutionary interpretation of subsidy rules in the present dispute answers contemporary concerns of the community of nations, which is developing renewable energy to support climate change mitigation.[895] The Panel and the Appellate Body had reasonable grounds to understand and apply the law in a way responsive to today's circumstances and needs.[896] The legal decisions made in the dispute can generate positive implications on the Members' action to develop renewable energy and mitigate climate change by providing a shelter.

The implications of the legal decisions are not confined to the SCM Agreement. They also have potential to implicate the application of certain GATT provisions. The Appellate Body's emphasis of supply-side considerations in determining the existence of 'benefit' seems to provide a new perspective for the application of 'like product' under the GATT. The Appellate Body reversed the Panel's ruling that the relevant market as benchmark could be any electricity market from any source of power, which hints that electricity from renewable energy sources may not be 'like' electricity from carbon-intensive sources.[897] The Ontario government' electricity preferences may reflect consumer attitude towards different energy sources is of relevance not only in the context of the SCM Agreement, but also in determining the 'likeness' under the GATT Article I and III.[898] The rejection of using a price found in the wholesale electricity market as the benchmark price to determine whether benefit conferred for renewable energy electricity is reminiscent of the issue regarding PPM-based discrimination under the GATT. For many years the trade policy community seems to suggest that non-products related PPM-based discrimination would not avail itself of Article XX. Even the Appellate Body decisions in the landmark case *US – Shrimp* injected some degree of confidence that measures addressed PPM-based discrimination could be exempted from the GATT obligations by means of Article XX, a number of important requirements still need to be fulfilled. This would be another intriguing academic debate that is beyond the remit of this thesis.

This thesis argues that the great length that the Appellate Body went through in avoiding to find the existence of benefit under the challenged measures should be applauded as a pro-climate decision. Without the Appellate Body's novel interpretation of market benchmark in subsidy analysis, the challenged FIT programme would be defined as a subsidy and face strict prohibition due to the

[894] Timothy Meyer, 'The World Trade Organization's Role in Global Energy Governance' in Thijs Van de Graaf et al. (eds) *The Palgrave Handbook of the International Political Economy of Energy* (Palgrave Macmillian 2016), at 155.
[895] Kent and Jha (n 96), at 268.
[896] *Ibid*, at 269.
[897] Daniel Bodansky, Jutta Brunnée and Lavanya Rajamani, *International Climate Change Law* (Oxford University Press 2017), at 345-346.
[898] *Ibid*, at 346.

incorporation of LCRs. This would obstruct not only the defending party, Canada but also other Members with similar supportive measures in place from incentivizing the de-carbonization. As discussed in Chapter 3, the use of FITs and other renewable energy electricity support measures has been increasingly prevalent around the world. The Appellate Body accorded the need of climate change mitigation with sufficient importance and saved FITs from the being subjected to strict WTO disciplines. This kind of 'green' jurisprudence should be recognized and applauded.

7.2.2 Is the Lack of Crave-outs for Legitimate Subsidies under the SCM Agreement A Problem?

The preceding parts assessed the subsidy-related legal decisions in *Canada – Renewable Energy* jurisprudence and underscored the strong points and weak points of the interpretation. The following question is: why did the Appellate Body introduce such a complicated benefit analysis that makes the finding of benefit so troublesome in some scenarios? Were there any other options that the Appellate Body can employ?

The 'legal acrobatics'[899] performed by the Appellate Body to avoid the finding of the challenged FIT Programme as a subsidy reflects its intention to create policy space for measures adopted to promote renewable energy electricity expansion and thus, climate change mitigation. Nevertheless, does it make sense to rely on the Appellate Body's innovative interpretation to shelter some forms of de-carbonization measures from the WTO disciplines? Or should the WTO regime provide policy space for such measures?

The reality is the lack of exceptional clauses under the SCM Agreement that the Members can seek resources to so as to pursue subsidies for legitimate reasons.[900] Without specific carve-outs, the Appellate Body was left with no choice but to reject the characterization of FITs as a subsidy. Kulovesi argues that the absence of environmental exceptions or consideration of the subsidy's policy objective contributes to the tense relationship between renewable energy supportive measures and the SCM Agreement.[901]

The legal status of FITs under the SCM Agreement remains unclear, which leaves uncertainties as well as controversies when it comes to the legality of regulatory subsidies that are widely employed for de-carbonization goal. The possibility of a steadfast rule on the market segregation (renewable energy market and conventional energy market) and distinction between market creation and promotion of the existing market does not seem to be realistic at now. Given the widespread use of FIT schemes in more than 90 jurisdictions worldwide and many of them are conditioned on various forms of local content requirements, the question regarding whether the FITs could be a subsidy will probably surface on the WTO dispute settlement in future. The Appellate Body in the present dispute

[899] This is a phrase borrowed from the article authored by Aaron Cosbey and Petros Mavroidis, see, Cosbey and Mavroidis (n 94).
[900] Matsushita et al. (n 304), at 321.
[901] Kulovesi (n 890), at 346.

left the door open to future adjudicators to find an appropriate market benchmark and determine the existence of subsidy.

7.2.3 What Is the Fate of FITs without LCRs under the SCM Agreement?

Compared with FITs with LCRs, FITs without any LCRs primarily aim at promoting the generation and use of renewable energy electricity, which is conducive to de-carbonization and climate change mitigation. The incorporation of LCRs in FITs would shift the underlying policy objective away from de-carbonization but towards green industrialization. Therefore, the interaction between de-carbonization and the WTO rules is more accurately reflected by the FITs without LCRs attached would be defined under the SCM Agreement. This part elaborates on relevant legal provisions under the SCM Agreement when it comes to defining the status of FITs.

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The history of the WTO renewable energy disputes shows that no case has ever been brought against the use of FITs without LCRs attached, which is in stark contrast with the use of FITs with LCRs. This reflects that either the use of FITs can pass the scrutiny of the WTO rules or it is very difficult to win a lawsuit against this measure at current stage. It would be welcoming if the use of FITs would not breach any WTO obligation under the SCM Agreement. While the law needs to be changed if there is even theoretical possibility that FITs face any possible restriction imposed by the WTO. In order to examine how FITs without LCRs attached would be defined under the SCM Agreement, the first step is to find out whether the measures constitute subsidy.

7.2.3.1 Is the FITs without LCRs attached A Financial Contribution?

Whether FITs without LCRs attached meet the definition of financial contribution or income or price support within the meaning of SCM Agreement Article 1.1 is of research interest in this part. Opinions are largely divided with respect to the nature of FITs under the SCM Agreement.

Howse suggests that the FITs should not constitute a subsidy because it does not represent 'a delegation of a governmental function to any private body' but 'a regulation of electricity market.'[902] The FITs amount to regulation of market behavior and transactions instead of imposition of governmental function on a private body.[903] It would be difficult as well as intrusive for the WTO dispute settlement body to assess whether the FITs constitute price support since the price regulation, in many cases reflects a variety of public policy goals.[904]

[902] Robert Howse, 'Post-Hearing Submission to the International Trade Commission: World Trade Law and Renewable Energy: The Case of Non-Tariff Measures' (2005) Renewable Energy and International Law Project, at 22.
[903] *Ibid.*
[904] Robert Howse, 'Climate Change Mitigation Subsidies and the WTO Legal Framework: A Policy Analysis' (2010) IISD, available at: https://www.iisd.org/pdf/2009/bali_2_copenhagen_subsidies_legal.pdf, at 6.

Being interpreted in a broad way, subsidies could cover any price-based or regulatory intervention that changes relative costs or returns in the market to the advantage of a subset of producers or consumers.[905] Bigdeli contends that FITs would fall under the ambit of 'any form of price support' even it is difficult to define the measures as any form of financial contribution.[906] Rubini also thinks FITs constitute direct and immediate forms of supports.[907]

7.2.3.2 Does the FITs without LCRs Attached Confer a Benefit?

The second step is to examine whether the FITs confers a benefit. As discussed in Chapter 4, neither the GATT nor the SCM Agreement define the term 'benefit', nor do either provide a particular methodology to determine the existence of a benefit. On the basis of the Appellate Body's construction of benefit analysis in *Canada – Renewable Energy*, the identification of a proper market benchmark becomes the key point. Although it was difficult to find one benchmark market during the adjudication, the development of renewable energy electricity market around the world has endured dramatic change. This is to say, the rapid expansion of renewable energy electricity provides proxy market benchmarks that the WTO adjudicators could refer to for benefit analysis.

For instance, the recent auction in Mexico that broke records at 1.77 cents per KWh for solar PV seems to put the FITs with a high level of tariffs into question: whether the schemes reimburse the recipients in a way that exceeds the cost and grants competitive advantages to them.[908] It is no longer an era that the grid parity between renewable energy sourced electricity and fossil fuels sourced one was broad that government supports are required to be in place for a long time.

7.2.2.3 Is the FITs without LCRs Attached Specific?

If the FITs was found to confer a benefit within the meaning of the WTO subsidy rules, the next step is to examine the specificity of the FITs, as required by the SCM Agreement Article 2. The concept of specificity confronts serious uncertainties in the WTO and has yet to be developed through the case law.[909] As indicated by almost all WTO cases, subsidies challenged under the SCM Agreement were ruled as specific.[910] Whether a subsidy is specific needs to be assessed on a case-by-case basis.[911]

Renewable energy electricity market could be considered as specific vis-à-vis the electricity market sourced from all energies. The prominent feature of renewable

[905] Low, Marceau and Reinaud (n 14), at 506.
[906] Bigdeli (n 79), at 166.
[907] *Ibid.*
[908] See, Howse and Eliason (n 656), at 88. Howse and Eliason argue that measures 'that simply reimburse or compensate the enterprise for taking some action that it would otherwise not take' mean that 'the enterprise has not acquired any competitive advantage over other enterprises, which neither take the subsidy nor have to perform these actions.'
[909] Bigdeli (n 79), at 179.
[910] *Ibid.*
[911] Panel Report, *US – Upland Cotton*, para. 7.1142.

energy supportive measures is that they are specifically designed and targeted to promote certain categories of renewable energy products.[912] The FIT programs in the form of regional or national programs to promote renewable energy production can be easily defined as 'specific' since they are specific to certain electricity generators to whom they are granted. This explains why such subsidies will likely be limited to 'certain enterprises' and meet the 'specificity' requirement of Article 2.1 of the SCM Agreement. A horizontal, generally accessible subsidy based on objective economic criteria could escape the remit of the SCM Agreement, while the use of which would face difficulties from political, financial and administrative terms.[913] It is difficult for governments in developing countries or least-developed ones to provide non-specific subsidies due to limited budget. Even a subsidy, which is not on its face specific, may nevertheless be found to be specific in fact if it was granted in a limited, disproportionate or predominant way.[914]

It is noted that the SCM Agreement allows the WTO Members to differentiate between enterprises, industries and geographical regions where differentiation is based on objective eligibility criteria.[915] The FITs with differentiated treatment provided to different sources of electricity is not likely to meet these conditions. Whether FITs adopted in renewable energy electricity would be deemed as specific is a matter upon which there is no WTO case law yet to clarify.

7.2.2.4 Does the FITs without LCRs Attached Cause Adverse Effects?

Being specific renders the measures actionable in the sense of SCM Agreement Article 5, which however, may not become a problem as long as the actionable subsides do not cause adverse effects on the interests of another Member. The following step in examining the legal status of FITs is to explore whether there would be adverse effects attributable to the use of FITs. The identification of adverse effects is complex. The complainant needs to show an 'adverse effect' on competing producers, which requires high standard of proof. A review of the WTO jurisprudence shows that establishing the existence of adverse effects in subsidy disputes is a quite difficult task facing the complaints.[916]

Particularly when it comes to the complicated global energy market with fossil fuel being heavily subsidized,[917] the effects of FITs on other energy sources would be difficult to demonstrate. As argued by Bigdeli, challenging actionable subsidies may turn out to be rather complicated than challenging prohibited ones because of

[912] Anna Marhold, 'EU State Aid Law, WTO Subsidy Disciplines and Renewable Energy Support Schemes: Disconnected Paradigms in Decarbonizing the Grid' (2017) TILEC Discussion Paper No. 2017-029, available at: https://ssrn.com/abstract=3009124, at 40.
[913] Peat (n 67), at 58.
[914] Low, Marceau and Reinaud (n 14), at 518.
[915] See, the SCM Agreement, Article 2.1(b). Footnote 2 specifies that eligibility criteria for a financial contribution should be neutral (non-discriminatory), should not favour certain enterprises over others and should be 'economic in nature and horizontal in application'. It also gives examples of such criteria, namely size or number of employees of an enterprise.
[916] There are only three disputes so far in which the complainants successfully proved adverse effects and challenged actionable subsidies claims. These disputes are: *US – Cotton*, *EC – Large Civil Aircraft* and *US – Large Civil Aircraft*.
[917] IEA, 'Fact Sheet: World Energy Outlook 2016' (2016), available at: https://www.iea.org/media/publications/weo/WEO2016Factsheet.pdf, accessed on 12 December 2017.

the complexity of establishing causal link between a subsidy and adverse effects, especially in the case of serious prejudice.[918]

Based on Article 6.3(a) of the SCM Agreement,[919] Duran argues that a fundamental point for a FIT to be found SCM-inconsistent is the existence of trade flows or opportunities in electricity between the FIT-providing Member and another Members.[920] Put differently, if there was simply no trade in electricity, no actual or potential trade restrictive effects would occur. For a long time, electricity has been traded traditionally within national jurisdictions or between neighboring countries, such as the EU States.[921] Given of the sparsely traded electricity around the world, the FITs is not likely to cause an 'injury' through increased imports of renewable energy electricity from the subsidizing WTO Member to the neighboring WTO Members.[922] Nor will it be likely to lead to 'serious prejudice' by displacing or impeding imports of renewable energy electricity from abroad.[923] Apparently, the limited size of globally traded electricity well explains the lack of litigiousness with respect to the use of FITs among WTO Member. However, it is intriguing to ask whether the global trade in electricity will remain low in the future.

It is expected that international trade in electricity will be gradually increasing in the forthcoming years because technological progress could enable the construction of international interconnected power networks.[924] This will constitute physical infrastructure that enables electricity to be traded between a long distance. More WTO Members could participate in trading electricity made from various sources. In the light of this, the WTO rules could be increasingly relevant when it comes to the WTO compatibility of international trade in electricity.[925] Relying on the limited volume of internally traded electricity at current stage to judge the likelihood of trade disputes does not seem to be valid, if viewed from a medium to long perspective. The probability of evidencing 'adverse effects' is likely to increase in the case of FITs and other similarly designed de-carbonization measures. In this vein, the FITs and other measures are likely to be subject to the WTO subsidy disciplines in future.

Not only actors in electricity sector but also energy producers could bring the lawsuits against the use of FITs. For instance, an exporter of natural gas have the grounds to complain that their exports were impaired because of supportive measures such as FITs used in renewable energy, since gas competes as a feedstock

[918] Bigdeli (n 79), at 184.
[919] This provision requires the demonstration of 'the effect of the subsidy is to displace or impede the imports of a like product of another Member into the market of the subsiding Member'.
[920] Duran (n 879), at 146.
[921] Kateryna Holzer, Ilaria Espa and Tetyana Payosova, 'Promoting Green Electricity through Differentiated Electricity Tax Schemes' in Thomas Cottier and Ilaria Espa (eds), *International Trade in Sustainable Electricity Regulatory Challenges in International Economic Law* (Cambridge University Press 2017), at 360.
[922] See, the SCM Agreement Article 15.
[923] See, the SCM Agreement Article 6.
[924] See, IEA, Cross-Border Trade in Electricity and the Development of Renewable-Based Electric Power: Lessons from Europe (2013), Annex 2 on Liberalisation of Electricity Markets, Competition and the Drivers of Cross-Border Trade in Electricity, at 50.
[925] Holzer, Espa and Payosova (n 921).

for electricity generation. Oil producers could also make similar claims. Even within the renewable energy sector, if the FITs are available only to solar energy sourced electricity generators, wind electricity generators could bring a subsidy claim and testify to the adverse effects of the FITs. In the light of this, the FITs even without LCRs attached would become actionable within the meaning of the SCM Agreement and face possible disciplines.

The challenge against the FITs without LCRs attached, at current stage is rather difficult to make under the SCM Agreement. However, it by no means shows that these measures can pass the scrutiny of the WTO rules in every scenario. This reflects the deficiency associated with the SCM Agreement: the lack of carve-outs for subsidies that contribute to public goods, such as climate change mitigation.

7.2.2.5 The Uncertainty Associated with the Fate of FITs without LCRs Attached Under the SCM Agreement

The Appellate Body in *Canada – Renewable Energy* left open the legal status of FITs under the SCM Agreement means that uncertainties exist with respect to how FITs would be defined by subsidy rules, which is highly controversial. It is clear that the compatibility of FITs with WTO subsidy rules depends on its specific modalities, such as the tariff rate, the coverage of the measure and the existence of adverse effects. The preceding parts applied the subsidy rules to the use of FITs without LCRs attached and found that there is still possibility that these measures face challenges raised under the SCM Agreement.

It is noted that the popularity of FITs among countries around the world has been declining in recent years. Particularly countries in Europe have already begun a shift away from FITs, which reflects the debate over the appropriate level of support that should still be afforded to such projects.[926] Asia presents a different picture with the majority of countries still using FITs for one or more renewable energy technologies.[927] More advanced Asian economies, such as South Korea and Singapore have started to replace FITs with other market-driven mechanisms.[928] In the light of this, it is not yet the time that FITs would be phased out entirely by policy-makers. Whether the WTO regime provides policy space for FITs without LCRs attached is a significant matter concerning trade-climate dichotomy.

Meanwhile, the way the FITs are defined under the SCM Agreement sheds light on the definition of other forms of de-carbonization measures. To put it differently, how the WTO adjudicators apply relevant rules in interpreting the compatibility of the FITs would impact the understanding of other measures in one way or another. It is reasonable to assume that de-carbonization measures that are similarly designed with the FITs would be subject to uncertain disciplines under the SCM Agreement, if not undue restrictions. The legal uncertainty associated with the status of the FITs casts shadow on the characterization of other de-carbonization measures under the SCM Agreement.

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[926] Chris Lo, 'Renewable Energy: Are Feed-in Tariffs Going out of Style?' (Power Technology, 18 January 2017), available at: https://www.power-technology.com/features/featurerenewable-energy-are-feed-in-tariffs-going-out-of-style-5718419/, accessed on 17 July 2018.
[927] *Ibid.*
[928] *Ibid.*

It is analytically useful to examine the SCM Agreement compatibility of other forms of de-carbonization measures, such as grants, favorable loan schemes and tax credits that are provided to research, development and deployment of renewable energy technologies.[929]. Direct funding, grants and tax credits straightforwardly fall into the ambit of subsidy as far as Article 1 of the SCM Agreement is concerned. It is clear that via tax credits, the government is forgoing government revenue from certain renewable energy technologies, which confers a benefit to the recipients. Once the tax credits are defined as a subsidy within the meaning of SCM Agreement, whether they are actionable turns out to be an open question. As discussed earlier, there is still a possibility for other energy producers to prove the existence of adverse effects or prejudice and thus, challenge tax credits or other support measures. With the urgent need to expand renewable energy generation and reduce carbon emissions, the undue restrictions to the use of renewable energy support measures imposed by the WTO should be removed.

The legal ambivalence in subsidy definition is likely to give rise to controversies and frictions in future adjudications. Without differentiating between 'good' and 'bad' subsidies as well as carve-outs for 'good' ones under the current SCM Agreement, even climate-friendly de-carbonization measures would be vulnerable to legal challenges . The Members' policy space in employing de-carbonization measures without infringing the WTO obligations would be restricted, which would impede the alignment between law and good policy.[930] In the light of this, it is important to secure and expand the scope of policy space for de-carbonization.. This would create enabling environment for the design and use of the FITs as well as other forms of de-carbonization measures in renewable energy area.

7.3 Proposed Amendments to the WTO Subsidy Rules

The need to revisit the SCM Agreement has been underscored given the uncertainty with respect to the legal status of de-carbonization measures adopted in renewable energy sector. At the time when subsidy laws were drafted, the negotiators certainty did not have trade in electricity or climate change mitigation in mind. The non-renewal of non-actionable subsidies, which aim at legitimate objectives, has compounded the problem.

It is rather questionable whether the Members have sufficient policy space under the SCM Agreement for subsidizing renewable energy development to de-carbonize the economy. It seems that the scope of policy space is uncertain, if not unduly limited under the SCM Agreement. This is likely to affect the potential cost and continuing viability of the Members' de-carbonization progress and risk impairing the environmental credentials of the WTO. The lack of an explicit language under the SCM Agreement that speaks on the significant balance between climate change mitigation and scrutiny of trade-distorting subsidies an obstacle to

[929] See the IEA, Global Renewable Energy Policies and Measures Data Base, available at: https://www.iea.org/policiesandmeasures/renewableenergy/, accessed on 15 October 2017.
[930] Rubini (n 91), at 322.

improving the supportiveness that the trade regime can have for climate-related interests.

Before moving to the elaboration of specific ways to amend the SCM Agreement, it is useful to touch upon another idea, which is securing and increasing the scope of policy space under the SCM Agreement through climate-friendly interpretation. The SCM Agreement provisions can be interpreted in a way that expands the scope of policy space the Members have. For instance, if the WTO adjudicators read the constituent elements of a subsidy: financial contribution or specificity in a narrow manner, the universe of de-carbonization measures captured by subsidy rules could be reduced. On the contrary, if the WTO case law interprets these concepts in an expansive manner, the reach of the subsidy rules would be widened to cover a larger number of de-carbonization measures.

However, it is far from an optimal option to merely rely on the interpretative approach to provide policy space for legitimate public policy goals. As contended by Rubini, litigation is expected to offer 'piece-meal or partial solution' to the less than satisfactory WTO subsidy legal framework.[931] The pressure imposed on the adjudicating bodies in interpreting rules in a certain way that accommodates non-trade values cannot be underestimated.[932] As discussed earlier, the rather innovative benefit analysis conducted by the Appellate Body in *Canada – Renewable Energy* could provide shelter for even protectionist-motivated measures, although unintentionally.[933] Ambiguity in the law may be positive when it brings flexibility for policy-makers, however it also might give rise to different and contrasting readings of law.[934] When the understanding of certain key provisions remains conflicting and becomes a controversial issue, good flexibilities might turn out to be bad uncertainty and lead to legal disputes.[935] Leaving highly controversial issues to the hands of the adjudicating bodies could risk pushing the limits of the texts of the SCM Agreement and entail systemic implications beyond the measure at issue.[936]

The capacity of dispute settlement decisions to implicate the WTO Members' policy space is circumscribed by the existing treaty rules that the Panel and the Appellate Body need to take as a given. It is incorrect to assume that the WTO adjudicators can interpret relevant provisions in whatever manners they want. In addition, if more trade restrictive policy measures, such as trade ban or quotas could be permitted by means of Article XX, less trade restrictive measures, such as subsidies face difficulty to be justified under the SCM Agreement represents the imbalance and incoherency of trade rules.[937] It is time that negotiators return to the table and draw distinctions of subsidies on the basis of the underlying rationale.[938]

Given the long-running stalemate in the WTO negotiation rounds, reforming subsidy rules for de-carbonization measures is by no means easy. It might be more

[931] Rubini (n 211), at 577-578.
[932] *Ibid.*
[933] See Chapter 7.
[934] Rubini (n 91), at 321.
[935] *Ibid.*
[936] Bigdeli (n 80), at 39.
[937] Rubini (n 91), at 322.
[938] Cosbey and Mavroidis (n 94), at 42-43.

realistic to rely on a friendly interpretation of certain subsidy rules so as to avoid encroaching the Members' autonomy in de-carbonizing the economy within a short period. However, it is still necessary to gather momentum that is needed to push forward the important task of amending the current subsidy rules from a medium to long perspective. The Members can jointly agree to some changes of the SCM Agreement on a multilateral basis as they did in the Uruguay Round Agriculture and subsidy negotiations. By making changes to the SCM Agreement, the WTO could balance trade liberalization interests and climate change-related interests in a more coherent manner. The following part discusses three possible legal solutions that aim to shelter certain desirable de-carbonization subsidies. It also assesses the effectiveness of these options.

7.3.1 Option One: Reactivation of the SCM Agreement Article 8

The proposal to renew the SCM Agreement Article 8, which craved out non-actionable subsidies, has surfaced since its expiration without renewal. Two forms of the non-actionable subsidies: research and development and the costs of environmental regulation are of relevance in promoting renewable energy and mitigating climate change. Is it a viable option to renew Article 8 so as to provide policy space for legitimate de-carbonization subsidies in renewable energy sector? To what extent otherwise illegal de-carbonization subsidies are exempted from the scrutiny of the WTO subsidy rules?

Coppens holds that the reactivation of Article 8 could increase legal certainty as to what subsidies can be permissible and endorse policy flexibility under the SCM Agreement.[939] Marhold argues that it is possible for renewable energy subsidies to be justified, even when they have local content requirements or other trade-discriminatory elements.[940] Mavroidis and de Melo also think reinsertion of the clause of non-actionable subsidies could be considered as 'an immediate amendment', which is a promising way.[941] This can preempt the wrong exercise of discretion by the WTO adjudicators by including illustrations of the type of subsidies that should qualify as climate-friendly.[942] However, they question the viability of reinserting Article 8 in tackling the immensity of the problem.[943]

More skeptical opinions have been expressed towards the reactivation of non-actionable subsidies from different perspectives.[944] Wu questions the viability of reviving Article 8 from a political economy perspective and argues that the divide between developed and developing countries, which thwarted the renewal of Article 8 in 1999 still remains.[945] This is to say, a large number of developing countries still perceive the revival of Article as primarily beneficial to developed

[939] Coppens (n 636), at 610.
[940] Marhold (n 912), at 45.
[941] Petros Mavroidis and Jamie de Melo, 'Climate Change Policies And The WTO: Greening The GATT, Revisited' in Scott Barrett , Carlo Carraro and Jamie de Melo (eds) *Towards a workable and effective climate regime* (CEPR Press 2015), at 225.
[942] *Ibid.*
[943] *Ibid*, at 234.
[944] See, Cosbey and Mavroidis (n 94), at 37-43; Howse (n 904), at 20-24.
[945] Mark Wu, 'Re-examining 'Green Light' Subsidies in the Wake of New Green Industrial Policies' (ICTSD and World Economic Forum) 2015, available at: www.e15initiative.org/, at 10.

countries and large developing ones.[946] On the other hand, developed countries tend to be reluctant to give special and differential treatment to all developing countries.[947] The discrepancy between the developed countries and the developing ones remains an obstacle to not only the revival of Article 8 but also other possible amendments to the WTO rules.

Besides from the feasibility of reactivating Article 8 in terms of political economy, there are also concerns about the substance of Article 8. It is useful to ask: what forms of de-carbonization subsidies could be justified under Article 8? From the perspective of combating climate change and de-carbonizing economy, does reviving Article 8 provide sufficient legal certainty as well as policy space?

As an illustrative example, the environmental category of non-actionable subsidies imposes the requirement on subsidies to be 'one-time, non-recurring' and 'limited to 20 per cent of the cost of adaptation.'[948] The treaty drafters decided to subject only the one-time subsidy into exemption and left a second-time subsidy or a third-time one out. Therefore, whether employing subsidy for one-time can be sufficient in achieving de-carbonization objectives is questionable. In addition, the basis on which subsidy is limited to 20 per cent of adaptation cost can be justified seems to be arbitrary.[949] Why should the limit be 20 per cent but not 30 percent or even higher? Besides from burdening the WTO adjudicating body with micromanaging the challenged government subsidies, the limit also narrows the policy space that Member States can have in making use of environmental subsidies.[950] However, this does not suggest that expanding the scope for exemptions, for instance to a high level of cost recovery will be preferable. Because this approach might risk opening the door to all kinds of environmental subsidies that in fact aim at promoting production to the extent that distorts trade.

Bigdeli also questions the wording of Article 8 and its effectiveness with respect to tackling climate change. He argues that this provision fails to include some legitimate subsidies such as these designed to improve energy efficiency yet creates space for subsidies that could be trade-distorting, such as these granted to producing firms.[951] The line between subsidies aim at legitimate public policy goals and subsidies that are crafted for industrial objectives seems to be blurred in some instances. Therefore, it is essentially important to distinguish between subsidies that are used to support R&D and these for production benefits since the latter might result in conspicuously distorting effects on international trade and thus, risk running afoul of the WTO rules.[952]

The reluctance shown by Members in Doha Negotiation over reactivating the non-actionable subsidies indicates Members' none or little concern over the prospect of formerly exempted subsidies to be subject to a WTO challenge.[953] Besides, there is inadequate evidence suggesting that the expiration of Article 8 has had a severely

[946] *Ibid.*
[947] *Ibid.*
[948] See, the WTO SCM Agreement Article 8.
[949] Howse (n 904), at 20.
[950] *Ibid*, at 21.
[951] Bigdeli (n 79), at 192.
[952] Cottier and Shariff (n 13), at 434.
[953] Bigdeli (n 80), at 31.

negative impact on the ability of particular states to develop green policy measures.[954] This calls into question whether reviving Article 8, as originally drafted could be needed or effective. It is understandable that the drafting of existing subsidy rules dating back two decades ago did not take proper account of the need to develop renewable energy so as to de-carbonize economy. Reactivating Article 8 could exempt some forms of de-carbonization subsidies, which otherwise would have been condemned by the WTO subsidy rules. However, the author still remains skeptical of whether restoring the category of non-actionable subsidies under the SCM Agreement is an ideal option.

Largely ignored up to now, subsidies that aim primarily for de-carbonizing economy and mitigating climate change need to be properly recognized and accommodated by the WTO regime. The subsidy rules need to be crafted in a way that encourages climate friendly de-carbonization measures without permitting them to become pretexts for protectionist motivated objectives. This will testify to the positive role that the trade regime could make in respecting climate change mitigation-related objectives. The next part engages in exploring the option to create a new category of non-actionable subsidies for de-carbonization subsidies.

7.3.2 Option Two: Creation of A New Category of Non-Actionable De-carbonization Subsidies in Renewable Energy Sector

As discussed in the preceding part, merely re-activating Article 8 could leave some legitimate de-carbonization subsidies outside the scope of exemptions and create unnecessary shelter for subsidies that can distort trade. An ideal option is to negotiate a specific category of non-actionable subsidies that is tailored to the needs of de-carbonization. The WTO membership needs to map out the scope of non-actionable de-carbonization subsidies that could be exonerated. The Members need to identify the subsidies that are effective enough to avail themselves of legalization.[955] The newly drafted category of non-actionable subsidies should not be over-inclusive that trade-discriminatory subsidies could be covered. Neither should it be under-inclusive since it would fail to meet the ultimate policy goal to shelter de-carbonization subsidies and provides sufficient policy space for the Members.

This part proposes a new list of non-actionable de-carbonization subsidies employed in renewable energy sector. It would add to the certainty and clarity of the WTO subsidy rules by introducing the general exemptions clause for certain forms of de-carbonization subsidies. However, it is another equally important issue that exceptions for legitimate subsidies should not be misused and be subjected to reasonable check system.

7.3.2.1 Renewable Energy R&D Subsidies

One key bottleneck for scaling-up renewable energy development to effectively de-carbonize energy use and the whole economy is the underachieved technological progress in renewable energy sector. The cost of immature new technologies tends to be prohibitively high. Therefore, R&D subsidies in renewable energy sector are

[954] Wu (n 945), at 9.
[955] Charnovitz (n 694), at 37.

principally aimed at encouraging the development of new technologies to reach a scale that would make them commercially viable. Significant government support for research and development of renewable energy technologies is much needed, which could spark 'a new Green Revolution'.[956] As long as renewable energy R&D subsidies are ensured to not distract from de-carbonization objectives and the research results are disseminated to maximize the positive spillovers, these subsidies are viewed positively.[957]

However, R&D subsidies to support fundamental and applied research on renewable energy production, storage, and distribution will be potentially subject to the SCM Agreement if they are specific in the sense of Article 2.[958] Some renewable energy R&D subsidies could benefit certain renewable energies instead of others. Or, subsidies are limited to domestic technology developers. It is likely that these subsidies would be captured by the category of actionable subsidies under the SCM Agreement if other Member brings a WTO case. The already lapsed Article 8 also crafted policy space for certain subsidies employed in research and development activities. This sheds light on the importance of R&D subsidies in economic development that even the WTO regime intended to not interfere too much. Nevertheless, its limited application and coverage renders its effectiveness in boosting research and development in de-carbonization sector questionable.

For the sake of clarity and certainty, it is recommended that a category of non-actionable subsidy under the SCM Agreement be carved out for renewable energy R&D subsidies. It sends a clear signal to the Members and informs them *ex ante* the use of renewable energy R&D subsidy will not be challenged in the WTO Dispute Settlement. In addition, the WTO adjudicators can rely on the explicit exceptions for certain forms of renewable energy subsidies without twisting the interpretation of subsidy rules so as to provide shelter for legitimate subsidies.

7.3.2.2 Renewable Energy Consumption Subsidies

States attempt to encourage consumers' behavior in using renewable energy by introducing consumption subsidies. Consumption subsidies can take the form of tax expenditures such as reduced value-added tax, or excise tax or direct budgetary transfers directed to specific consumers or sectors. Compared with the enormous amount of subsidies granted to fossil fuel consumption, subsidies for renewable energy consumption is much smaller in size. Consumption subsidies that put renewable energy on an equal footing with heavily subsidized fossil fuels could correct market failure.

Although subsidies used to promote consumption is generally *de jure* or *de factor* non-specific and thus, not actionable within the meaning of the WTO subsidy rules. However, renewable energy consumption subsidies could be argued to be 'specific', if renewable energy is compared with conventional energy, like fossil fuels. It

[956] James Bacchus, 'The Case for Clean Subsidies', Harvard Business Review (November 13, 2012, available at: https://hbr.org/2012/11/the-case-for-clean-subsidies, accessed at 20 October 2017.
[957] Alan Sykes, 'The Economics of WTO Rules on Subsidies and Countervailing Measures' (John M. Olin Program in Law and Economics Working Paper No. 186, 2003), at 22-23.
[958] Ilaria Espa and Sonia Rolland, 'Subsidies, Clean Energy, and Climate Change' (2015) E15Initiative, ICTSD and World Economic Forum, available at: www.e15initiative.org/, accessed on 10 October 2017, at 6.

remains unclear whether fossil fuels and renewable energy would be treated as 'like products' with respect to assessing 'adverse effects' under the SCM Agreement. The consumption subsidies used in renewable energy sector might be subject to an effective challenge due to the adverse effects on their counterparts: fossil fuel consumption.

It would strengthen the legal certainty to acknowledge that subsidies granted to renewable energy consumers to encourage consumption is non-actionable. 959 However, there is still a need to subject consumption subsidies to a certain limit that is deemed as necessary to address market failures.[960] In this vein, the positive effects with respect to de-carbonization could outweigh the potential negative trade distortions. It is the task for the WTO Members to negotiate the precise limits of renewable energy consumption subsidies that is non-actionable.

7.3.2.3 Renewable Energy Electricity Price Support

Renewable energy sources themselves are often available at low or zero cost, however, the bulk cost of project expenditure is attributable to the capital cost and installation.[961] The high upfront cost imposes heavy pressure on renewable energy projects, which renders supportive measures that aim to reduce the pressure in establishing renewable energy electricity facilities very appealing and even necessary.

Due to the unclear status of price supporting schemes adopted for renewable energy electricity development, there is a need to provide policy space for these schemes so as to increase the legal certainty. For instance, the rate of FITs is usually differentiated on the basis of technology type and size of installation.[962] The rate of FITs granted to more expensive technologies, such as solar PV tends to be higher in comparison to mature technologies, such as hydroelectric.[963] Indeed, differentiation in terms of FIT rates occurs not only between technologies, such as solar PV, wind, geothermal energy but also within technologies, for instance, between on- and offshore wind, or between small PV installations and large PV installations.[964] In this vein, Charnovitz characterizes the setting of FIT contract prices as supportive measure in the 'grey area' of SCM law.[965] This presents a true 'elusive frontier' of subsidy law and policy,[966] which from a policy space perspective, can result in a serious situation of legal uncertainty.

In addition, the purchase obligation of FITs affords a privileged access on locally sourced electricity, which tends to be equivalent in economic effects to a local

[959] Wu (n 945), at 11.
[960] *Ibid.*
[961] Karl Mallon, 'Myths, Pitfalls and Oversights' in Karl Mallon (ed), *Renewable Energy Policy and Politics: A Handbook for Decision-making* (Earthscan 2006), at 21.
[962] Heymi Bahar, Jagoda Egeland and Ronald Steenblik, 'Domestic Incentive Measures for Renewable Energy with Possible Trade Implications,' OECD Trade and Environment Paper 2013/01, at 30.
[963] *Ibid*.
[964] Erik Gawel, Sebastian Strunz and Paul Lehmann, Support Policies for Renewables: Instrument Choice and Instrument Change from A Public Choice Perspective in Douglas Arent at al. (eds) *The Political Economy of Clean Energy Transition* (Oxford University Press 2017), at 124.
[965] Charnovitz (n 694), at 31.
[966] Rubini (n 212), at 16.

content requirement.[967] Nevertheless, the less intense international competition and trade in electricity, together with the difficulty of tracing the origin of electricity in the absence of an established system of certification justify the different treatment between electricity purchase obligation and local content requirements.[968] In the case when cross-border electricity trade becomes more accessible, whether FITs is discriminatory subsidy and subject to the scrutiny of subsidy law calls into question.

It is likely that these schemes would be subject to the WTO challenge if adverse effects could be proven because one set of producers are favored over others. The FIT, absent discriminatory policy elements, is aimed at an objective that all nations agree is significant. Consequently, it would eliminate the concern by explicitly recognizing that pricing support schemes are legal as long as there are no local content requirements or export contingency requirements attached.

Setting an exception clause for pricing support scheme does not suggest that any rate of FITs or other schemes should be allowed. It is necessary to specify *de minimis* threshold to the extent that can shape an enabling environment to attract investment and to secure renewable energy electricity production.[969] Pricing support mechanism is needed to get the renewable energy electricity market started, bring production up to scale and provide producers the opportunity to learn by doing and so reduce the cost as a result. These subsidies would no longer be necessary for certain forms of renewable energies when their costs have been reduced to be competitive on the market.

Therefore, it is recommended to agree to a specified rate and time period for renewable energy sourced electricity pricing support mechanisms. The FITs with higher than necessary rate would cause trade distortions and cast negative impacts on government budget To avoid unnecessary distortions and spending, subsidies should be granted only insofar as they are necessary to produce the inventive effects and only until the market failure justifying them is still in place.[970]

7.3.3 Option Three: Application of the GATT Article XX to the SCM Agreement

In the absence of specific exceptions for de-carbonization subsidies, the proposal to applying the GATT Article XX to the SCM Agreement has surfaced. Whether the applicability of Article XX could be extended to justify measures that otherwise inconsistent with the SCM Agreement becomes a highly controversial issue. This part touches upon the arguments in this regard and examines the viability of this approach.

As discussed in preceding chapter, Article XX includes exemptions for climate-related objectives, paragraphs (a), (b), (d), and (g) are of relevance. However, the defendant in Canada – Renewable Energy did not refer to the GATT Article XX, it is unknown whether this approach is workable in the WTO jurisprudence. Commentators divide in whether the GATT Article XX could or should be applied to the subsidy claims made under the SCM Agreement.

[967] *Ibid*, at 27.
[968] *Ibid.*
[969] Wu (n 945), at 11.
[970] *Ibid*, at 6.

Commentators that approve the application of the GATT Article XX to the SCM Agreement put forward a number of arguments. [971] In an amicus brief submitted by several NGOs to the adjudicators in *Canada - Renewable Energy*, it is argued that Article XX should be treated as an exception to the SCM Agreement. [972] The reasons are multifold: the first relates to the textual and contextual support from the SCM Agreement in justifying certain subsidies by means of Article XX. [973] The second is the object and purpose of the WTO Agreements supports the integration of Article XX to the SCM Agreement. [974] The third reason is based on the rules of international law. [975] The forth reason is traced back to the negotiating history of the WTO Agreement, which confirms the need for a broad understanding and interpretation of Article XX. [976] The fifth reason is compelling policy reasons that justify the application of Article XX. [977]

A number of legal scholars also have argued for the applicability of Article XX to the SCM Agreement. Howse states that the SCM Agreement constitutes *lex specialis*, or specialized legal regime, which is derived from the GATT and thus, the general GATT provisions, should be applicable. [978] Jegou and Rubini point out 'a natural expansiveness' of Article XX, which merits its application to other WTO Agreements regulating trade in goods. [979] The applicability of Article XX to renewable energy subsidies is 'a credible argument and a significant possibility' and may become 'a successful defense.' [980] The silence of the SCM Agreement on environmental exceptions makes Article XX eligible in filling in the environmental hole of that. [981] Green also argues that 'the best approach' to enabling climate change subsidies under WTO rules is to extend the coverage of the GATT Article

[971] On the applicability of the GATT Article XX to the SCM Agreement, see, Amicus Curiae Submission by International Institute on Sustainable Development, Canadian Environmental Law Association & Ecojustice Canada, Canada—Certain Measures Affecting the Renewable Energy Generation Sector (DS412) (May 10, 2012), available at: https://www.iisd.org/pdf/2012/ecojustice_amicus_curiae_brief.pdf; Daniel Peat, 'The Wrong Rules for the Right Energy: the WTO SCM Agreement and Subsidies for Renewable Energy' (2012) 24 (7) Environment Law and Management 3; Robert Howse, United Nations Conference on Trade and Development, World Trade Law and Renewable Energy: The Case of Non-Tariff Barriers, UN Doc. UNCTAD/ DITC/TED/2008/5 11–14 (2009), available at http://archive.unctad.org/trade_ env/test1/publications/UNCTAD_DITC_TED_2008_5.pdf; Green (n 4), at 407-410.
[972] IISD, Amicus Curiae Submission by International Institute on Sustainable Development, Canadian Environmental Law Association & Ecojustice Canada, *Canada—Certain Measures Affecting the Renewable Energy Generation Sector* (DS412) (May 10, 2012), available at: https://www.iisd.org/pdf/2012/ecojustice_amicus_curiae_brief.pdf.
[973] *Ibid*, at 6-13.
[974] *Ibid*, at 14.
[975] *Ibid*, at 15.
[976] *Ibid*, at 16-18.
[977] *Ibid*, at 18-19.
[978] Howse (n 904), at 18 and 25.
[979] Ingrid Jegou and Luca Rubini, 'The Allocation of Emission Allowances Free of Charge: Legal and Economic Considerations' (2011) Transition to a Low Carbon Future Series Issue Paper No.18; International Centre for Trade and Sustainable Development, available at: https://www.ictsd.org/downloads/2011/08/the-allocation-of-emission-allowances-free-of-charge.pdf, at 39.
[980] Rubini (n 212), at 39.
[981] Christopher Tran, 'Using GATT, Art XX to Justify Climate Change Measures in Claims under the WTO Agreements' (2010) 27(5) Environmental and Planning Law Journal 346, at 357.

XX exception to such subsidies.[982] In addition, Article XX justifies any measure within its scope, including measures more distorting than subsidies. It seems irrational that more trade-restrictive measures such as import ban and quotas could be justifiable by Article XX while subsides that aim at climate change mitigation cannot.[983] Low and other colleagues think in the absence of the first-best option of an international agreement regarding climate change action, the operation of Article XX to justify some subsidies otherwise inconsistent with the SCM Agreement may become crucial.[984]

The recent case law also suggests that the exceptions of Article XX might be invoked to justify a violation of the SCM Agreement. For instance, the Appellate Body in *China – Audiovisual Services* ruled that Article XX was available as a defense to claims under paragraph 5.1 of China's Accession Protocol.[985] Similarly, in *US – Shrimp*, it was submitted that such Article XX justifications could be used against allegations of violation of the Antidumping Agreement.[986]

Opponents that opt for the invalidity of applying the GATT Article XX to the SCM Agreement put forward raise several arguments. Firstly, applying Article XX to out-of-GATT Agreements would possibly undermine 'the inner balance of rights and obligations' negotiated by the parties.[987] Secondly, if the treaty drafters wanted the SCM Agreement justification to be available, they would have made this as clear as in other agreements, such as the WTO SPS Agreement, which expressly mentions the viability of such exceptions in SPS Article 1 and 2.4.[988] In addition, the lapsed Article 8 of the SCM Agreement, which was similar to Article XX and designed exclusively for the SCM Agreement, implies that integrating the GATT Article XX to the SCM Agreement would not work.[989] The temporary exception of non-actionable subsidies supports the view contextually that Members intended to construct the SCM Agreement as 'a specific regime with its own exceptions and flexibilities'.[990] The non-renewal of the SCM Agreement Article 8 seems to evidence the unwillingness of the Members to have exceptions for certain subsidies. Therefore, it would be contrary to the treaty drafters' intention to integrate the GATT Article XX to the SCM Agreement. Finally, odd legal consequences could occur if the multilateral action against certain subsidies would be exempted by means of Article XX, whereas unilateral countervailing duties can still be imposed

[982] Green (n 4), at 409.
[983] Howse (n 904), at 17.
[984] Low, Marceau and Reinaud (n 14), at 506.
[985] Appellate Body Report, *China – Audiovisual Services*, paras. 205-233.
[986] Appellate Body Report, *United States— Measures Relating to Shrimp from Thailand* ('US-Shrimp (Thailand)'),WT/DS343/AB/R, adopted 16 July 2008, paras. 308-310, 319
[987] Rubini (n 211), at 562.
[988] According to the SPS Preamble, members' desire "to elaborate rules for the application of the provisions of GATT 1994 which relate to the use of sanitary or phytosanitary measures, in particular the provisions of Article XX(b)," Agreement on Sanitary and Phytosanitary Measures, April. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1867 U.N.T.S. 493. The SPS Agreement Article 2.4 reads as follows: '[S]anitary or phytosanitary measures which conform to the relevant provisions of this Agreement shall be presumed to be in accordance with the obligations of the Members under the provisions of GATT1994 which relate to the use of sanitary or phytosanitary measures, in particular the provisions of Article XX (b).'
[989] Rubini (n 212), at 35.
[990] Coppens (n 636), at 194.

on these subsidies.[991] The incoherence between unilateral measures and multilateral ones would cast negative impacts on the legitimacy of the WTO as an institutional framework.

Despite of vehement oppositions to the application of Article XX to the SCM Agreement, it is another issue to analyze the effectiveness of justifying otherwise illegal subsidies via the application of Article XX. Assuming that the GATT Article XX was applicable to the SCM Agreement, what are the required steps to take to avail de-carbonization subsidies of the general exceptions? First of all, these subsidies contribute to the objective of reducing carbon emissions and mitigating climate change, thus falling under one of the enumerated provisions of Article XX, namely, paragraphs (a), (b), (d) or (g). The key terms 'necessary' and 'relating to' in these paragraphs invoke different requirements, and the former turns out to be stricter. The evolving case law suggests that a considerable degree of deference is given to the Members with respect to the level of protection they chose. In this vein, governments' persuasion to mitigate climate change would be respected from the trade regime.

The objectives are not only considered in the first step of analysis of Article XX, but also in the following step, which requires an examination of the manner in which the challenged measure is applied under the Chapeau. Whether trade discriminatory de-carbonization subsidies can pass the scrutiny of both the 'necessity' test and the requirement of not being 'unjust or arbitrary discrimination' under the Chapeau becomes a key issue. The application of Chapeau is to weed out subsidies aimed primarily for economic or trade gains rather than climate change mitigation interests. De-carbonization subsidies, which meet the substantive conditions, as well as the conditions of the Chapeau, would be non-actionable. Adjudicators are provided with an opportunity to analyze the degree of trade-related distorted caused by the use of de-carbonization subsidies in relation to the scale of its positive effects.

In comparison to a new list of non-actionable subsidies created under the SCM Agreement, the application of Article XX has to face more restraints. For instance, it might become a hurdle for meeting the requirements imposed by the Chapeau for renewable energy subsidies. If the subsidies were not used in an even-handed manner, would Article XX still be available?

7.3.4 Which Option is Preferable?

Among the three proposals to change the current SCM Agreement so as to incorporate climate change mitigation-related objectives in an explicit manner, the author favors the second one: creation of a newly-drafted non-actionable subsidies. By craving out a new list of subsidies that are climate-friendly, and therefore non-actionable, the SCM Agreement could aid the fight against climate change on the trade front substantially. This represents an effective and steadfast way to translate sensitivity to developing renewable energy and addressing climate change to the SCM Agreement. The most challenging, yet most important task is to ascertain the coverage of non-actionable subsidies.

[991] *Ibid.*

7.4 Conclusion

This chapter developed the analytical discussion of the interaction between the WTO regime and de-carbonization on the basis of the legal decisions made in *Canada – Renewable Energy*. The case law sheds important light on how measures designed to support electricity generated from renewable energy would be dealt with under the SCM Agreement. It found out that the policy space under the SCM Agreement for de-carbonization measures exists yet being filled with uncertainties.

Certain forms of de-carbonization measures, especially these regulatory ones would easily fall outside the remit of the SCM Agreement since they do not meet the definition of subsidy. Another widely-employed de-carbonization measure: feed-in tariffs would not be captured by subsidy rules so far as the Appellate Body's interpretative approach made in *Canada – Renewable Energy* is concerned. Even when some measures meet the requirements of being subsidy, as long as they are implemented on a non-specific basis, the subsidy rules still would not apply.

The relatively safe situation of FITs and other forms of renewable energy electricity support mechanisms can be attributable to two reasons. The first one relates to the sparsely trade nature of electricity generated from renewable energy sources. The generation of renewable energy electricity has mainly occurred locally, regionally and nationally.[992] The first important issue in determining the applicability of subsidy rules is to examine whether there is cross-border trade in the products or markets that could be affected by government's subsidization behavior.[993] Since the electricity is not extensively traded around the world, the possibility of public support having an impact on international trade remains low. This, as a consequence reduces the Members' willingness to initiate challenges at the WTO Dispute Settlement platform. Nevertheless, with the rapid technological progress and demand for electricity, the idea of a 'global grid', although at its infancy has huge potential to be nurtured and materialized.

The second reason is the novel interpretation of subsidy definition, as adopted in the Appellate Body Report in *Canada – Renewable Energy*, which deserves applause from the perspective of climate change mitigation. Particularly when the SCM Agreement does not have carve-outs for green and legitimate subsidies, the Appellate Body used its interpretative authority to provide more policy space for renewable energy development.[994] The narrowed definition of 'relevant market benchmark' and the exclusion of government's market-creation action from the definition of 'subsidy' would broaden the scope of climate-related actions exempt from the subsidy rules.[995] This interpretative approach has made the coverage of subsidy less inclusive so that some forms of de-carbonization measures would not fall into this ambit at the first place.

[992] Thomas Cottier and Ilaria Espa (eds), *International Trade in Sustainable Electricity Regulatory Challenges in International Economic Law* (Cambridge University Press 2017), at 2.
[993] Rubini (n 91), at 316.
[994] Sherzod Shadikhodjaev, 'Promotion of 'Green' Electricity and International Dispute Settlement: Trade and Investment Issues' (2016) International Lawyer 343, at 350.
[995] *Ibid.*

The Appellate Body's hard-fought fight in *Canada – Renewable Energy* on the one hand, demonstrates the increasingly friendliness that the WTO regime has shown through adjudication towards the goal of de-carbonization and climate change mitigation. On the other hand, it underscores the imperative to translate sensitivity of non-trade values, such as climate change mitigation and de-carbonization into the WTO subsidy rules. Interpretative approach can be adopted to provide policy space for climate change mitigation-related actions. Such an approach would also entail systemic implications or even unintended consequences.[996] For instance, under a narrowly interpreted subsidy definition, even trade distorting measures with undesirable impacts would be sheltered from being captured, which may undermine rules-based subsidy disciplines.[997] The Appellate Body's good intention to provide breathing space for de-carbonization measures should not be abused to shield protectionism-motivated measures from being subjected to the WTO restraints. In addition, it is uncertain and unpredictable to rely on adjudicators' interpretation, which is a piece-meal solution to the deficiency of the SCM Agreement.

Therefore, it is by no means acceptable to ignore the deficiencies as manifested in the legal decisions made in *Canada – Renewable Energy* or expect that this interpretative approach would be adopted in future jurisprudence to provide policy space for de-carbonization measures. Many issues have been left undecided, and there is certainly no final statement of the law with respect to the legal status of regulatory subsidies that are extensively employed in renewable energy electricity sector.[998] The use of FITs might be defined as subsidy within the meaning of SCM Agreement and subjected to the subsidy disciplines in future jurisprudence. The impacts of restraining the Members' de-carbonization actions are not confined to trading system but expected to implicate the climate-related commitments. Therefore, it is fundamentally important that the WTO regime does not impose undue restraints on the Members' legitimate climate action.

The reason for the Appellate Body's novel yet troublesome interpretation of subsidy, which also sheds light on the solution, is the absence of general exceptions for legitimate subsidies under the SCM Agreement. This is to say, the lack of specific carve-outs for certain forms of legitimate subsidies was culprit for the Appellate Body's 'legal acrobatics', which may generate negative implications. On the other hand, recognizing the absence of non-actionable subsidies as a severe legal problem points out the solution: creating exceptions for some subsidies.

Frictions that might occur between the Members concerning the use of trade-related renewable energy measures could weaken de-carbonization efforts and aggravate the fragmentation of international trading system and climate regime. It is critically important to solve the problem presented by the lack of exceptions under the SCM Agreement that legitimate subsidies deserve. This represents a gap that needs to be filled in so as to ensure that the trade regime pursues its economic goals in a way that is sensitive to other important goals and values, such as de-carbonization.

[996] Bigdeli (n 80), at 23-25.
[997] *Ibid*, at 24.
[998] Luca Rubini, 'ASCM Disciplines and Recent WTO Case Law Developments: What Space for 'Green' Subsidies' in Thomas Cottier and Ilaria Espa (eds), *International Trade in Sustainable Electricity Regulatory Challenges in International Economic Law* (Cambridge University Press 2017), at 319.

There is clearly a need to create carve-outs for subsidies adopted in renewable energy sector with an aim of de-carbonization. In this vein, the WTO SCM Agreement could be well equipped to enable, facilitate and possibly encourage subsidies employed to expand renewable energy electricity and achieve the goal of de-carbonization.

Three promising avenues were reviewed in preceding parts: one is the reactivation of the already lapsed Article 8 of the SCM Agreement; second is the creation of a new category of non-actionable subsidies that are tailored to the need of de-carbonization; third is the application of the GATT Article XX to the SCM Agreement. The second option has great potential to fill the gap existing in the current SCM Agreement and increase the environmental credentials of the subsidy rules.

At the current stage, to make widespread changes in the SCM Agreement within the foreseeable future seems to be rather unlikely, if not entirely impossible. It is not pragmatic to count on the reinvigoration of multilateral negotiation and include SCM Agreement reform on the agenda. However, this does not mean that the Members' hands are tied without any efforts to be made. Before making possible changes to the subsidy rules, the Members can start from preparation.

As argued by Rubini, it is important that the Members prepare facts, data and their assessment of subsidies, which are necessary for any possible negotiation or law reform.[999] The process of knowledge generation and information sharing should by no means be underestimated. Instead, it is encouraged that the Members facilitate discussion and exchange ideas on the use of renewable energy subsidies. The enhanced fisheries subsidies notification as raised in the WTO Eleventh Ministerial Conference represents a practical first step in addressing harmful fisheries subsidies and sheds valuable light on how to facilitate information sharing in renewable energy subsidies.[1000] Even if incremental progresses, the Members should identify the opportunities to achieve accomplishments and avoid leaving everything to a package of results for Ministerial action.[1001]

Similar action has been taken in tackling climate-harmful fossil fuel subsidies. Participating Members in the WTO Eleventh Ministerial Conference released a Ministerial Statement calling on the WTO to discipline inefficient fossil fuel subsidies through enhanced WTO transparency and report that will enable the evaluation of the trade and resource effects of these subsidies.[1002] The momentum and lessons that have been accumulated to deal with fossil fuels could influence the decisions making on renewable energy subsidies in a positive way. It is useful to explore the similarities between the reform of fossil fuel subsidies and renewable

[999] Rubini (n 91), at 333.
[1000] For the details of negotiations on fisheries subsidies, see, WTO, Negotiations on Fisheries Subsidies, available at: https://www.wto.org/english/tratop_e/rulesneg_e/fish_e/fish_e.htm, accessed on 12 January 2018.
[1001] USTR, '2018 Trade Policy Agenda and 2017 Annual Report' (2018), available at: https://ustr.gov/sites/default/files/files/Press/Reports/2018/AR/2018%20Annual%20Report%20V.pdf, accessed on 28 January 2018, at 85.
[1002] See, IISD, 'Members Call for WTO to Play A Central Role in Ending Inefficient Fossil Fuel Subsidies', available at: http://www.iisd.org/media/members-call-wto-play-central-role-ending-inefficient-fossil-fuel-subsidies.

energy subsidies, despite of their differences. The vitally important prerequisite for disciplining fossil fuel subsidies as well as providing legal certainty to renewable energy subsidies under the WTO framework is to recognize that climate change is too significant to be held back by the political and technical intricacies of engaging in a law reform of SCM Agreement.[1003]

As an alternative, a plurilateral approach that binds a subset of the WTO membership represents another route to address climate change. This should not be viewed as attempts to curb multilateralism. The past WTO history on the negotiation of Information Technology Agreement is a good example.[1004] The Members that are willing to negotiate on a new list of non-actionable renewable energy subsidies could form the group of willingness and get negotiation started.

The current SCM Agreement is far from ideal in accommodating public policy goals, such as climate change mitigation. Rather, it might create undue limitations on the Members' action in developing renewable energy so as to reduce emissions. The dispute rulings presented in *Canada – Renewable Energy* clearly reflect the deficiencies of the legal provisions of SCM Agreement in this aspect. Therefore, it is significantly important to factor into climate change mitigation the SCM Agreement by making carve-outs for certain forms of de-carbonization measures.

[1003] Gary Horlick, 'The WTO Subsidies Agreement Can Be Changed to Discipline Fossil Fuel Subsidies' (ICTSD Opinion, 2017), available at: https://www.ictsd.org/opinion/the-wto-subsidies-agreement-can-be-changed-to-discipline-fossil-fuel-subsidies, accessed on 12 January 2018.
[1004] Tamiotti and Ramos (n 319), at 510.

Chapter 8: Green Industrialization and the WTO Rules

This chapter aims to elaborate on how the WTO rules are applied in assessing the legality of trade-related measures that primarily aim at achieving green industrialization. It is important to map out the scope of policy space that the WTO Members have in adopting policy measures with possible implications on international trading system to realize green industrialization.

As discussed in Chapter 3, the transition to a green economy depends on the realization of green industrialization. The focus of 'industries' almost invariably turns out to be on the manufacturing sector, therefore, strengthening the economic viability of renewable energy manufacturing sector is of significance in green industrialization. Against this backdrop, governments are eager to shape a facilitative policy environment for improving renewable energy manufacturing capabilities. The question is no longer whether industrial policy measures are needed, but how to design them in a way that can meet the underlying policy objectives yet remain WTO-consistent.

The spectrum of supportive measures in enhancing the renewable energy manufacturing capability is very wide, which include tax rebates on exported renewable energy products, targeted subsidies for research and development, green public procurement schemes. These measures are relevant in addressing climate change and facilitating green industrialization. However, not all of them are debatable from the perspective of international trade law because they might have no or neutral implications on international trading system. Only when the policy measures are designed in a discriminatory way that foreign trade interests are subjected to jeopardy, the WTO disciplines come into play. Therefore, it is of research interest to examine how the WTO deals with green industrialization measures that possibly impose restrictions on international trade.

This chapter chooses to focus on the use of local content requirements, which are widely employed by countries around the world as one typical form of green industrialization policy measures. LCRs, as well as some other forms of green industrialization measures not only aim for renewable energy development and climate change mitigation, but also, perhaps more importantly, the increased competitiveness of renewable energy equipment manufacturing sector.

The emphasis on renewable energy equipment manufacturing sector does not mean that green industrialization measures cannot generate positive environmental impacts. Competitive renewable energy industries, once nurtured can participate in the diffusion of renewable energy technologies and supply of cost-effective renewable energy products. In this vein, a strong and competitive renewable energy manufacturing sector has potential to contribute to climate change mitigation.

However, the environmental benefits that green industrialization measures can possibly bring tend to be incidental and dependable on the specific policy design and implementation. It compounds the question when green industrialization measures that are employed in a trade-discriminatory manner yet still have the potential to facilitate climate change mitigation. Whether the positive impacts of

green industrial policies on climate change mitigation could outweigh their restrictive ramifications on trading system is put into question.

The following part elaborates on two high-profile renewable energy disputes with respect to the consistency of green industrialization measures with the WTO law. Both of the two disputes targeted at the use of LCRs in renewable energy equipment manufacturing sector. This provides insights on the scope of policy space that the Members have in making use of green industrialization measures. Whether the Members would be given the policy space to nurture and grow domestic renewable energy industry by means of discriminatory trade measures remains a controversial issue. The predominant part of legal analysis in this chapter is not in what ways the use of LCRs violates the WTO law but the possibility in justifying the otherwise illegal green industrialization measures by means of exoneration/exemptions under the current WTO regime.

8.1 The Adjudication of Renewable Energy Disputes Concerning Green Industrialization Measures

The surge of the WTO disputes on the use of trade-discriminatory green industrialization measures provides a testing ground of the compatibility between green industrialization objective and the WTO rules. The decisions made by the Panel and particularly, the Appellate Body in the disputes call into close attention, which map out policy space for the Members' green industrialization efforts. The jurisprudence sheds important light on how the Members design and implement green industrialization measures in a WTO-consistent manner.

As discussed in Chapter 3, the use of LCRs in renewable energy manufacturing sector constitutes blatantly trade discriminatory measures, which is motivated by protectionism objectives. The violation of national treatment principle is self evident in the case of LCRs from trade law perspective. What remains to be discussed is whether the use of LCRs could possibly be exonerated or exempted by means of WTO provisions.

In *Canada – Renewable Energy*, the defendant Canada tried to avail the challenged measure of the GATT Article III: 8 (a) so that there would not be any breach of non-discrimination obligation at the first place. While in *India – Solar Cells*, the defendant India not only revoked the GATT Article III: 8 (a) but also referred to the GATT Article XX (d) and (j). Therefore, the scope of jurisdiction in the two disputes is different.

The following part firstly, elaborates on the decisions made by the adjudicators with respect to the application of the GATT Article III: 8 (a) in *Canada – Renewable Energy* and *India – Solar Cells*. Then it moves to discussing how the GATT Article XX (d) and (j) were understood in justifying the use of LCRs in renewable energy area.

8.1.1 The Interpretation of the GATT Article III: 8 (a)

As discussed in Chapter 5, the GATT Article III: 8(a) exonerates some forms of government procurement from being subjected to non-discrimination discipline,

even measures with discriminatory impacts on other trade partners. Both the defending parties in the two renewable energy disputes raised the defense under the GATT Article III: 8(a). The key issue therefore, becomes whether the challenged measures could meet all the requirements set in this provision. This following part analyses the application of this provision in *Canada – Renewable energy* first and then *India – Solar Cells.*

8.1.1.1 The Interpretation of the GATT Article III: 8 (a) in *Canada – Renewable Energy*

As the first-ever case in dealing with renewable energy industrial policy measures, *Canada – Renewable Energy* represents 'an acid test' for whether, under the WTO rules, governments may use preferences for local producers of renewable energy equipment.[1005] Japan and the EU, as the complainants alleged that the imposition of LCRs violated the GATT Article III: 4 and TRIMs Article 2.1 national treatment on the basis that foreign energy generation equipment was subjected to less favorable treatment than 'like' products of Ontario origin.[1006]

In the self-defense, Canada argued that the FIT Programme amounted to 'laws and requirements that govern the procurement of renewable energy electricity for governmental purpose of securing an electricity supply for Ontario from clean sources,' and 'not with a view to commercial resale or with a view to use in the production of goods for commercial sale.' [1007] The Ontario's initiated and administered FIT Programme could fall under the ambit of government procurement derogation and thus, pass the scrutiny of non-discrimination discipline. If Canada could successfully make use of the GATT Article III: 8(a), even the discriminatory LCRs would have been exonerated.[1008] Whether Canada could successfully avail the challenged measures Article III: 8(a) became a decisive issue in the assessment of national treatment principle.

(1) The Panel Decisions

There are three distinct but cumulative requirements in the GATT Article III: 8(a).[1009] While the panel agreed with Canada that challenged measures amounted to 'laws, regulations or requirements governing the procurement by governmental agencies of products purchased', thus fulfilling the first tier of requirements under the provision, it found that the Government of Ontario and the municipal governments 'profit from the resale of electricity that is purchased under the FIT Programme' and that the resale of electricity was made 'in competition with the licensed electricity retailers.' [1010] Therefore, according to the Panel, Ontario purchased the electricity 'with a view to commercial resale' and thus GATT Article III: 8(a) was not applicable. If the FIT Programme were provided to manifest no view to commercial resale or gain no profits, Article III: 8(a) would have been

[1005] Bill Waren, 'Green Energy Guilty Verdict Expected in World Trade Organization' Friends of the Earth (10 October 2012), available at: https://foe.org/2012-10-green-energy-guilty-verdict-expected-in-world-trade/, accessed 4 November 2017.
[1006] Panel Report, *Canada-Renewable Energy*, paras.3.1-4.3.
[1007] Appellate Body Report, *Canada-Renewable Energy*, para. 1.10.
[1008] Cosbey and Mavroidis (n 94), at 15.
[1009] See, detailed discussion of the GATT Article III: 8(a) is in Chapter Four.
[1010] Panel Report, *Canada-Renewable Energy*, para. 7.151

available in this case. It seems that the Panel kept 'a glimmer of hope' for Canada to be vindicated at the appeal stage.[1011]

Nevertheless, it is worth emphasizing that the Panel characterized the challenged measures as government procurement since the LCRs compelled the purchase and use of equipment manufactured in Ontario 'as a necessary prerequisite for the alleged procurement…to take place.'[1012] In other words, failure to satisfy the conditions of the LCRs would result in no procurement of renewable energy electricity, which implies that the requirement governed procurement for the purposes within the meaning of the GATT Article III:8(a). Therefore, the Panel rejected the EU's proposed understanding that the derogation should only cover measures that directly affect a product identical to the products allegedly procured. It is worth mentioning that the Panel also touched upon the relationship between electricity and electricity generation equipment in this dispute, which became a key analytical issue that the Appellate Body issued fundamentally different rulings. The Panel found that the LCRs were imposed on the very same equipment that was needed and used to produce the electricity that was procured by the government, therefore 'a close relationship' existed between the products.[1013]

(2) The Appellate Body Decisions

The Panel's decisions regarding the application of Article III:8(a) on challenged measures was controversial, and all three parties appealed on this point. On appeal, the Appellate Body first determined the nature of this provision, holding that it is 'a derogation limiting the scope of the national treatment obligation and it is not a justification for measures that would otherwise be inconsistent with that obligation.'[1014] In other words, measures governing government procurement are excluded from the scope of national treatment obligation under Article III as long as the requirements set in Article III: 8(a) have been met.

The Appellate Body then proceeded to address the key point that gave rise to its divergence with the Panel. The Appellate Body paid particular attention to the phrase 'product purchased' when deciding whether the Canadian LCRs governed the procurement. In the Appellate Body's reasoning, the reading of Article III: 8(a) must be related to the obligations as prescribed under GATT Article III.[1015] Thus, the government procurement derogation 'becomes relevant only if there is discriminatory treatment of foreign products that are covered by the obligations in Article III, and this discriminatory treatment results from laws, regulations, or requirements governing procurement by governmental agencies of products purchased.'[1016] According to the Appellate Body, therefore, the 'same discriminatory treatment' needed to be considered both under Article III and Article III: 8(a). In the light of this, the key term 'products purchased' within the meaning

[1011] Sadeq Z. Bigdeli, 'Clash of Rationalities: Revisiting the Trade and Environment Debate in Light of WTO Disputes Over Green Industrial Policy' (2014) 6(1) Trade, Law and Development 178, at 190.
[1012] Panel Report, *Canada-Renewable Energy*, para. 7.124.
[1013] Panel Report, *Canada – Renewable Energy*, para. 7.127.
[1014] Appellate Body Report, *Canada – Renewable Energy*, para. 5.56.
[1015] Appellate Body Report, *Canada –Renewable Energy*, para 5.58.
[1016] Appellate Body Report, *Canada –Renewable Energy*, para 5.63.

of Article III: 8(a) needs to be understood by considering the scope of 'products' covered by Article III.

More specifically, the Appellate Body found that the products subject to the discrimination and the products that were purchased by the government must be in 'a competitive relationship.'[1017] Thus, the products that were discriminated against and those purchased need to be 'identical', or 'like', or 'directly competitive or substitutable' so as to fall under the ambit of Article III: 8(a).[1018] After finding that it was renewable energy electricity generating equipment that was subject to discriminatory treatment and electricity that was purchased under the FIT Programme, the Appellate Body concluded a competitive relationship did not exist between electricity generating equipment and electricity. In so holding, the Appellate Body reversed the Panel's finding electricity and generation equipment manifested 'a close relationship' because the latter was used to generate the former; instead, the Appellate Body determined that the mere existence of 'a close relationship' cannot meet the requirement of a competitive relationship.[1019] Thus, the LCRs did not qualify as 'laws, regulations or requirements governing the procurement by government agencies' of electric within the meaning of Article III: 8(a).[1020] Accordingly, Canada's attempt to exonerate the deviation from the national treatment obligation on basis of Article III: 8(a) failed and the use of LCRs constituted a violation of its WTO obligations.

It is noteworthy that the Appellate Body also added that consideration of inputs and processes of production used to produce the product may be required in assessing the relationship between products.[1021] However, it was left undecided in the present case whether the cover of Article III: 8(a) may also extend to discrimination relating to 'inputs and processes of production used in respect of products purchases by way of production.'[1022] The scope of government procurement derogation would be largely expanded if the consideration of inputs and processes of production could be covered by Article III: 8(a).

Finally, the Appellate Body mapped out understanding on the phrase 'governmental purposes', which referred to 'what is consumed by the government or what is provided by government to recipients in the discharge of its public functions.'[1023] The scope of such governmental functions should be determined on a case-by-case basis while there must be 'a rational relationship' between the purchased products and the governmental function being discharged.[1024] Since the challenged measure did not meet the first-tier requirement, the adjudicators did not move to touch upon whether India government performed governmental function. It remains to be seen the scope of 'governmental purposes' within the meaning of Article III: 8(a).

[1017] Appellate Body Report, *Canada – Renewable Energy*, para 5.79.
[1018] Appellate Body Report, *Canada –Renewable Energy*, para. 5.65.
[1019] Appellate Body Report, *Canada –Renewable Energy*, para 5.76.
[1020] Appellate Body Report, *Canada –Renewable Energy*, para. 5.79.
[1021] Appellate Body Report, *Canada –Renewable Energy*, para. 5.63.
[1022] Appellate Body Report, *Canada –Renewable Energy*, para. 5.63.
[1023] Appellate Body Report, *Canada –Renewable Energy*, para. 5.59.
[1024] Appellate Body Report, *Canada –Renewable Energy*, para. 5.59.

(3) Comparing the Panel and the Appellate Body Decisions

The divergence between the Panel and the Appellate Body lies in how the relationship between the products discriminated against and the products procured are interpreted in order for Article III: 8(a) to apply. The interpretative approach adopted by the Panel in understanding 'products purchased' allows for a broader scope to Article III: 8(a) than the approach employed by the Appellate Body. It remains to be examined how the Appellate Body's interpretation would be followed in future jurisprudence.

Without any doubt, the requirement to establish a competitive relationship laid out by the Appellate Body has narrowed the scope of policy space of Article III: 8(a), which also puts 'an important gloss' on the applicable exception for government procurement.[1025] The availability of the government procurement derogation would only come into existence when the government directly purchases the domestic products at the expense of imported like products. Any attempt to exempt LCRs attached renewable energy policy measures from being violations of national treatment obligations by means of government procurement derogation is unlikely to succeed.

In comparison to the Panel's interpretation of the GATT Article III: 8(a), which was in a simple and straightforward way, the Appellate Body adopted a more twisted approach. It seems that the approach adopted by the Panel has the potential to widen the scope for government procurement derogation while the Appellate Body flatly excluded the possibility of invoking this provision for any buy local measures.[1026]

The Appellate Body upheld the Panel's decision that the FIT programme violated Article III: 4 of the GATT and Article 2.1 of the TRIMs.[1027] Canada would face the threat of WTO-authorized trade sanctions if Ontario does not bring its acclaimed programme into compliance with WTO rules.

8.1.1.2 The Interpretation of the GATT Article III: 8 (a) in *India – Solar Cells*

The United States brought the dispute against India's certain measures relating to local content requirements under the Jawaharlal Nehru National Solar Mission for solar cells and solar modules. The claims made were related to the violation of national treatment under the GATT Article III: 4 and Article 2.1 of the TRIMs Agreement.[1028]

(1) India's Arguments

India submitted that the challenged measures should be exempted by the means of the government procurement derogation contained in Article III: 8(a).[1029] India argued that the Appellate Body's interpretation in *Canada – Renewable Energy* of 'products purchased' and the test of a 'competitive relationship' between the

[1025] Charnovitz and Fischer (n 92), at 178.
[1026] Bigdeli (n 1011), at 190.
[1027] Appellate Body Report, *Canada –Renewable Energy*, paras. 6.1 and 6.2.
[1028] Detailed discussion of India – Solar Cells can be found in Chapter 6.
[1029] See India's first written submission, paras. 101-164.

products discriminated against and the product purchased 'is not a single inflexible rule to be applied in all circumstances for consideration under Article III.'[1030] India aimed to distinguish the present case from that of *Canada – Renewable Energy*, based on whether the products discriminated against were directly used in the generation of electricity or not.[1031] Because with the reasoning laid out by the Appellate Body in *Canada – Renewable Energy* to be followed in this dispute, the possibility of India successfully revoking government procurement derogation would be rather dim.

In support, India referred to an undecided issue in *Canada – Renewable Energy* which concerns whether the derogation can extent to discrimination relating to 'inputs and processes of products' used in respect of products purchased by way of procurement.[1032] Here, India emphasized the nature of solar cells and modules as 'integral inputs for solar power generation' and demanded 'a different analysis when the discrimination is on inputs for a product that is purchased.'[1033] According to India, solar cells and modules constitute 'integral inputs' to the generation of electricity as opposed to other 'ancillary' equipment[1034] While in *Canada – Renewable Energy*, the LCRs applied on a wide range of equipment and services required to construct and maintain renewable energy power generation system.[1035] Therefore, India argued for the scope of the 'products purchased' to be extended to cover 'integral input for generation or production of the product that is purchased.'[1036] India thus attempted to argue that Article III: 8(a) would be applicable as long as the products could be somehow related to each other. This is to say, an 'integral input' to a product procured by the government could by its nature be covered by Article III: 8(a). The complainant, however, countered that solar cells and modules were not inputs in the generation of electricity because they were not 'incorporated into or otherwise physically detectable' in the electricity procured by the India government.[1037] Instead, the equipment should be characterized as 'capital goods'.[1038]

(2) The Panel Decisions

The Panel dismissed India's argument entirely and found the discrimination against imported solar cells and modules were not covered by the derogation of Article III: 8(a).[1039] India's argument that the challenged measures were distinguishable from the measures assessed by the Appellate Body in *Canada – Renewable Energy* was also rejected.[1040] The Panel disagreed with India that the government was effectively procuring the solar cells and modules by purchasing the electricity. Furthermore, the Panel chose not to engage with India's contention that as 'integral inputs' to the generation of electricity solar cells and modules are relevant to the

[1030] Appellate Body Report, *India – Solar Cells*, para. 5.19.
[1031] See, European Union's Third Party Written Submission, paras. 37.
[1032] Appellate Body Report, *Canada – Renewable Energy*, para. 5.73.
[1033] See India's second written submission, para. 23.
[1034] See India's Response to Panel Question No. 19, para 3.
[1035] Panel Report, *India – Solar Cells*, para. 7.114.
[1036] Panel Report, *India – Solar Cells*, para. 7.117.
[1037] See, Second Written Submission of the United States, para. 20.
[1038] *Ibid.*
[1039] Panel Report, *India – Solar Cells*, para. 7.135.
[1040] Panel Report, *India – Solar Cells*, para. 7.135.

analysis under Article III: 8(a) since these were issues that the Appellate Body considered unnecessary to address in *Canada – Renewable Energy.*

(3) The Appellate Body Decisions

In its appeal, India claimed that the Panel mistakenly failed to consider its arguments that 'solar cells and modules are indistinguishable from solar power generation' and that they should qualify as 'inputs' for that purpose.[1041] The Appellate Body upheld the panel decision, and in doing so reiterated that products purchased under Article III: 8(a) by way of procurement must necessarily be 'like', or 'directly competitive' with or 'substitutable' for the foreign products being discriminated against.[1042] More specifically, the Appellate Body confirmed that while 'inputs and process of production' could be taken into consideration during the assessment they cannot replace the competitive relationship standard.[1043] According to the Appellate Body, the question of whether the coverage of Article III: 8(a) could possibly extend to discrimination relating to inputs and process of production used in respect of products purchased arises only after the product purchased has been found to be in a competitive relationship with the product subject to discrimination.[1044] A consideration of inputs and processes of production cannot displace the competitive relationship standard.[1045] However, it is reasonable to assume that the possibility that government procurement derogation might apply to discriminate in relation to inputs and production methods where both government purchase and discrimination concern the same products still exists.[1046]

Both the Panel and the Appellate Body in the present case followed the interpretation previously adopted in the Appellate Body Report in *Canada – Renewable* Energy. This is to say, in order for Article III: 8(a) to be available, 'a competitive relationship' between products purchased and products discriminated against must be established. If such interpretation is maintained in future disputes, than merely relying on solar cells and modules being 'integral inputs' for solar power electricity generation will continue to be insufficient to allow a Member to invoke the derogation of Article III: 8(a). Therefore, India failed to successfully avail the challenged LCRs of government procurement derogation.

8.1.1.3 Reflections on the Application of the GATT Article III: 8(a) in Renewable Energy Sector

The consistency of the Appellate Body decisions in *Canada – Renewable Energy* and *India – Solar Cells* reflects that India's solar local content requirements were substantially similar to Ontario's. The jurisprudence has delineated the scope of policy space that Members have to use government procurement to favor domestic producers without running afoul of the WTO obligations. In order to successfully make use of the government procurement to provide more favorable treatment to the domestic renewable energy producers, the Members have to meet all the criteria

[1041] See, India's appellant's submission, para. 35 (b).
[1042] Appellate Body Report, *India – Solar Cells*, para. 5.40.
[1043] Appellate Body Report, *India – Solar Cells*, para. 5.40.
[1044] Appellate Body Report, *India – Solar Cells*, para. 5.40.
[1045] Appellate Body Report, *India – Solar Cells*, para. 5.24.
[1046] Sherzod Shadikhodjaev, 'India – Certain Measures Relating to Solar Cells and Solar Modules' (2017) 111(1) American Journal of International Law 139, at 142.

of Article III: 8(a). Given the opaqueness of the provisions, the scope and perimeters of the derogation must be determined by the dispute settlement body. The Panel and the Appellate Body's determinations ultimately determine how large the scope of policy space that the Members have in exercising discriminatory government procurement practices.

The Appellate Body jurisprudence has sent a clear signal that a product being purchased by a Member government is by itself not sufficient to be shielded from national treatment obligation contained in the GATT Article III. This interpretation alone widens the scope of Article III beyond what some commentators had believed. In this regard, Yanovich argues that the Appellate Body's holdings 'debunk the myth' that governments that had not signed onto the Government Procurement Agreement (GPA) [1047] had 'carte blanche' to systemically favor domestic producers over foreign ones in procurement. [1048] This is the case as a challenged procurement measure does not automatically fall under the ambit of Article III: 8(a) – but rather is subjected to a close scrutiny of the article – even if a government has not signed the WTO GPA. [1049] For example, in the renewable energy sector the derogation contained in Article III: 8(a) will not automatically shelter discrimination in the renewable energy generation equipment sector as a condition of obtaining a favorable renewable energy electricity rate. Therefore, the application of the non-discrimination obligation contained in GATT Article III extends and applies irrespective of membership in the GPA. Thus, non-GPA Members have only relatively limited freedom to adopt discriminatory and protectionist procurement measures for the achievement of various policy objectives.

One of the most important findings to come out of the disputes is the establishment of a clear condition on the application of the derogation – the challenged measures must concern goods that are in a competitive relationship. Merely establishing a close relationship between the products that are subject to discrimination and the products purchased (as was accepted by the Panel in *Canada – Renewable Energy*) is not sufficient in invoking government procurement derogation. Therefore, it is likely that many government procuring practices, in which products do not demonstrate a competitive relationship would fail to pass the scrutiny.
The practical result of the Appellate Body's interpretation undoubtedly narrows the scope of policy space under Article III: 8(a) and, accordingly, puts 'an important gloss' on the applicable of the exception for government procurement. [1050] Many government procurement measures could potentially fall within the scope of GATT Article III, and thus be subject to the non-discrimination obligation. Should this interpretation be followed in the future, any attempt to exonerate LCRs attached to renewable energy electricity support measures from the national treatment obligation by means of government procurement derogation will be unlikely to succeed.

[1047] See, Agreement on Government Procurement Annex 4(b) of the WTO Agreement, reprinted in Uruguay Round of Multilateral Trade Negotiations: Legal Instruments Embodying the Results of the Uruguay Round, Vol. 31, GATT Secretariat, Geneva, 1994. The GPA is the main instrument regulating government procurement in international trade, it binds only a subset of the WTO's Members governments due to its nature as a plurilateral treaty.
[1048] Yanovich (n 7), 430.
[1049] Dawar (n 428), at 647.
[1050] Charnovitz and Fischer (n 92), at 178.

With this in mind, it should be obvious that the Appellate Body decisions in relation to the application of government procurement derogation will have numerous implications. For instance, the Appellate Body's interpretation of the derogation will make it difficult, if not impossible, for a Member to implement a LCR. This is the correct result, and in striking down LCRs the Appellate Body was surely cognizant of the fact that in most, if not virtually every, circumstances the imposition of such measures will not only lead to a discriminatory impact on trading partners but also impede diffusion of renewable energy technologies and slow down development of the renewable energy sector. Viewed in this manner, the WTO jurisprudence has the potential to not only uphold one of the cornerstone principles of the trading system but as importantly to remove barriers to the deployment of renewable energy. This reflects that under the WTO regime, mitigation eliminating trade protectionism in renewable energy sector is synergy between trade linearization and climate change. Therefore, the Appellate Body decisions in narrowing the scope of Article III: 8(a) could be credited from both a trade law and climate perspectives.

It is, of course, worth delving deeper and analyzing whether the WTO decisions are well grounded or somehow methodologically flawed. In many respects, the Panel's interpretation of the GATT Article III: 8(a) in *Canada – Renewable Energy* is preferable to that of the Appellate Body. For instance, the Panel offered a textual interpretation of what constitutes government procurement in a straightforward manner. The Panel simply found that a measure governs procurement when the contract cannot be awarded unless certain conditions are fulfilled, or when contract performance requires that conditions to be fulfilled, which does not seem to twist the treaty language of Article III: 8(a).[1051] This interpretation is permissive on one hand, and still has the potential to guard against protectionism since the third requirement of 'for governmental purposes' and 'not with view to commercial resale' serves as another layer of screening that trade protectionism could be caught. In this regard, the Panel's approach widens the scope for government procurement derogation while still maintaining an appropriate level of gatekeeping whereas the Appellate Body drastically reduces the scope of the application of Article III: 8(a).[1052]

In this vein, the Panel decision is simple and straightforward, whereas the Appellate Body's reasoning is more twisted and difficult to comprehend. This view is shared by Davies, who argues that the test established by the Panel is 'generally applicable, easier to understand, and [better] corresponds with commercial reality.'[1053] The Appellate Body confined the understanding of Article III: 8(a) to a narrow context and thus, failed to consider how the object and purpose of this provision could be relevant in the context of the WTO Agreement.[1054] This is likely to give rise to uncertainty and complexity when addressing the applicability of government procurement derogation even in paradigm situations.[1055]

[1051] Arwel Davies, 'The GATT Article III: 8(a) Procurement Derogation and Canada – Renewable Energy' (2015) 18(3) Journal of International Economic Law 543, at 546.
[1052] Bigdeli (n 1011), at 190.
[1053] Davies (n 1051), 554.
[1054] *Ibid.*
[1055] *Ibid*, at 552.

For example, government builds basic infrastructure such as parks, schools and railways through a procurement process in order to fulfill governmental purposes. In these activities, governments could confine the inputs to locally made cement and steel. The relevant question would thus become: are schools and cement/steel in a competitive relationship? The answer would seem to be in the negative. A following issue to be addressed is thus whether Article III: 8(a) is applicable in the case. If a strict interpretation, which demands a competitive relationship is applied, the abovementioned example might fail to fall under the ambit of government procurement even it is a paradigm case of government procurement.

The Appellate Body's understanding and application of the competitive relationship test is not only limited but also rather 'mechanical'.[1056] In this regard, the test can unduly restrict the scope of the provision as well as governments' procurement activities. Therefore, it is reasonable to conclude that while the Appellate Body came to the right decision it relied on a flawed methodology, which has the potentially to remove the usefulness and value of Article III: 8(a).

While the jurisprudence casts doubt on the applicability of the GATT Article III: 8(a) to discriminatory government procurement measures, there may still be some limited ways in which to make use of the provision to incentivize domestic renewable energy sector. For example, Article III: 8(a) could apply to the renewable energy equipment sector when a government favors domestically manufactured wind turbines over foreign ones in the installation of wind turbines for its own use as opposed to with a view to commercial resale. The threshold question of competitive relationship in this case is satisfied because the government procures wind turbines and it is the wind turbines manufactured locally are favored. It is easy to prove that the products being purchased and products being discriminated against are identical, which testifies to the existence of a competitive relationship within the meaning of Article III: 8(a).

However, in another slightly modified scenario, it would be highly questionable that the government procurement derogation would apply when the government decides to install wind turbines to provide wind electricity for public use and requires only locally manufactured wind blades be used to build these turbines. Again, the reason is that while the government procures wind turbines and discriminates against foreign manufactured wind blades, the wind blades are not in a competitive relationship with wind turbines – notwithstanding the fact that wind blades constitute key component of wind turbines.

The Appellate Body was correct in striking down the blatantly discriminatory LCRs because the imposition of LCRs in renewable energy creates obstacles to renewable energy development by prioritizing and promoting the purchase of costlier (and therefore less efficient) renewable energy products. Restricting Article III: 8(a) to exclude LCRs could prevent any misuse or abuse of this derogation by Members, as otherwise governments could easily camouflage protectionism-motivated measures within government procurement. Restricting Article III: 8(a) in this way

[1056] Gladwin Issac and Trishna Menon, 'When Good Intentions Are Not Enough: Revisiting the *US – India Solar Panels* WTO Dispute' (2017) 10(2) OIDA International Journal of Sustainable Development 37, at 44.

is also beneficial from climate change mitigation perspective, as removing trade barriers and incentivizing open competition in renewable energy sector can lower the cost of renewable energy and scale-up the deployment of renewable energy. In this regard, the decisions testify to the potentially positive synergy between trade liberalization and climate change mitigation from a global perspective.

However, the methodology adopted by the Appellate Body was by no means flawless. Rather, it was overly restrictive, unnecessarily complex and ran counter to the original spirit and negotiating history of the WTO procurement provisions.[1057] The GPA is the main international instrument seeking to regulate government purchasing, which suggests the policy space under the GATT for government procurement should not be unduly restricted. Expanding obligations assumed by GPA signatories on a plurilateral basis to a multilateral basis via an interpretation of GATT Article III: 8(a) is dangerous and unwise (especially given the reluctance of a large block of Members to sign on to the agreement).[1058] The Appellate Body's narrow interpretation of Article III: 8(a) could potentially lead to a systemic imbalance between the application of and obligations contained in multilateral and plurilateral agreements.[1059] Moreover, such an approach could generate chilling effects on the attempt of renewable energy producer countries to discriminate in their renewable energy support mechanisms in a way that retards industrial growth and sectoral development.

In contrast, the panel in *Canada – Renewable Energy* offers a more preferable approach with a less rigid interpretation of what constitutes 'government procurement' by not requiring the relationship between products purchased and products discriminated against to be competitive was adopted. This approach should be revisited by future panels and the Appellate Body. The current jurisprudence potentially leaves Article III: 8(a) devout of any substance, and this surely could not have been the intention of the drafters or even the Appellate Body. It will be up to future panels/Appellate Body to change course and render the provision once again applicable and available for use.

8.1.2 The Interpretation of the GATT Article XX

It is notable that in *Canada – Renewable Energy*, Canada did not make any other counterargument besides from the reference to Article III: 8(a). It is not the aim of this work to second-guess why Canada did not revoke any provision of Article XX. However, a large number of defending parties have resorted to this article, particularly in disputes concerning the interface of trade and non-trade interests. Whether Canada could have successfully defended the challenged measures under Article XX remains unknown.

India in *India – Solar Cells* sought justification from the GATT Article XX (d) and (j) for the challenged measures. An invocation of several exception clauses under Article XX at the same time is acceptable under WTO law.[1060] *India – Solar Cells*

[1057] Davies (n 1051), at 547-549.
[1058] *Ibid.*
[1059] Maria Anna Corvaglia, *Public Procurement and Labour Rights: Towards Coherence in International Instruments of Procurement Regulation* (Hart Publishing 2017), at 108.
[1060] Holzer, Espa and Payosova (n 921), at 370.

represents a first time litmus test of the applicability of Article XX for trade discriminatory renewable energy measures. Whether Article XX can be successfully invoked to justify the WTO Members' deviations from trade obligations in developing their domestic renewable energy industry is of critical importance.

India put forward a general argument, articulating a multitude of objectives that India aimed to achieve by adopting the challenged measures. The objectives were to 'achieve energy security, mitigate climate change, and achieve sustainable development', including steps to 'ensure the adequate supply of clean electricity, generated from solar power, at reasonable prices' India also asserted that this would 'reduce its reliance on imported oil and coal'.[1061] The focus of legal analysis became whether the LCR measures 'related to' the acquisition or distribution of 'products in general or local short supply' within the meaning of Article XX (j) and whether the LCR measures were 'to secure compliance with laws or regulations' within the meaning of Article XX (d).

8.1.2.1 The Application of Article XX (j)

India – Solar Cells represents the first time that Article XX (j)[1062] had been invoked by a WTO Member before the Dispute Settlement Body. This places a task on the Panel and the Appellate Body to carefully consider specific facts in this case while applying this provision.

India asserted that 'lack of domestic manufacturing capacity of solar cells and modules amounts to a situation of local and general short supply of solar cells and modules in India.'[1063] In addition, India also pointed out the 'risk of a shortage' would cause solar cells and modules 'being products in general or local short supply.'[1064] However, India acknowledged that the quantity of solar cells and modules available from all sources, both imported and domestic, was sufficient to meet the demand of India solar power developer.[1065] Therefore, the contentious point became whether the lack of domestic manufacturing capacity and the risk of a shortage would meet the definition of 'general or local short supply' within the meaning of Article XX (j).

The Panel ruled that the terms 'products in general or short supply' referred to 'a situation in which the quantity of available supply of a product does not meet demand in the relevant geographical area or market'.[1066] In this vein, the terms did not refer to 'products of national origin in general or local short supply'.[1067] In addition, the Panel held that 'products in general or local short supply' did not

[1061] See India's first written submission, paras. 188, 192 and 202.
[1062] Chapter 5 briefly mentioned Article XX (j). It says, ''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 Members 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.'
[1063] See, India's first written submission, paras. 213.
[1064] India's first written submission, paras. 236.
[1065] *Ibid.*
[1066] See, Panel Report, *India – Solar Cells*, para. 7.218.
[1067] *Ibid.*

mean 'products at risk of becoming in short supply'. Even the term could be read to include 'products at risk of being in short supply', the Panel considered that 'only imminent risks of such shortage' would fall under the ambit.'[1068] Therefore, the Panel found the products subject to the challenged LCR measures were not 'products in general or local short supply' within the meaning of Article XX (j) of the GATT 1994.[1069]

India's reference to Article XX (j) was also rejected during appeal stage. The Appellate Body, before going to the details of the challenged measures, made some clarification on how to understand and apply this provision. An assessment of the relationship between the challenged measure and 'the acquisition or distribution' of products on the basis of the measure's design and its essentiality to such acquisition or distribution was required.[1070] The term 'essential' was understood to be similar to the word 'necessary' in Article XX (d), which means that the process of 'weighing and balancing' of relevant factors in a necessity test would also be pertinent under Article XX (j).[1071] This is to say, it is important to assess the challenged measure's contribution to addressing 'the acquisition or distribution' of the products in short supply and its trade-restrictiveness in comparison to reasonably available alternatives.[1072]

In conceptualizing the terms 'general or local short supply', the Appellate Body held that insufficient supply from all sources, whether domestic or foreign to meet demand in the relevant market would satisfy.[1073] There are a number of factors in assessing the issue of short supply: the level of domestic production of a particular product, the relevant product and geographical market, potential price fluctuation, accessibility of international supplies and others factors demonstrating the availability and sufficiency of a given product.[1074] The Appellate Body also acknowledged that a Member's development status as indicative of production capacity and exposure to supply disruptions, stressing that the measure's policy rationales, for instance energy security and sustainable development could be given certain consideration in the analysis of short supply.[1075] India's argument that whether there was 'sufficient' domestic manufacturing of a given product could be taken as the only reference in determining the existence of 'short supply' was not endorsed by the Appellate Body ruling.[1076]

Having already found certain flaws in India's defense under Article XX (j), the Panel and the Appellate Body declined to examine whether the relationship between the challenged measures and the pursued objective was essential or the consistency of challenged measures with the Chapeau of Article XX.[1077]

[1068] *Ibid.*
[1069] Panel Report, *India – Solar Cells*, para. 7.265.
[1070] Appellate Body Report, *India – Solar Cells*, para. 5.58 and 5.60.
[1071] Appellate Body Report, *India – Solar Cells*, para. 5.62 and 5.63.
[1072] *Ibid.*
[1073] Appellate Body Report, *India – Solar Cells*, para. 5.83.
[1074] Appellate Body Report, *India – Solar Cells*, para. 5.71.
[1075] Appellate Body Report, *India – Solar Cells*, para. 5.72, 5.78 and 5.79.
[1076] See, Appellate Body Report, *India – Solar Cells*, para. 5.88.
[1077] Appellate Body Report, *India – Solar Cells*, para. 5.145.

As the first-time legal interpretation of Article XX (j), the decisions sheds valuable light on how to apply 'general or local short supply' exception and justify restrictive trade measures via this provision. The negotiation of this provision was originally aimed at addressing temporary situations of shortage of goods emerging after World War II, and it was subject to termination at some point later.[1078] However, this exception clause for supply shortage remained in effect after several reviews and extensions and became accepted as a permanent provision in 1970.[1079] The original focus of this provision might have been on agricultural products and commodities, the decision in this case shows that this exception clause can have an extensive coverage to include virtually any goods.[1080] Novel items, such as solar cells, modules or any other renewable energy generating equipment can still possibly fall under the ambit of Article XX (j), which reflects an evolving attitude adopted by the adjudicating bodies.

It is understandable that Article XX (j) cannot be interpreted in a broad sense to even shelter the lack of domestic manufacturing capacity in certain areas. Otherwise, it would be very easy for the Members to make policy measures that favor certain domestic industries as long as their capacity in this regard is not internationally competitive. This would risk opening the door for unlimited industrial policy measures that are motivated by protectionist objectives.

8.1.2.2 The Interpretation of Article XX (d)

Another defense India made was the reference to Article XX (d)[1081]. This exceptional clause has been invoked by the Members and addressed by the adjudication bodies many times.[1082] The interpretation of this provision can contribute to the balance between international trade liberalization and national regulatory prerogatives.[1083] There is a large body of jurisprudence concerning the application of Article XX (d), on the basis of which the Panel and the Appellate Body in *India – Solar Cells* could rely.

[1078] Shadikhodjaev (n 1046), at 145.
[1079] *Ibid.*
[1080] *Ibid.*
[1081] Chapter 5 briefly discussed this provision. Article XX (d) states, ''necessary to secure compliance with laws or regulations which are not inconsistent with the provisions of this Agreement, including those relating to customs enforcement, the enforcement of monopolies operated under paragraph 4 of Article II and Article XVII, the protection of patents, trade marks and copyrights, and the prevention of deceptive practices.'
[1082] See, GATT Panel Reports, *US – Spring Assemblies*, 1982; *Canada – FIRA*, 1983; *Japan – Agricultural Products I*, 1987; *US – Section 337 Tariff Act*, 1998; *EEC – Parts and Components*, 1990; *US – Tuna (Mexico)*, 1991; *US – Malt Beverages*, 1992; *US – Taxes on Automobiles*, 1994; *US – Tuna (EEC)*, 1994; WTO Panel Reports, *US – Gasoline*; *Canada – Periodicals*; *Korea – Various Measures on Beef*; *Argentina – Hides and Leather*; *Canada – Wheat Exports and Grain Imports*; *EC – Trademarks and Geographical Indications* (Australia); *Dominican Republic – Import and Sale of Cigarette*; *Mexico – Taxes on Soft Drink*; *Brazil – Retreaded Tyres*; *US – Customs Bond Directive*; *US – Shrimp (Thailand)*; *China – Autos Parts*; *Colombia – Ports of Entry*; *Thailand – Cigarettes (Philippines)*; Appellate Body Reports, *Korea –Various Measures on Beef*; *Dominican Republic – Import and Sale of Cigarettes*; *Mexico – Taxes on Soft Drinks*; *US – Shrimp (Thailand) / US – Customs Bond Directive*; *Thailand – Cigarettes (Philippines).*
[1083] Federico Ortino, *Basic Legal Instruments for the Liberalization of Trade* (Hart Publishing 2004), at 200.

(1) India's Arguments

India claimed its obligations 'to ensure ecologically sustainable growth while addressing India's security challenge, and ensuring compliance with its obligations relating to climate change'.[1084] India also referred to a wide range of certain international and domestic instruments, respectively as the laws and regulations with which the LCR measures were to secure compliance.

The international instruments identified by India were as follows:[1085]

(i) the preamble of the WTO Agreement,
(ii) the United Nations Framework Convention on Climate Change,
(iii) the Rio Declaration on Environment and Development (1992),
(iv) UN Resolution A/RES/66/288 (2012) (Rio+20 Document: 'The Future We Want')

The domestic instruments identified by India were as follows:[1086]

(i) Section 3 of India's Electricity Act, 2003
(ii) paragraph 5.12.1 of the National Electricity Policy,
(iii) subsection 5.2.1 of the National Electricity Plan, and
(iv) the National Action Plan on Climate Change

Following the two-tier test as established in previous case law, the defending party needs to show that the challenged measure is designed to secure compliance with laws or regulations that are not themselves inconsistent with some provision of the GATT 1994. Second, it must be shown that the measure is necessary to secure such compliance.

In the present case, one threshold issue became whether the international and domestic instruments that India cited could be considered as 'laws or regulations' within the meaning of Article XX (d). The Panel referred to the ruling of the Appellate Body in *Mexico – Taxes on Soft Drinks* that the term 'laws or regulations' referred to 'rules that form part of the domestic legal system of a WTO Member' as well as 'rules deriving from international agreements that have been incorporated into the domestic legal system of a WTO Member or have direct effect according to that WTO Member's legal system'.[1087]

India claimed that different issues would emerge with respect to international and domestic instruments, which should be considered individually. With respect to international instruments, India referred to the preamble of the Marrakesh Agreement Establishing the WTO, the United Nations Framework Convention on Climate Change (UNFCCC), the Rio Declaration, and Rio 20+. As an illustrative example, India has amended various provisions of its Electricity Act, its National Electricity Policy, its National Electricity Plan, and its National Action Plan on Climate Change to ensure compliance with the aforementioned international

[1084] India's first written submission to the Panel, para. 240.
[1085] India's first written submission, para. 240; India's opening statement at the first meeting of the Panel, para. 54; India's response to Panel question No. 34(a); India's second written submission, para. 137; India's response to Panel Question No. 66, para. 82.
[1086] *Ibid.*
[1087] Panel Report, *India – Solar Cells*, paras. 7. 289.

instruments by generating electricity from renewable energy sources.[1088] India also pointed out that its Constitution empowers executive branches to take action without express authorization from the legislature, the aforementioned executive actions could be all binding.[1089] Therefore, the executive actions were deemed as legally binding. As to the 'direct effect' of the international instruments under its domestic legal system, India upheld the fact that 'the principles of sustainable development under international environmental law have been recognized by the Supreme Court of India to be part of the environmental and developmental governance in India.'[1090]

(2) The Panel Decisions

The Panel ruled that the executive branch taking implementing action without express legislative sanction did not speak to the question that whether international obligations as assumed by India would automatically be incorporated into domestic law and have a 'direct effect' in India.[1091] The Panel subsequently ruled that India failed to meet its burden of demonstrating that any of the international instruments at issue had 'direct effect' in India and thus, they cannot be characterized as 'laws or regulations' within the meaning of Article XX (d).[1092] India appealed the Panel's conclusion in this regard.

(3) The Appellate Body Decisions

The Appellate Body, at the beginning, clarified the scope of eligible 'laws and regulations', which was not necessarily confined to legally-enforceable instruments and could, where appropriate, comprise certain other rules that do not entail coercion or penalties and sanctions for non-compliance.[1093] A case-by-case assessment of the relevant domestic legal system as well as 'specific characteristics and features' of the cited instruments and rules in a holistic way was necessary in the present case.[1094]

According to the Appellate Body, there are a few indicators that should be taken into consideration: (i) the degree of normativity of the instrument and the extent to which the instrument operates to set out a rule of conduct or course of action that is to be observed within the domestic legal system of a Member; (ii) the degree of specificity of the relevant rule; (iii) whether the rule is legally enforceable, including, e.g. before a court of law; (iv) whether the rule has been adopted or recognized by a competent authority possessing the necessary powers under the domestic legal system of a Member; (v) the form and title given to any instrument or instruments containing the rule under the domestic legal system of a Member; and (vi) the penalties or sanctions that may accompany the relevant rule.[1095]

[1088] Panel Report, *India – Solar Cells*, paras. 7.282 and 7.302.
[1089] Panel Report, *India – Solar Cells*, paras. 7.297.
[1090] India's first written submission, para. 180.
[1091] Panel Report, *India – Solar Cells*, paras. 7.298.
[1092] Appellate Body Report, *India – Solar Cells*, para. 5.98.
[1093] Appellate Body Report, *India – Solar Cells*, para. 5.109.
[1094] Appellate Body Report, *India – Solar Cells*, para. 5.114.
[1095] Appellate Body Report, *India – Solar Cells*, para. 5.113.

In this vein, among domestic instruments identified by India, only Section 3 of the Electricity Act, 2003 qualified as a 'law' within the meaning of Article XX (d).[1096] The following step was to explore whether the challenged measures would be necessary to secure the compliance with the Electricity Act. The Appellate Body upheld that India failed to establish a 'link or nexus' between the LCR measures and Section 3 of the Electricity Act, 2003.[1097] Therefore, the Appellate Body rejected India's assertion that the LCRs were employed to ensure compliance with the rule of 'ensuring ecologically sustainable growth while addressing India's energy security challenge, and ensuring compliance with its obligations relating to climate change', as reflected in the Electricity Act and the related national policy and plans.[1098] The domestic policy and plans cited by India appeared to be 'hortatory, aspirational, declaratory, and…descriptive', which implies the failure of India to codify a sufficiently normative and specific rule.[1099] This means that India cannot prove that LCR measures were employed to 'secure compliance' with the legal obligations in Section 3 of the Electricity Act.[1100]

With respect to international instruments, the Appellate Body recognized that international instruments could be valid 'laws or regulations' within the meaning of Article (d) in some circumstances. The first circumstance is when these international instruments become part of the Members' domestic legal system by means of incorporation, or having direct effect within the domestic system without such implementation, or in other ways available under that system.[1101] The other scenario is when the international instruments operate with 'a sufficient degree of normativity and specificity under the domestic legal system…so as to set out a rule of conduct or course of action.'[1102] The Appellate Body agreed with the Panel that there was no evidence showing that the international instruments had direct effect in India.[1103] Therefore, India failed to satisfy the first tier requirement of Article XX (j), so the Panel and the Appellate Body declined to examine the remaining arguments under this provision: whether the relationship between the challenged LCR measures and the pursued objective was necessary and whether the challenged measures were consistent with the Chapeau of Article XX.[1104]

(4) Reflections on the Interpretation of Article XX (d)

It is worth mentioning that India attempted to invoke principles of international environmental law, including the UNFCCC as justifications for the challenged renewable energy measures. This marks the first time that a WTO Member had relied on its international obligations of tackling climate change to justify otherwise WTO-inconsistent measures.[1105] However, both the Panel and the Appellate Body flatly rejected India's reliance on its UNFCCC commitments with respect to

[1096] Panel Report, *India – Solar Cells*, para. 7.318.
[1097] Panel Report, *India – Solar Cells*, para. 7.329.
[1098] Appellate Body Report, *India – Solar Cells*, para. 5.126.
[1099] Appellate Body Report, *India – Solar Cells*, para. 5.133 and 5.135.
[1100] *Ibid.*
[1101] Appellate Body Report, *India – Solar Cells*, para. 5.140.
[1102] Appellate Body Report, *India – Solar Cells*, para. 5.141.
[1103] Appellate Body Report, *India – Solar Cells*, para. 5.145.
[1104] Appellate Body Report, para. 5.145.
[1105] Brendan McGivern, 'WTO Panel Report: India – Solar Cells and Moduels' (White & Case, 2016), available at: https://www.whitecase.com/publications/alert/wto-panel-report-india-solar-cells-and-modules?s=renewable%20energy, accessed on 07 July 2017.

addressing climate change in a consistent manner. This raises the question whether the obligations Parties made under the UNFCCC could be referred to as justification under the WTO regime. Does the rejection of UNFCCC being valid 'laws or regulations' within the meaning of Article XX (a) indicate the unwillingness of the WTO regime to take into account climate-related concerns? The answer is clearly a NO. The author is of the view that the Panel and the Appellate Body in *India – Solar Cells* adopted an interpretative approach consistent with prior jurisprudence in relation to Article XX (d).

4.1 The Interaction Between the UNFCCC and the WTO

It is analytically useful to touch upon the UNFCCC framework with respect to the legal status of its provisions and obligations as well as the relationship with the WTO. It is clear that States have been making efforts to agree upon obligations at the UNFCCC. Nevertheless, it is hardly contested that the UNFCCC imposes few hard commitments, particularly on developing countries.[1106] The UNFCCC provisions cited by India in its Article XX (d) defense commit all Parties to formulate 'national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing …emissions' of greenhouse gases, and 'measures to facilitate adequate adaptation to climate change', and to 'take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and action.'[1107] The language used in the cited provisions is not legally binding or sufficiently specified.[1108] It would be extremely difficult, if not impossible for India to argue that these commitments pledged by Members under the UNFCCC have binding effectiveness.

However, if the provisions of UNFCCC as cited by India constituted 'laws or regulations' within the meaning of Article XX (d), the following question would be whether the challenged LCRs were measures 'to secure compliance' with the UNFCCC. This is to say, the defendant needs to establish a linkage between using trade discriminatory measures and complying with the UNFCCC obligations. Whether India could prove that the imposition of localization requirements was to fulfill its obligations made under the UNFCCC becomes a key point.

As a first step, it is useful to find out whether the agreements make clear under what circumstances and with what constrains governments may adopt trade-related measures that have restrictive or discriminatory effects to promote climate-related objectives. If there was clear mandate under the climate regime that the use of certain trade restrictive measures could be permitted or even encouraged, how the WTO regime would react to it would become intriguing.

It is noted that the UN climate agreements do not explicitly approve any trade restrictions to advance climate change mitigation goals or take a position on recourse to such measures in climate context. To the contrary, the UNFCCC Article 3.5 stipulates,[1109]

[1106] *Ibid.*
[1107] Article 4.1 (b) of the UNFCCC
[1108] Daniel Bodansky, 'The United Nations Framework Convention on Climate Change: A Commentary' (1993) 18(2) The Yale Journal of International Law 451, at 516.
[1109] Article 3.5 of the UNFCCC.

'Measures taken to combat climate change, including unilateral ones, should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade.'

The language adopted in the UNFCCC is merely a reiteration of the Chapeau of the GATT Article XX, which reflects the close linkage between trade regime and climate regime. It is reasonable to assume that the UNFCCC neither encourages nor prohibits the use of trade measures, however, it makes direct reference to the WTO law. Parties are prohibited from taking any action that would produce arbitrary or unjustifiable discriminatory or restrictive implications on international trade. To draw a line between justifiable trade discrimination and unjustifiable trade discrimination becomes crucially important.

More specifically, Article 2.3 of the Kyoto Protocol gives some guidance on the relationship between climate change mitigation and trade objectives. It declares that the parties 'shall strive to implement policies and measures in such a way as to minimize adverse effects, including effects on international trade.' The international climate regime is cognizant of the importance of using trade-related measures in addressing climate change problems as well as ensuring these trade practices being fair and non-discriminatory. From a legal perspective, the term of 'shall' used in this provision suggests in a strong tone that parties to the Kyoto Protocol to curb the possibly negative impacts of their implementation of Kyoto Protocol duties on international trade. The expression that Parties shall 'strive to implement' their policies and measures could be understood that certain 'adverse effects' on international trade could still be acceptable in the eyes' of negotiators.

The Paris Agreement, representing recent development of the multilateral efforts in climate change area, does not explicitly refer to trade nor dictates the Parties to take any specific trade-related measures to achieve climate related goals. Therefore, the UNFCCC Article 3.5 still remains authoritative in light of guiding the use of trade-related measures to address climate change. A flexible bottom-up approach endorsed by the Paris Agreement leaves plenty of room for countries to formulate their own plans are in line with their individual national circumstances, capacities and priorities.[1110] The desirability and legitimacy of using trade-related policy tools to address climate change is left unaddressed.[1111] This new model of voluntary contributions determined by nations could turn out to be 'worrisome since it is uncertain how the expected results could be delivered.[1112] In addition, the climate regime has moved towards a universal approach in the context of the Paris Agreement that efforts made from all countries are needed, unlike the Kyoto Protocol, which is featured with a sharp gap between developed countries and developing ones in terms of climate-related pledges.

[1110] Cosbey (n 542), at 7.
[1111] *Ibid.*
[1112] Henrik Selin and Adil Najam, 'Paris Agreement on Climate Change: The Good, The Bad, and The Ugly" (The Conversation, 14 December 2015), available at: https://theconversation.com/paris-agreement-on-climate-change-the-good-the-bad-and-the-ugly-52242, accessed on 12 December 2017.

Among the most common trade-related elements mentioned in these NDCs, developing renewable energy has attracted manifold references.[1113] A large number of countries consider using renewable energy to fulfill NDCs and more than half of them refer to it as a priority sector for mitigating climate change.[1114] Among 163 NDCs that have been officially submitted to the UNFCCC by 2016, 35 of them set quantified energy targets in the form of renewable energy or low-carbon energy supply.[1115] It is reasonable to assume that the Paris Agreement could provide a significant push for further investment in and deployment of renewable energy.

A large number of counties have formulated relative or absolute targets or detailed plans in their NDCs.[1116] For instance, China has determined to increase the share of non-fossil fuels in primary energy consumption to around 20%.[1117] In India's NDC, the aim is to achieve about 40% cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030.[1118] Saudi Arabia also in its DRC, identifies renewable energy as a priority area with specific reference given to solar power, wind power, geothermal energy.[1119] It also highlights the co-benefits that climate action can bring in the context of trade elements.[1120] This reflects the possibility for developing countries to design their NDCs in the light of respective national capabilities so as to grasp the opportunity to enact measures that promote their own economic development and realize industrialization in a 'green' manner.

It seems that the climate regime continues to take a 'hands-off approach' when it comes to dealing with trade issues that have consistently surfaced.[1121] With the pace and scope of domestic climate actions entailed by the Paris Agreement accelerating, interactions between climate motivated measures and trade as well as international trade disciplines are bound to rise. Therefore, the likelihood of initiating trade law challenges to these policy measures cannot be underestimated.[1122] In the case when governments attempt to adopt trade-related renewable energy measures, they have to deal with a variety of legal norms, either in trade regime or climate regime in

[1113] The three most common trade-related elements referred to in these NDCs are: international market mechanisms, technology transfer and renewable energy development.
[1114] For a comprehensive discussion of national determined contributions that countries submit to the Paris Agreement, please see, Pieter Pauw et al., 'NDC Explorer' German Development Institute (2016), available at: https://www.die-gdi.de/en/ndc/, accessed 7 November 2017.
[1115] IEA, Energy, Climate Change and Environment (OECD/IEA, 2016) at 19,
[1116] *Ibid.*
[1117] See, Enhanced Actions on Climate Change: China's Intended Nationally Determined Contributions, available at: http://www4.unfccc.int/ndcregistry/PublishedDocuments/China%20First/China%27s%20First%20NDC%20Submission.pdf.
[1118] See, India's Intended Nationally Determined Contribution: Working Towards Climate Justice, available at: http://www4.unfccc.int/ndcregistry/PublishedDocuments/India%20First/INDIA%20INDC%20TO%20UNFCCC.pdf.
[1119] See, The Intended Nationally Determined Contribution of the Kingdom of Saudi Arabia under the UNFCCC, available at: http://www4.unfccc.int/ndcregistry/PublishedDocuments/Saudi%20Arabia%20First/KSA-INDCs%20English.pdf.
[1120] *Ibid.*
[1121] Bodansky, Brunnée and Rajamani (n 897), at 348.
[1122] *Ibid.*

fragmented forms.[1123] While legal obligations under the climate regime may direct the Members to proceed one way, the WTO covered agreements would dictate to another way.[1124] Until the time when either of the regimes makes clarification on the convergence of respective obligations, the confusion as well as consequent conflict between the obligations under two regimes is likely to occur.

Some scholars argue that measures designed to reduce GHG emissions and address climate change would be easier to justify in the case when they are explicitly recognized by international climate agreement. [1125] However, the existing agreements that make up the international climate regime employ somehow vague language or even keep silent in this regard. It is unclear whether restrictive trade measures are endorsed by climate regime or what trade measures can be used to achieve climate goals. Clashes may arise when governments adopt trade-related measures with the aim to fulfill the obligations made under the climate agreement while breaking trade rules. The wide variety of possible ways for countries to fulfill the climate related commitments become the reason why potential conflicts between the climate regime and the trade regime tends to be increasing.

4.2 Can LCRs Be Justified when UNFCCC Obligations Meet Article XX (d) Requirement?

It is interesting to reflect on one hypothesis: if the UNFCCC obligations that India referred to under the category of international instruments could qualify as 'laws or regulations' that are consistent with the WTO law, will India successfully seek shelter from Article XX (d)? The remaining requirements of this provision are put into question: would the challenged LCR measures be considered 'necessary' to secure compliance with the UNFCCC commitments? Would the challenged measures fulfill the requirements as set in the Chapeau of Article XX?

Firstly, as discussed in Chapter Four, the reading of 'necessary' in WTO jurisprudence involves a process of weighing and balancing a series of factors, which include 'the contribution made by the compliance measure to the enforcement of the law or regulation at issue, the importance of the common interests or values protected by that law or regulation, and the accompanying impact of the law or regulation on imports or exports.'[1126]

There is no doubt that public policy objectives such as, energy security, climate change mitigation and sustainable development, as pursued by India are vitally important. India might develop an argument that climate change problem is so huge that it requires the country to develop a complete domestic solar industry supply chain that does not have to rely on foreign inputs to tackle rapidly growing GHG emissions. This seems to suggest that so as to achieve climate change mitigation, domestic production capabilities of renewable energy equipment need to be enhanced. In the light of this, protectionist measures could be justified because they can incentivize the domestic production.

[1123] Jaemin Lee, 'SCM Agreement Revisited: Climate Change, Renewable Energy, and the SCM Agreement' (2016) 15(4) World Trade Review 613, at 616.
[1124] *Ibid.*
[1125] Green (n 28), at 187.
[1126] See Appellate Body Report, *Korea – Beef*, para 164.

What remains to be examined is the contribution that challenged LCR measures can make to the achievement of the goals. Although there is an argument that LCRs are necessary in nurturing the growth of infant industries, particularly in an environment of intense global competition,[1127] empirical research shows that the effectiveness of LCRs in promoting renewable energy industrial development is circumscribed to a number of factors.[1128] Firstly, the stability and size of market play a key role in ensuring that there will be incentive for investors to invest in building up the necessary manufacturing capacity; secondly, the restrictiveness of LCRs should be set at a reasonable rate, which cannot be too high to diminish the chance of success; thirdly, the cooperation between governments and firms can help the former to set targets on the basis of realistic assessments of market conditions and provide financial assistance to help firms to meet targets and increase positive outcomes, in addition, policy makers could be well-informed to adjust the LCRs in a timely manner; fourthly, technology and knowledge transfer is one of the objectives that LCRs aim to achieve.[1129] Therefore, simply adopting and enacting LCRs in renewable energy sector does not predict a bright future for renewable energy development. The fate of a competitive renewable energy manufacturing sector and green industrialization depends on a complex web of factors. It is highly possible that LCRs might not turn out to be as effective in achieving the intended goals as policy makers expect.

Although LCRs can protect domestic manufacturers from some of the challenges of early-stage growth, such requirements can restrict innovation as well as country's access to cutting-edge technologies.[1130] By imposing requirements on solar power generators to purchase locally made manufacturing equipment, India electricity generators cannot rely on cheaper imports from other countries. The increase of cost in sourcing locally manufacturer equipment will slow down the expansion of renewable energy technologies. Viewed from climate change mitigation perspective, LCRs act as impediment to renewable energy technological diffusion, which by no means can be perceived as climate-friendly. Therefore, there might not be a compelling climate change mitigation reason for the use of LCRs.

Another requirement that any WTO-inconsistent measure needs to meet before being justified by Article XX is the Chapeau, which serves another layer of screening of protectionist motivated measures. This means, even India could prove the LCRs were necessary within the meaning of Article XX (d), how to satisfy the Chapeau requirements would be a hurdle to overcome. Imposing LCRs clearly constitutes arbitrary and unjustifiable discrimination between countries where the same conditions prevail, which at the same time becomes a restriction on international trade. Without satisfying the Chapeau requirements, Article XX (d) is not applicable.

8.1.2.3 Concluding Analysis on the Application of Article XX

[1127] Hufbauer, Schott and Cimino (n 178) at 35.
[1128] Kuntze and Moerenhout (n 173), at 11-12.
[1129] *Ibid.*
[1130] John Smirnow, 'U.S. – India Solar Trade Dispute At the WTO Could Spur Collaboration' (2013) Solar Energy Industries Association, available at: https://www.seia.org/blog/us-india-solar-trade-dispute-wto-could-spur-collaboration, accessed on 12 January 2018.

It is puzzling that India did not refer to either paragraph (b) or paragraph (g) of Article XX of the GATT, which are regarded as highly relevant in justifying otherwise WTO-inconsistent renewable energy measures.[1131] Measures designed to support renewable energy development on the grounds that they are 'necessary to protect human, animal or plant life or health' or 'relating to the conservation of exhaustible natural resources' might have a better chance to be permitted by the WTO.[1132] It is useful to explore whether renewable energy measures can be designed to pursue the objectives as listed in Article XX (b) and (g).

In assessing the applicability of Article XX (b), it is useful to refer to the language used in the Paris Agreement, which stipulates, 'climate change represents an urgent and potentially irreversible threat to human societies and the planet.'[1133] As a global challenge, climate change can also affect domestic issues such as human health.[1134] It is not difficult to demonstrate the explicit linkage between developing renewable energy as so to mitigate climate change and the objective of protecting human, animal or plant life or health within the meaning of Article XX (b).

In assessing the applicability of Article XX (g), prior WTO jurisprudence explicitly confirmed air as 'exhaustive natural resources.'[1135] The deployment and development of renewable energy as alternative to carbon-intensive fossil fuels would reduce the depletion of clean air and conserve natural resources within the meaning of Article XX (g). In the light of this, the relationship between policy measures designed to support renewable energy development and the pursued objectives as listed in Article XX (g) is rather self-evident.

However, on the other hand, is it really necessary to discriminate against imported renewable energy equipment and in favor of domestic ones so as to realize public policy goals as set in Article XX (g) or (b)? These goals would be promoted just as effectively, or even more effectively by measures incentivizing the use of renewable energy equipment regardless of its origin. From climate change mitigation perspective, it is irrelevant from where the electricity generators source the equipment, be it domestic or foreign producers. It is the quality and price of renewable energy equipment, which is an objective criterion that should play a decisive role in generators' decision-making instead of the origin. In this vein, there is still possibility that the use of discriminatory measures in sourcing renewable energy equipment would not be deemed as related directly to the policy objectives under Article XX (g) or (b).

As discussed in the preceding part, another hurdle for LCRs to be justified by Article XX lies in the Chapeau requirements after the causal relationship between the measures and the legitimate policy objectives is established. A retrospect review of environment-related WTO case law shows that many measures that support

[1131] Rolf Weber, 'Renewable Energy: Subsidies and Taxes as Competition Distortion' in Larry Kreiser et al. (eds) *Environmental Pricing: Studies in Policy Choices and Interactions* (Elgar 2015), at 170.
[1132] Meyer (n 894), at 154.
[1133] See, *Adoption of the Paris Agreement*, Decision 1/CP.21, FCCC/CP/2015/L.9, 12 December 2015.
[1134] Bradly Condon and Tapen Sinha, *Global Lessons from the AIDS Pandemic. Economic, Financial, Legal and Political Implications* (Springer Verlag 2008), at 5–6.
[1135] Panel Report, *US – Gasoline*, para 6.20.

environmental protection purpose would still fail the Chapeau test in practice.[1136] The Chapeau prohibits measures that fall within the scope of one of the listed exceptions but nevertheless constitute arbitrary or unjustifiable discrimination or a disguised restriction on international trade.

To sum up, given the high regard that the WTO holds with the non-discrimination principle and the blatantly discriminatory nature of LCR measures is hardly debated, LCR measures can be determined as WTO-inconsistent without invoking the legal provisions of the SCM Agreement.[1137] This at least partly explains why the US decided to drop claims made under the SCM Agreement before the Panel stage.

Unsurprisingly, criticism has been expressed towards the WTO rulings in *India – Solar Cells*. Sam Cossar-Gilbert from Friends of the Earth complained that the WTO decisions are made against renewable energy and jobs in India.[1138] This is a dangerous and self-serving position used to justify attacking common sense renewable energy policy in a developing country, which has other competing policy priorities.[1139] The ruling comes as a harsh kick in the gut to global climate cooperation after the promising results achieved in Paris recently.[1140] Greenpeace also stated that the WTO ruling and the U.S. decision to sue India is a setback to India's renewable energy ambitions. The Indian government has demonstrated its commitment to its fledging solar manufacturing sector, which requires support, at least at initial stage so as to become competitive with imported products.[1141] India should be left with sufficient scope of policy space to come up with its own roadmap for a green economy solution to address climate change.[1142] Localization requirements can serve as a standard policy tool to foster, nurture, and grow new industries and help achieve the goal of 100 percent clean energy by cultivating domestic renewable energy industries that promote strong climate policies.[1143]

Although India failed to justify the LCRs measures, it does not imply that the trade regime is not friendly towards climate-related goals. Note that it is not India's National Solar Mission that was challenged, but the limitation of supportive program to only locally manufactured equipment. The limitation on the availability of supportive program has little or even nothing to do with climate-related value,

[1136] Meyer (n 894), at 155.
[1137] Asmelash (n 753), at 279.
[1138] Dipti Bhatnagar and Sam Cossar-Gilbert, 'World Trade Organization Smashes India's Solar Panels Industry' (Ecologist, 28 February 2016), available at: https://theecologist.org/2016/feb/28/world-trade-organisation-smashes-indias-solar-panels-industry, accessed on 24 December 2017.
[1139] *Ibid.*
[1140] Clayton Aldern, 'WTO Swats down India's Massive Solar Initiative' (Grist, 24 February 2016), available at: http://grist.org/climate-energy/wto-swats-down-indias-massive-solar-initiative/, accessed on 14 December 2017.
[1141] Greenpeace, 'Greenpeace Supports India's Decision to Challenge WTO Ruling on India's Solar Mission' (27 February 2016), available at: http://www.greenpeace.org/india/en/Press/Greenpeace-Supports-Indias-decision-to-challenge-WTO-ruling-on-Indias-Solar-Mission/, accessed on 13 December 2017.
[1142] *Ibid.*
[1143] Ben Beachy and IIana Solomon, 'The WTO Just Ruled Against India's Booming Solar Program' (Huffpost, 9 December 2017), available at: https://www.huffingtonpost.com/entry/the-wto-just-ruled-agains_b_9307884.html?section=india, accessed on 28 December 2017.

but everything to do with industrialization objective. Whether the WTO provides breathing space for industrial objectives cannot be mislabeled as trade and climate dichotomy. Although the WTO should give sufficient scope of policy space to the Members so as to make use of trade-related policy measures to develop renewable energy, this does not mean that any kind of renewable energy measure would be permitted under the WTO regime. The WTO decisions in this case have delivered a clear message that climate change is a global problem and should be tackled with non-discriminatory trade measures.[1144] Accusing WTO attacking India's solar industry or global imperative to addressing climate change is an exaggeration and fails to grasp the real failure of India's solar energy plan.

Upholding trade liberalization objectives could still be consistent with protecting climate interests. To illustrative, maintaining free trade in renewable energy sector without barriers will contribute to reducing the cost of renewable energy products, and therefore, promoting renewable energy adoption. Regardless of the rationales that justify the use of discriminatory industrial policy measures, it is useful to ask whether a measure void of restrictive elements could achieve the same result.

It seems that the battle between the US and India in solar manufacturing sector did not just end with the issuance of WTO adjudications. The United States has intended to notify the WTO DSB in 2018 January that India has failed to comply with WTO ruling within the agreed timeline and trigger a fresh round of litigation.[1145] If India was found to have not complied with the rulings, the US has the option to ask the WTO for permission to impose trade sanctions on India.[1146] However, as a defendant, India rejected this legal accusation raised by the US at its solar power polices and contended that it had changed the rules. Therefore, the request from the US to impose punitive trade sanctions on san groundless. At this moment, it is unclear what specific part of ruling that India failed to comply with.[1147] What is clear is another round of trade sanctions can intensify the tensions between the US and India.

At the same time, one recently published news in Bloomberg reports that India is considering a 7.5% tax on imported solar panels, according to government officials with knowledge of the situation.[1148] India's domestic manufacturers have long complained that solar equipment, particularly solar cells imported at a low price

[1144] Tom Miles, 'U.S. Takes India Back to WTO in Solar Power Dispute' (Reuters, 2017), available at: https://www.reuters.com/article/us-usa-india-wto/u-s-takes-india-back-to-wto-in-solar-power-dispute-idUSKBN1EE1BK, accessed on 12 December 2017.
[1145] *Ibid.*
[1146] Tom Miles, 'India Rejects US Solar Claim at WTO, Explores New Defence' (Reuters, 2018), available at: https://uk.reuters.com/article/wto-energy-india-usa/india-rejects-us-solar-claim-at-wto-explores-new-defence-idUKL8N1P35SY, accessed on 9 January 2018.
[1147] Priya Sanjay, 'India Failed to Comply with WTO Ruling in Solar DCR Case' (MERCOM, 2017), available at: https://mercomindia.com/india-failed-wto-ruling-dcr-case/, accessed on 21 December 2017.
[1148] Anindya Upadhyay and Vrishti Beniwal, 'India Consider 7.5% Tariff on Imported Solar Panels' (Bloomberg Markets, 2018), available at: https://www.bloomberg.com/news/articles/2018-01-04/india-is-said-to-consider-7-5-tariff-on-imported-solar-panels, accessed on 5 January 2018.

account for a very large portion of the market.[1149] In the year 2014, more than 70% of the imported solar panels were made in China.[1150]

Higher tariffs imposed on imports would inevitably push up the price of power generation and reduce the expansion of power usage. India's solar power developers' reliance on low-cost solar equipment from China is likely to be imperiled, so is Prime Minister Modi's ambitious goal of installing 100 gigawatts of solar energy by 2022. The intention of Indian government to boost domestic manufacturing capabilities is self-evident. However, it casts doubt on whether making foreign manufactured products more expensive and thus, artificially increase domestically manufactured products' competitiveness in the market is an effective option.

Either local content requirements or tariff increase has been a widely employed form of green industrialization measures. This shows that countries like India have used a mix of industrial policies to safeguard the interests of renewable energy sector. The biggest impediment to global adoption of renewable energy is that these technologies are not competitive with fossil fuels.[1151] India's decisions to increase the cost of renewable energy diffusion and deployment would run counter to the global imperative to bring down the renewable energy cost.

Although the use of LCRs in renewable energy sector has become a new battle-field in the WTO dispute settlement and several major renewable energy producer countries have been involved, much more countries that put in place LCR s are left outside. For instance, highly subsidized loans has been offered by Brazil's National Development Bank (BNDES), which is a main financial sponsor conditional on a LCR of 70%, coupled with the weight of its components.[1152] Manufacturing companies that cannot abide by the bank's LCRs would be delisted from its financing programme, which is deemed as essential since it offers the only local currency-based long-term finance.[1153] The BNDES aims to foster manufacturing of components in Brazil with high technological content and extensive use of manpower.[1154]

In spite that a number of foreign companies have invested in local wind production facilities, some developers complained that LCRs would impede the uptake of wind energy because the price of locally manufactured inputs, such as steel turns out to be higher. Data shows that Brazilian wind projects are generally more costly than

[1149] Ed King, 'No, the WTO Did Not Just Kill India's Solar Industry' (Climate Home News, 25 February 2016), available at: http://www.climatechangenews.com/2016/02/25/no-the-wto-did-not-just-kill-indias-solar-industry/, accessed on 12 December 2017.
[1150] *Ibid.*
[1151] Ann Harrison, Leslie A. Martin and Shanthi Nataraj, Green Industrial Policy in Emerging Market (2017) 9 Annual Review of Resources Economics 253, at 255.
[1152] For details of LCRs adopted by BNDES in wind sector, please see: https://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/Institucional/Press/Noticias/2012/20121212_geradores.html.
[1153] 'Brazil could Raise Sourcing Requirement Beyond 60%' (Wind Power, 2012), available at: https://www.windpowermonthly.com/article/1163271/brazil-raise-sourcing-requirement-beyond-60, accessed on 12 December 2017.
[1154] *Ibid.*

those in India and China.[1155] Meanwhile, the LCRs could turn out to be too rigid in wind industry in which technology is involving so quickly that relying on a systematic global supply chain becomes essential. However, if any WTO Member decides to bring Brazil to the Dispute Settlement Body, the outcome would be rather predictable: Brazil's LCRs constitute violation of non-discrimination obligation and need to be corrected.

8.2 Conclusion on the Interaction between Green Industrialization and the WTO Rules

The focus of this chapter is not the wide range of policy measures on which green industrialization can rely but only a sub-set of green industrialization measures that have implications on the trading system. The case law: *Canada – Renewable Energy* and *India – Solar Cells* provide valuable materials to examine how governments design and enact green industrialization measures that would create restrictive impacts on trading partners. It also sheds important light on how the WTO deals with the Members' green industrialization action under the broad context of climate change mitigation. The way the WTO adjudicators apply and interpret certain WTO provisions in assessing the compatibility of some forms of green industrialization measures is vitally important. This emerges as the issue of policy space that the WTO Members have in promoting green industrialization.

A detailed and thorough analysis of the WTO jurisprudence in the two disputes suggests that favoring domestic renewable energy manufacturers and discriminating against foreign ones would have a difficult time in passing the scrutiny of the WTO rules or being justified by the exceptional clauses. However, it does not imply that the international trade regime itself would prevent governments from pursuing ambitious climate policies. Instead, it sends a clear signal that measures designed to promote renewable energy development and green industrialization cannot unjustifiably or arbitrarily favor domestic manufacturers over foreign ones.

In *Canada – Renewable Energy* and *India – Solar Cells*, the complaining parties did not question the objectives of the FIT programme or National Solar Mission to combat climate change and reduce carbon emissions. As declared by Japan in *Canada – Renewable Energy*, this case involved 'trade and investment' instead of 'trade and environment' issues.[1156] The Panelists also emphasized that they did not opine about the legitimacy of Ontario's goal of promoting renewable energy electricity.[1157] The US in *India – Solar Cells* explicitly supported the environmental and developmental aims and objectives of the National Solar Mission. [1158] Therefore, the importance of objectives such as energy security and climate change mitigation under these renewable energy programs are not questioned by either complainants or the WTO adjudicators.

[1155] Joe Leahy, 'Brazil's Renewable Energy Potential Attracts Investors' (Financial Time, 2017), available at: https://www.ft.com/content/a20b74bc-7eb4-11e7-ab01-a13271d1ee9c, accessed on 12 December 2017.
[1156] Panel Report, *Canada – Renewable Energy*, para. 7.7.
[1157] Panel Report, *Canada – Renewable Energy*, para. 7.153.
[1158] See, United States' opening statement at the first meeting of the Panel, para. 2; United States' opening statement at the second meeting of the Panel, para. 2.

The prohibition of trade discriminatory green industrialization policy measures, such as LCRs under the WTO regime can be analyzed from not just the perspective of trade law but also the perspective of climate change mitigation. Measures like LCRs unduly restrict international trade by unfairly providing favorable treatment to domestic producers. This constitutes trade barriers that distort market competition and subjects foreign producers' interests into jeopardy. The increase of costs, as a result of mandatory purchase of more expensive domestic products will slow down the diffusion of renewable energy technologies.[1159] This will undermine overall investment and the up-scale of renewable energy technologies.[1160]

The use of LCRs seems to be a combination of good intentions with bad outcomes, such as distorting international trade, slowing down technologies diffusion or even risking retaliations from other Members. There are important lessons to be learned so as to ensure the effectiveness of industrial policies in renewable energy sector. Whether purely green industrial policies can exist that focus directly and exclusively on the development and diffusion of green technologies rather than industrial competitiveness, employment or fiscal interests is debatable in practice. In Rodrik's view, this kind of industrial policy is unlikely to be in place since politically salient objectives, such as jobs in renewable energy sector represent a more attractive platform for promoting green industrialization policy.[1161] However, pursuing local benefits while opting out of international trade obligations is a dangerous move.

Facilitating climate change mitigation needs renewable energy development at a faster pace and with a broader scale, in which reducing renewable energy cost plays a key role. In this vein, the imposition of LCRs drives up the cost and impedes the expansion of renewable energy, which shapes a not enabling environment for renewable energy development. Therefore, putting a ban on the use of LCRs by the WTO adjudicators can remove trade barriers and create a fair and open trade environment in which renewable energy developers, regardless of their origins compete in an equal footing. Renewable energy electricity producers can source the generation equipment from sources with cheapest price or highest quality. In this vein, by subjecting discriminatory trade measures into WTO scrutiny, the international trade regime can create a more facilitative environment for the development and deployment of renewable energy technologies. It is incorrect to label the WTO's prohibition of LCRs as hospitality that trade regime has towards climate-related goals or misalignment between climate regime and trade regime.

The capacity of international trade to support climate action and green industrialization process cannot be underestimated, nor should the positive role that the WTO law can play in ensure a fair and competitive environment for trade in renewable energy sector. The linkage between trade regime and climate regime needs to be put in synergy, which could foster international cooperation and policy-making with positive implications for both trade liberalization, climate change mitigation and green industrialization. Any trade-related measures in incentivizing green industrial development should be not only environmentally sustainable but

[1159] OECD, 'The Economic Impact of Local Content Requirements' (2016 February), available at: https://www.oecd.org/tad/policynotes/economic-impact-local-content-requirements.pdf.
[1160] *Ibid.*
[1161] Rodrik (n 117), at 489.

also legally sustainable. The compliance of these measures with trade norms is of critical importance, which could invite more disputes in the future if the compliance is put into question.

However, developing countries, particularly China and India will likely to continue to engage in restrictive industrial policy measures, despite complaints of the US and other European countries. If all Members took the route of using trade-discriminatory measures in developing their own renewable energy industry, a 'beggar-thy-neighbor' process of trade-inhibiting protectionism would emerge. The trade disputes between WTO Members with respect to how to develop renewable energy with trade-related government support measures would always take years to simmer down.[1162] The intensified trade relations are likely to give rise to other kinds of trade frictions, which damage global cooperation on renewable energy development.

The tension between green industrial policymaking and compliance with WTO rules may not turn out to be as severe as conventionally believed. There is still considerable leeway in the WTO rules that allows the Members to even use trade discriminatory measures. This is to say, even if policy measures are challenged as violation of non-discrimination, they may be defended in the WTO on different grounds, as follows.

First, if a Member government or a public utility is the purchaser of renewable energy sourced electricity, the government procurement derogation could be invoked as long as all interpretative parameters defined by the Appellate Body in *Canada – Renewable Energy* and *India – Solar Cells* are satisfied. This is to say, the government does not need to be bound by national treatment but has the discretion to discriminate against foreign suppliers in its procurement activities. As an illustrative example in renewable energy sector, it is WTO-legal to discriminate against foreign manufacturers of solar equipment components, such as solar modules, solar PV when the governments decide to purchase the equipment for governmental use. Many developing countries remain a non-Member to the WTO's Government Procurement Agreement, providing them with opportunities to engage in making restrictive government procurement policies to promote domestic renewable energy development. The scope of policy space under the government procurement derogation should not be underestimated. However, nor should it be ignored that the recent jurisprudence on the application of government procurement derogation has largely narrowed the scope of policy space under this provision. The extent to which the Members can discriminate in government procurement within the meaning of the GATT Article III: 8(a) is limited.

Second, the GATT Article XX maps out exceptional clauses to obligations where an otherwise illegal measure is taken for legitimate public policy objectives, such as the protection of human, animal or plant life or health; or the conservation of exhaustible national sources. These exceptions are relevant in justifying the Members' action to develop renewable energy and address climate change. In the case when renewable energy support measures are formulated in a way restricts international trade yet provide conducive effects on climate system, Article XX is

[1162] Carbaugh and Brown (n 213), at 13.

likely to provide breathing room for these measures and strike balance between trade-related values and climate-related ones. The jurisprudence on the application of Article XX demonstrates a two-tier test, which means that the exception could be available only if the invoking party provides that the challenged measure is relevant to any of the identified public policy objectives and that it is not applied in a manner which constitutes 'a means of arbitrary or unjustifiable discrimination,' or 'a disguised restriction on international trade.'[1163]

Whereas the objective of green industrialization is justified in today's realities, the manner the WTO Members devise the policy to aid actors in renewable energy sector may become the source of tensions. A deeper understanding and a more thorough reflection on the interactions between trade, renewable energy development, and climate change mitigation and green industrialization can help increase the synergies between the four to the maximum level. To achieve this goal, it is important to map out the policy tools that are particularly relevant in upholding trade liberalization and renewable energy industrial development. This is key to decouple economic growth and emissions.

Meanwhile, it is equally critical to ensure that the WTO core value: non-discrimination can play a key role in detecting and disciplining protectionist-motivated measures that are erected in renewable energy sector. The WTO regime is tasked to minimize inadvertent implications of green industrialization measures and make sure that trade disciplines would positively contribute to, rather than undermine, the overarching objectives of climate change mitigation and green industrialization. Therefore, the key issue here is to ensure the removal of trade barriers that increase the price of renewable energy technologies and thus, unduly slow down renewable energy expansion. Permitting the Members to employ green industrialization measures in whatever way they want risk opening the door to protectionism. In essence, the WTO must become more attuned to non-trade priorities and values that are widely embraced around the world without abandoning its mission to fight protectionism.

[1163] See, Chapter 4 and Chapter 8.

Chapter 9: The Way Forward: Target Setting As an Ideal Alternative

9.1 The Rationale of Exploring An Alterative to Green Industrialization Measures

This chapter aims to explore other options in achieving de-carbonization and green industrialization goals, which are different from the measures examined in previous chapters. The rationales for this analysis are twofold: the first is the policy space under the WTO regime for de-carbonization measures and green industrialization measures turns out to uncertain and limited; the second is the desirability of an alternative option in promoting renewable energy development and mitigating climate change.

9.1.1. The Limited and Uncertain Policy Space for Green Industrialization and De-carbonization Measures

As discussed in details in preceding chapters, de-carbonization and green industrialization have the potential to mitigate climate change and facilitate the transition to a green economy. However, their interaction with the WTO law is subjected to uncertainties or restrictions, which is dependable on the specific policy design and implementation.

The policy makers, in designing and implementing green industrialization measures tend to employ trade protectionism policies to favor domestic producers. In the light of this, the use of green industrialization measures can breach non-discrimination principle, viewed from a trade law perspective. Meanwhile, it remains questionable whether trade discriminatory green industrialization measures can still achieve objectives with respect to climate change mitigation. If the answer is yes, it is debatable whether the WTO regime should provide policy space for these measures that are trade restrictive yet climate friendly. However, if the answer is negative, which means that certain forms of green industrialization measures fail to meet climate-related goals yet generate restrictive implications on trading system, the Members should not be given discretion in employing these measures under the WTO regime.

When it comes to how de-carbonization measures are defined under the WTO law, it is the WTO subsidy rules that come into play in assessing the measures' WTO consistency. The dispute *Canada – Renewable Energy* suggests that the legal status of certain forms of de-carbonization policy measures, such as FITs under the SCM Agreement is left undecided. Therefore, these measures would be shielded from the disciplines of the SCM Agreement. This certainly could be perceived as a climate-friendly outcome because de-carbonization measures, if ruled to not be subjected to subsidy rules could be employed by the Members within their discretion. However, the undecided legal status of FITs under the SCM Agreement does not mean that FITs will always be shielded away from the scrutiny of subsidy rules in every scenario. Nor does it guarantee that other forms of de-carbonization measures will be permitted under the SCM Agreement.

Therefore, it is intriguing to ask a question: is the current SCM Agreement 'green' enough that trade-related de-carbonization measures, such as feed-in tariffs adopted could pass the scrutiny of the WTO rules? The author argues that a friendly

interpretation of the subsidy rules could effectively protect some forms of de-carbonization measures from being unduly restricted, however, it is far from ideal to improve the supportiveness of the WTO regime to climate-related goals. The absence of non-actionable subsidy category under the SCM Agreement risks subjecting some forms of de-carbonization measures to subsidy disciplines. Because de-carbonization measures, once being ruled as subsidies would fall within two categories – either prohibited or actionable subsidies. This is to say, measures that even aim at achieving desirable public policy objectives still would not be insulated from actions but rather be captured by the subsidy rules. The failure to take into consideration the underlying policy objectives of measures renders the SCM Agreement deficient. Therefore, this thesis proposes to fill the gap and 'green' the SCM Agreement to accommodate legitimate policy objectives.

A corollary issue that needs to be raised is the development of feed-in policies at the current stage, viewed from the perspective of de-carbonization policymaking. Feed-in tariffs or feed-in premiums remain the most prominent form of de-carbonization policy for renewable energy electricity expansion within recent decades. However, the changing policy landscape in renewable energy area demonstrates a shift away from FITs policies, most notably in Europe and Asia.[1164] The year 2016 marked the second in a row in which no new countries employed feed-in policies at the national level.[1165] Particularly when it comes to large-scale project deployment, auction-based procurement has received increasing popularity and become a replacement to feed-in policies.[1166]

The statistics gathered from different jurisdictions is telling. For instances, the German feed-in tariff for PV installations of less than 10kW was EUR 127 per MWh in 2016, which dropped from a level of EUR 287 per MWh in 2011.[1167] The Chinese government also has recently revealed its new FITs for different types of solar PV projects, the rate of which has fallen as much as 15% from the beginning of 2018.[1168] In the FITs plan for renewable energy published by the Taiwan's Bureau of Energy, the rate of support for solar is about to reduce in 2018 as well.[1169] It is welcoming news that wind and solar power in good locations can now competitive with fossil fuel-based electricity in terms of cost.[1170] REN 21 report shows that the world now has added more renewable energy electricity capacity annually than it has added in net new capacity from all fossil fuels combined.[1171]

[1164] REN21, 'Renewables 2017 Global Status Report' (REN21 Secretariat, 2017), at 122.
[1165] *Ibid.*
[1166] *Ibid.*
[1167] UNEP, 'Global Trends in Renewable Energy Investment' (2016, Frankfurt School – UNEP Center and Bloomberg New Energy Finance), available at: http://fs-unep-centre.org/sites/default/files/attachments/press_release_gtr_2016_in_english.pdf, accessed on 27 November 2017
[1168] Brian Publicover, 'China Sets Lower Solar FIT Rates for 2018' (PV Magazine, 2017), available at: https://www.pv-magazine.com/2017/12/22/china-sets-lower-solar-fit-rates-for-2018/, accessed on 29 December 2017.
[1169] Tom Kenning, 'Taiwan Releases Tentative Renewable Energy FITs for 2018' (PV Tech, 2017), available at: https://www.pv-tech.org/news/taiwan-releases-tentative-renewable-energy-fits-for-2018, accessed on 23 December 2017.
[1170] Tilman Altenbury and Dani Rodrik, 'Green Industrial Policy: Accelerating Structural Change Towards Wealthy Green Economies' in Tilman Alternbury and Assmann (eds) *Green Industrial Policy: Concept, Policies, Country Experiences* (UNEP and DIE 2017), at 6.
[1171] *Ibid.*

The reduction of FITs cost in an increasing number of countries around the world should be factored into consideration during policy making.

It is crucially important for policy-makers to adjust the rate of FITs in line with the ever-changing cost of renewable energy technologies. Over time, the rate of FIT needs to be reduced to reflect the drop in the price of renewable energy equipment and the higher returns of renewable energy electricity developers. If the rate of feed-in policies were set at a level higher than necessary, it would be wasting in monetary sense. Meanwhile, renewable energy electricity developers under the scheme are likely to be accused of being paid with more than adequate remuneration. In trade law jargon, this implies the existence of a 'benefit' within the meaning of the SCM Agreement and the use of FITs would be subject to the WTO discipline.

As discussed in Chapter 7, the challenged FITs in *Canada – Renewable Energy* were not deemed as a subsidy was due to the failure of identifying an appropriate market benchmark in which remuneration received by solar and wind power developers under the scheme could be compared to. However, the twisted interpretation adopted in *Canada – Renewable Energy* by no means shuts the door to finding a benchmark so as to assess the rate received by producers under certain FITs. Quite on the contrary, the adjudicators specified the conditions that a market needs to meet to qualify as a benchmark. Therefore, it is possible in future for the WTO adjudicators to identify an appropriate market benchmark that does exist in the world or compose a rational market as proxy. Due to the enormous development and installation of renewable energy around the world, it is no longer an era featured with the scarcity of renewable energy sourced electricity markets. In the light of this, it is much easier to identify a market benchmark to assess the existence of 'benefit' within the meaning of the SCM Agreement. Therefore, it is more probable that such FITs would be deemed to confer a benefit to recipients and thus, constitute a subsidy.

The interaction of both de-carbonization measures and green industrialization measures with the WTO rules can give rise to possible contentions. The WTO law is not perfect in bringing into coherence of trade interests and climate interests, yet it is not realistic to rely merely on legal reform. The following part aims to explore possible option that can achieve the duel objectives: de-carbonization and green industrialization while comply with the WTO rules.

9.1.2 An Alternative Option

The uncertainties faced by policy makers in designing de-carbonization measures and the strict WTO scrutiny that some forms of green industrialization measures cannot pass underscore the need of finding an alternative. This is an approach that is WTO-consistent and simultaneously effective in generating positive effects on renewable energy development and climate change mitigation. The following part proposes that setting renewable energy targets can become the alternative to de-carbonization and green industrialization measures.

9.2 An Introduction to Renewable Energy Targets Setting

To set renewable energy targets can potentially bring the imperative to reduce emissions and to enhance industrial competitiveness, together with the need to respect the WTO obligations into compatibility.[1172] This part elaborates on the desirability of renewable energy target setting, starting from what it is to what advantages it has.

First of all, what is renewable energy targets setting? IRENA research report defines renewable energy targets as 'numerical goals established by governments to achieve a specific amount of renewable energy production or consumption'.[1173] Renewable energy targets range from aspirational statements, such as political announcements and vision statements, to energy strategies and action plans, to fully articulated targets, which are accompanied by quantifiably policy instruments and legally binding obligations.[1174] Renewable energy targets are often set in a long-term perspective, typically ranging from 10 to 20 years.[1175] The REN 21's Global Status Report proposes a definition of renewable energy targets as 'official commitment, plan, or goal set by a government at the local, state, national or regional level to achieve a certain amount of renewable energy by a future date.'[1176] The diversity of renewable energy targets in different jurisdictions tends to be notable, there is no one-size-fits-all targets setting that could be applied uniformly.

Renewable energy targets can apply to electricity, heating/cooling or transport sectors, or to the energy sector as a whole. This part mainly focuses on targets set in electricity sector since it has the biggest share of emissions and becomes the policy priority in a large number of countries. IRENA research shows that around 150 countries have set renewable electricity targets up to 2015, making it the most widespread type of renewable energy targets. [1177] The primary policy objectives pursued play a decisive role in the design of renewable energy targets. Governments are adopting renewable energy targets to meet multiple interconnected policy objectives, ranging from energy security, environmental protection and social-economic development.[1178] However, this part's focus is not to touch upon the underlying policy objectives of renewable energy targets setting but its important role in incentivizing renewable energy development and the realizing the fundamental objectives of de-carbonization as well as green industrialization.

It is worth pointing at the skeptical views towards renewable energy targets setting. Helm argues that this is expensive and counter-productive since they would lock in more costly and less efficient technologies instead of encouraging the emergence of

[1172] For the discussions of the importance of renewable energy targets setting, please see, IRENA, 'Renewable Energy Target Setting' (June 2015).
[1173] IRENA, Renewable Energy Target Setting (June 2015), at 9.
[1174] *Ibid.*
[1175] *Ibid*, at 49.
[1176] REN21,Renewables 2014 Global Status Report, (2014) available at: http//www.ren21.net/portals/0/documents/resources/gsr/2014/gsr2014_full%20report_low%20res.pdf
[1177] IRENA (n 1173), at 9.
[1178] *Ibid.*

new and more efficient technologies.[1179] It is the government that performs the task of 'picking winners' instead of letting market creates opportunities for the cheapest and fastest route so as to de-carbonization.[1180] When it comes to renewable energy deployment target, Fischer and others doubt the efficiency of establishing targeting and point out a better option: governments should focus on boosting investments in R&D sector to bring about the up-to-date technologies.[1181] Regardless of the criticism, the expansion of renewable energy targets setting around the world shows no sign of slowing down.

The important role that renewable energy targets setting could play in stimulating renewable energy development is three-fold. Firstly, establishing renewable energy targets can send a strong signal to manufacturers, installers, and other stakeholders across the renewable energy value chain as a whole. Manufacturing sector has dominated the trade balance for a long time and become the engine of growth for many upstream industries.[1182] Establishing reasonably ambitious renewable energy targets could stimulate local manufacturing capabilities and enhance industrial competitiveness in this area. Moreover, not only manufacturing sector, but also other sectors along the whole renewable energy value chain, such as R&D, installation and maintenance could benefit from the setting of targets. In contrast, the use of LCRs in renewable energy area merely focuses on the manufacturing sector while ignoring other stakeholders' needs. The disproportionately high reliance on renewable energy manufacturing capability does not seem to be rational from a long-term perspective. Therefore, setting renewable energy targets outweigh green industrialization measures in shaping an enabling environment that most, if not all sectors of the renewable energy value chain could benefit from.

Secondly, from a micro perspective, setting renewable energy targets supports investors' medium and long-term investment decisions by making future market opportunities and the market's anticipated growth visible. This is a critically important factor in stimulating the development of renewable energy at scale.[1183] Stakeholders are enabled to allocate resources more effectively thanks to a clear vision of market growth and potential. It would be easier to plan other medium to long-term decisions. For instance, setting targets for the amount of electricity to be sourced from renewable energy sources within a fixed and predictable timeline could generate and ensure investment in renewable energy because investors tend to build their business on the back of the demand for renewable energy.[1184]

Thirdly, by making trajectory and growth visible, renewable energy targets could expand the deployment of renewable energy and bring down the cost. In the

[1179] Dieter Helm, 'Government Failure, Rent-Seeking, and Capture: the Design of Climate Change Policy' (2010) 26(2) Oxford Review of Economic Policy 182.
[1180] Carolyn Fischer, Richard Newell and Louis Preonas, 'Environmental and Technology Policy Options in the Electricity Sector: Interactions and Outcomes' (2013) Resources for the Future Discussion Paper, at 13-22.
[1181] Robert Mcllveen, 'Greener, Cheaper and Accountable' (The Guardian, 2010), available at: https://www.theguardian.com/commentisfree/cif-green/2010/aug/10/micro-renewables-greener-cheaper-accountable, accessed on 12 December 2017.
[1182] Karl Aiginger, 'Industrial Policy: A Dying Breed or A Re-emerging Phoenix' (2007) 7(3-4) Journal of Industry, Competition and Trade 297, at 302.
[1183] IRENA (n 1173), at 10.
[1184] PAGE, *Green Industrial Policy and Trade: A Tool-Box* (UNEP and UNIDO, 2017), at 52.

meantime, it provides many opportunities to establish a local supply chain by incentivizing local stakeholders to participate and enhance policy certainty. In this perspective, setting reasonably ambitious renewable energy targets not only reduces carbon intensity of economic development but also has the potential to enhance local supply chain and accelerate technological development. The objectives of de-carbonization and green industrialization could be achieved at the same time with renewable energy targets set in a clear, quantifiable and measureable manner. In this vein, renewable energy targets could be established as an alternative to measures designed primarily for de-carbonization and green industrialization, which might breach WTO obligations.

9.3 An Overview of Renewable Energy Target Setting

With renewable energy target setting becoming a defining feature of the global energy landscape, 173 countries around the world had adopted at least one type of renewable energy target as of year-end 2016, which increased almost four times from 43 countries in 2005.[1185] The geographic shift that has been happening in renewable energy targets setting is also noticeable. Early 2000s had seen the expansion of target setting mostly in developed countries while recent years are marked with developing and emerging economies' leading role in the growing adoption of targets.[1186] The setting of renewable energy targets, in a large number of cases, focuses on electricity sector, namely setting a specific share of renewable sourced electricity.[1187]

In order to examine the correlation between the setting of renewable energy targets and the realization of de-carbonization and green industrialization objective, the following part chooses four jurisdictions, the EU, Australia, China and India and their specific experiences in setting renewable energy targets. The four jurisdictions cover both developed countries and developing ones, which will make the analysis more representative and comprehensive. A review of renewable energy targets setting in the four jurisdictions reveals a causal relationship between a robust and stable target and renewable energy growth as well as a between an unstable or under ambitious target and weak renewable energy growth.

9.3.1 Country-Specific Experiences in Renewable Energy Target Setting

9.3.1.1 The EU

The EU has assumed a leading position around the world with its ambitious energy targets. Dating back to 2001, the EU adopted a European Directive to promote the development of renewable energy with an ambitious target of 21% of total EU electricity consumption to be generated from renewable energy source by 2010.[1188] Non-binding targets for each Member State was specified in the Annex to this Directive.[1189]

[1185] *Ibid.*
[1186] REN21, 'Renewables 2017 Global Status Report' (Paris: REN21 Secretariat, 2017), at 120.
[1187] *Ibid.*
[1188] See, European Commission, 'Renewable Energy Directive 2001/77/EC' available at http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_283/l_28320011027en00330040.pdf.
[1189] *Ibid.*

The legislative work on a mandatory European renewable energy target started in 2007 until the EU Renewable Energy Directive was adopted in 2009. This Directive establishes an overall policy for the production and promotion of energy from renewable sources in the EU.[1190] It established legally binding targets for its 28 Member States at the regional and national level. Each Member State was allocated a renewable energy source target expressed as the share of energy from renewable energy source in its projected gross final consumption for 2020. Each Member State was also required to develop a National Renewable Energy Action Plan that outlined both its current energy mix as well as the various policy measures being used or to be implemented to achieve targets.[1191] Statistics shows that the share of renewable energy in total final energy consumption increased to 15.2% in 2013 from 8.6% in 2005, largely due to the enabling policy frameworks accompanied by supportive schemes that have been put in place to achieve the targets.[1192]

Due to changing economic market conditions, renewable energy targets also have been subject to a lot of modifications. In 2014, the European Council adopted the 2030 Framework for Climate and Energy.[1193] The Framework has increased the renewable energy target to 27% of the EU's final energy consumption and raised the target for greenhouse has reductions to 40% below 1990 levels[1194] However, unlike the 2009 EU Renewable Energy Directive, the target set in the Framework will not be translated into national targets via EU legislation and thus, not binding on the EU Member States individually.[1195] The absence of binding national targets raises questions as to whether national policies could be expected to meet the EU target. Therefore, lots of uncertainties remain as whether and in what ways the targets could be reached. What implications this change in the target architecture will have on each Member State's respective policies are yet to be seen.[1196]

The Framework calls for review of the targets in 2020 to ensure that these targets would be achieved in 2030 EU level.[1197] It is estimated that Euro 379 billions would be needed on an annual basis to achieve the EU's climate and energy target. The Framework also calls for a review of the targets in 2020 'to give the EU the means of ensuring that the 2030 EU level target is met.'[1198]

[1190] See, European Commission, 'Renewable Energy Directive 2009/28/EC' available at: https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive. It requires he EU to fulfill at least 20% of its total energy needs with renewables by 2020 to be achieved through the attainment of individual national targets. All EU countries must also ensure that at least 10% of their transport fuels come from renewable sources by 2020.

[1191] IRENA (n 1173), at 21.

[1192] *Ibid.*

[1193] See, European Commission, '2030 Energy Strategy', available at: https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/2030-energy-strategy. The renewable energy target for 2030 is to achieve at least a 27% share of renewable energy consumption and at least 27% energy savings compared with the business-as-usual scenario.

[1194] *Ibid.*

[1195] *Ibid.*

[1196] Claudia Fruhmann, Andreas Tuerk (2014): "Renewable Energy Support Policies in Europe". Climate Policy Info Hub, 3 November 2014. Online available at: http://climatepolicyinfohub.eu/renewable-energy-support-policies-europe.

[1197] See, European Commission (n 1193).

[1198] See, European Commission, (2014) 'A policy framework for climate and energy in the period from 2020 to 2030'available at: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52014DC0015.

In 2016, the EU published a proposal for a revised Renewable Energy Directive to enable the EU to become a global leader in renewable energy and ensure the fulfillment of 2030 renewable energy target.[1199] The Clean Energy Package presents legislative proposals on renewable energy and facilitating measures, including actions to encourage public and private investment to achieve renewable energy policy goals.[1200] The consistency and coherence in renewable energy policy making has sent a strong signal to the market and encouraged investment in renewable energy industry as well as research and technology. The statistics shows that the EU accounted for approximately 50% of global renewable energy investment in 2011, although the share has dropped due to the increasing investment made by other countries recently.[1201] There is still huge room for investment growth in EU side so as to meet its renewable energy policy goals.

The EU finally revised the targets for renewable energy from 27% to 35% by 2030, signally a strong and positive move towards a renewable energy future and boosting employment increase in this sector.[1202] It also supports Member States to give five years' visibility on their public support for renewable energy.[1203] The consensus amongst industry stakeholders, which urged for an increase of target, was that an under-ambitious target would curtail the rate of progress in the adoption of renewable energy.[1204] In addition, the remarkable reduction of costs in renewable energy, particularly the wind and solar would facilitate the realization of renewable energy targets. Wind is now the cheapest form of new electricity generation in Europe, which is also a key part in European manufacturing and exports.[1205] Statistics shows that wind energy area has absorbed around 263,000 jobs in Europe and contributed 36 Million Euros to EU GDP.[1206] An increased target is in line with the growing tendency demonstrated in renewable energy sector.

Therefore, the newly set target has great potential to bring the EU closer to the renewable energy capacity it needs to meet the emissions reduction goals set out in the Paris Agreement.[1207] Because the direct effect of renewable energy target increases is an equivalent rise in volume and capacity by one third. The EU Member States would make fair and forward-looking contributions to the target. On the other hand, it also provides certainty and clarity in terms of investment for the

[1199] See, European Commission, 'Renewable Energy Directive' available at: https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive.
[1200] European Commission, 'Renewables: Europe on Track to Reach Its 20% Target by 2020', available at: http://europa.eu/rapid/press-release_MEMO-17-163_en.htm.
[1201] *Ibid.*
[1202] Marc Eglon, 'The EU Just Raised Their 2030 Renewable Energy Target to 35%' (Taylor Hopkinson News, 2018), available at: https://www.taylorhopkinson.com/eu-raised-2030-renewable-energy-target-to-35-percent/, accessed on 1 February 2018.
[1203] *Ibid.*
[1204] *Ibid.*
[1205] Craig Richard, 'European Parliament Approves 35% Renewables Target' (Wind Power Monthly, 2018), available at: https://www.windpowermonthly.com/article/1454751/european-parliament-approves-35-renewables-target, accessed on 30 March 2018.
[1206] *Ibid.*
[1207] In the EU's NDCs, the EU and its Member States are committed to a binding target of an at least 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990, available at: http://www4.unfccc.int/ndcregistry/PublishedDocuments/European%20Union%20First/LV-03-06-EU%20INDC.pdf.

medium to long term. A higher share of renewable energy implies higher installation rates of renewable energy in the EU countries, which can generate positive impacts on the competitiveness of European manufacturing and service industry in the renewable energy sector.[1208] This clearly shows the linkage between reasonably ambitious renewable energy target and the realization of not only de-carbonization but also green industrialization objectives.

9.3.1.2 Australia

Australia also has been more proactive in setting renewable energy targets within recent years. In 2007, the Australia government committed in its Renewable Energy Target (RET) to ensure that 20% of Australia's electricity supply comes from renewable energy sources by 2020.[1209] To achieve this, the Government has set annual targets for each year of the scheme, and requires Australian electricity retailers and large wholesale purchasers of electricity to demonstrate that they meet these targets.[1210] Compliance is demonstrated by surrendering renewable energy certificates and failure to surrender adequate RECs leads to charge.

In 2010, RET has included two newly drafted targets, which are the eye-catching Australia's Large-scale Renewable Energy Target and Small-scale Renewable Energy Target.[1211] The former provides financial incentives by creating large-scale generation certificates for renewable energy power stations, such as wind and solar farms, or hydroelectric power stations.[1212] The latter scheme creates financial incentives by providing small-scale technology certificates to individuals and small businesses, which install eligible small-scale renewable energy systems such as solar panel systems, small-scale wind systems.[1213]

However, months of uncertainty from the end of 2013 to the mid-2015, over the future level of Australia's Renewable Energy Target damaged investor confidence in this area.[1214] The reason is quite straightforward: any reduction in the target would reduce the amount of new renewable energy investment over the following years as well as considerably damage investments already made in good faith based on legislated renewable energy target.[1215] This is a classic example of how targets setting bring certainty that is conducive for investment. Nevertheless, following the

[1208] Jenny Winkler et al., 'Renewable Energy Directive Target' (Study for European Parliament's Committee on Industry, Research and Energy, 2018), available at: http://www.europarl.europa.eu/RegData/etudes/STUD/2018/614201/IPOL_STU(2018)614201_EN.pdf, at 44.
[1209] See, Australia Government Department of the Environment and Energy, The Renewable Energy Target Scheme, available at: http://www.environment.gov.au/climate-change/government/renewable-energy-target-scheme.
[1210] *Ibid.*
[1211] For detailed information of Australia's Renewable Energy Target, please see: http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target, accessed on 17 November 2017.
[1212] *Ibid.*
[1213] *Ibid.*
[1214] Craig Froome, 'How Will the Reduced Renewable Energy Target Affect Investment' (The Conversation, 2015), available at: http://theconversation.com/how-will-the-reduced-renewable-energy-target-affect-investment-41505, accessed on 17 November 2017.
[1215] Clean Energy Council, 'The Impact of Reducing the Renewable Energy Target on Investments' (2014), available at: https://www.cleanenergycouncil.org.au/policy-advocacy/renewable-energy-target/impact-of-reducing-the-ret.html, accessed on 16 November 2017.

legislation of the revised Large-Scale Renewable Energy Target[1216] in mid-2015 and a new Prime Minister who is more supportive of renewable energy, investment confidence in this sector has been significantly enhanced.[1217]

The Clean Energy Report 2016 indicates that renewable energy contributed 17.3% of Australia's electricity this year from 14.6% in 2015.[1218] The cost of large-scale solar is reduced by half compared the price a couple of years ago, which together with other sources make renewable energy the cheapest kind of new power generation in Australia.[1219] The decrease of cost, will in return boost investment and accelerate energy transformation. The year 2017 has seen at least 43 large-scale renewable energy projects to be under construction or completed, which could deliver an unprecedented USD 8.8 billion investment and more than 4496 MW of new renewable energy capacity.[1220] Around 13,443 people have been employed by renewable energy projects currently under construction.[1221] The bipartisan support, accompanied by support from the Australia Renewable Energy Agency, the Clean Energy Finance Corporation and various initiatives of state and governments play a decisive role in fulfilling the target.[1222]

The benefits of the renewable energy targets set in Australia are multiple, including the creation of employment opportunities and the increase of investment amount. Like any infrastructure project, renewable energy generates economic benefits for local communities that are surrounding the projects. The projects will provide positive spillovers on many different businesses involved. For instance, the construction of renewable energy projects can generate employment for local people as well as a boost for other sectors, such as equipment suppliers, contractors and much more. The following operation and maintenance of renewable energy projects also could provide jobs. On the other hand, large number of investments have been motivated by the government's target commitment.[1223] It is anticipated that renewable energy investment in Australia would continue to increase at lease before the end of existing Renewable Energy Target.[1224] This has placed Australia at five on Ernst & Young's Renewable Energy Attractiveness Index in 2017, up from 11 recorded in 2016.[1225]

[1216] Under the new Renewable Energy Target deal, the amount of new large-scale renewable energy in Australia will be reduced from the legislated 41,000 GWh target to 33,000 GWh by 2020 while no changes will be made to the Small-scale Renewable Energy Target.

[1217] Clean Energy Council, 'Progress and Status of the Renewable Energy Target Briefing Paper' (May 2015).

[1218] Clean Energy Council, 'Clean Energy Australia Report 2016' (2017), available at: https://www.cleanenergycouncil.org.au/policy-advocacy/reports/clean-energy-australia-report.html, accessed on 25 December 2017

[1219] *Ibid.*

[1220] Clean Energy Council, '2017 Jobs and Investment in Large-Scale Renewables' (2017), available at: https://www.cleanenergycouncil.org.au/policy-advocacy/renewable-energy-target/jobs-and-investment.html, accessed on 22 December 2017.

[1221] *Ibid.*

[1222] *Ibid.*

[1223] Dmitry Danilovich, 'Will Clean Energy Target Provide Policy Certainty and Drive Investment' (KPMG, 2017), available at: https://home.kpmg.com/au/en/home/insights/2017/06/australia-clean-energy-target-provide-policy-and-investment.html, accessed on 17 November 2017.

[1224] *Ibid.*

[1225] See, Ernest & Young, 'Renewable Energy Country Attractiveness Index' (2017), available at: http://www.ey.com/gl/en/industries/power---utilities/ey-renewable-energy-country-attractiveness-index-our-index, accessed on 12 December 2017.

Nevertheless, the Australia Institute's new Climate & Energy Program issued the first major publication, which finds that a transition to between 66% to 75% renewable energy generations by 2030 is needed to meet Australia's Paris commitment in a cost-effective manner.[1226] The incongruity between Australia's 2030 mitigation targets and the long-term commitments embodied in the Paris Agreement is likely to create uncertainty that deters investment and drives up the cost of capital.[1227]

9.3.1.3 China

The setting of renewable energy targets in developing countries also presents a promising picture, which in some aspects tend to be even more progressive than developed countries. This part chooses China as an example and discusses how the renewable energy targets setting plays a crucial role in boosting China's rapidly increasing renewable energy electricity generation and manufacturing capability. Although the use of LCRs in the early stage of China's wind energy development was well known, this part focuses on the rise of solar energy in China.

China's development is marked with high carbon intensity, reaching 475 tonnes per million dollars of GDP,[1228] which places a great challenge on the country to decarbonize the economy. However, recent years have witnessed China's momentum and determination in developing renewable energy, which can be reflected from a series of legislative actions. China has become the first-attractive country for renewable energy investment, according to a recent Ernst & Young report.[1229]

In 2005, China's State Council and National People's Congress approved a comprehensive law for developing and promoting renewable energy.[1230] Through this law, the Chinese government sent a clear signal that renewable energy development was a national priority by setting the target of 15% of total primary energy supply to come from renewable energy by 2020.[1231] The end of 2009 saw an update of the Renewable Energy Law, which increased the original target to a share of 15% of total final energy consumption from non-fossil fuel sources up from 9% in 2008.[1232]

[1226] The Australia Institute, 'Meeting Our Paris Commitment' (24 September 2017), available at: http://www.tai.org.au/content/meeting-our-paris-commitment, accessed on 12 January 2018.
[1227] Sophie Vorrath, 'Australia Needs 75% Renewables by 2030 to Meet Paris Targets, Cut Costs' (Reneweconomy, 20117), available at: http://reneweconomy.com.au/australia-needs-75-renewables-2030-meet-paris-targets-cut-costs-42441/, accessed on 12 January 2018.
[1228] PWC, 'Low Carbon Economy Index 2016: UK Maintains Its Position as A Climate Change Leader' (01 November 2016), available at: http://pwc.blogs.com/press_room/2016/11/low-carbon-economy-index-2016-uk-maintains-its-position-as-a-climate-change-leader.html, accessed on 12 December 2017.
[1229] See, Ernest & Young (n 1225)
[1230] See, Renewable Energy Law of the People's Republic of China (Chinese Version), issued on 28 February 2005 and became effective on 01 January 2006, available at: http://www.npc.gov.cn/wxzl/wxzl/2005-04/25/content_337639.htm.
[1231] *Ibid.*
[1232] See, Renewable Energy Law of the People's Republic of China (Revised), issued on 26 December 2019, available at: http://www.npc.gov.cn/huiyi/cwh/1112/2009-12/26/content_1533216.htm.

The 2007 Medium and Long-term Development Plan for Renewable Energy set out national targets for a mandatory market share of 1% of renewable energy (excluding hydropower) in the country's total electricity mix by 2010 and 3% by 2020.[1233] In order to implement these targets, China's National Development and Reform Commission introduced it as a mandatory obligation.[1234]

In its 12th Five Year Plan, renewable energy was identified as an emerging strategic industry and overall targets for renewable energy were set, in which China committed USD 920 billion to renewable energy investments so as to meet the goal of producing 20% of the nation's electricity from renewable sources by 2015.[1235] Later in October 2012, China's State Council issued its Energy Policy White Paper to considerably extend the previous targets that had been outlined in its 12th Five Year Plan.[1236] The recent adoption of the 13th Renewable Energy Development Five Year Plan by National Energy Administration establishes targets for renewable energy deployment until 2020.[1237] Explicit targets are set with respect to renewable energy installation capacity, for instance, to increase installed renewable energy capacity to 680 gigawatts by 2020.[1238] These policy goals are perceived to be 'the most far-reaching aims yet'.[1239] Meanwhile, China also has established respective Five Year Plan for each renewable energy technology, in which targets as well as support policy measures are mapped out.

China aims to establish a robust and comprehensive policy framework with a broad coverage and shape an enabling environment for renewable energy deployment and development. Some scholars define China's approach as 'stage-signaling' in the sense that national government provides guidelines and concrete renewable energy targets that local government and other stakeholders need to pursue.[1240] These signals map out policy preferences and indicate how much emphasis that should be put on climate change mitigation.

With up to USD 102 billion renewable energy investment made in 2015, China has already been recognized as the largest investor in domestic renewable energy, which was more than twice that invested domestically by the US and five times that

[1233] See, China's NDRC, Medium and Long-term Development Plan for Renewable Energy (2007), available at: http://www.ndrc.gov.cn/zcfb/zcfbghwb/200709/W020140220601800225116.pdf.
[1234] *Ibid.*
[1235] See, 12th Renewable Energy Development Five Year Plan (2011-2015) (Chinese Version): http://www.ccchina.gov.cn/Detail.aspx?newsId=16895&TId=57.
[1236] See, The State Council of The People's Republic of China, China's Energy Policy 2012, available at: http://english.gov.cn/archive/white_paper/2014/09/09/content_281474986284499.htm.
[1237] See, 13th Renewable Energy Development Five Year Plan (2016-2020) (Chinese Version): https://www.iea.org/media/pams/china/IEA_PAMS_China_China13thRenewableEnergyDevelopmentFiveYearPlan20162020.pdf. Targets set in this plan are aligned with objectives of the 13th Five Year Plan on National Economy and Social Development.
[1238] *Ibid.*
[1239] Ma Tianjie, 'China's Ambitious New Clean Energy Targets' (The Diplomat, 2017), available at: https://thediplomat.com/2017/01/chinas-ambitious-new-clean-energy-targets/, accessed on 27 November 2017.
[1240] Tom Harrison and Genia Kostka, 'The Local Politics of Climate Change in China and India' (Development Leadership Program Research Paper 22, June 2012), available at: http://publications.dlprog.org/Manoeuvres%20for%20a%20Low%20Carbon%20State.pdf, accessed on 22 December 2017.

of the UK.[1241] China's record-breaking investment in renewable energy sector is proved to incentivize its domestic manufacturing capacity. In 2017, China announced a plan to invest USD 360 billion in renewable energy through 2020, with a goal of creating 13 million jobs.[1242] The IEA predicts that in 2021, more than one-third of global solar PV and onshore wind capacity will be located in China.[1243]

A recently published IEA report underscores that China's national renewable energy capacity target contributes to its share of over 40% of global renewable capacity growth and particularly in solar cell manufacturing sector, Chinese companies account for around 50% of total annual global capacity.[1244] Five of the world's six largest solar-module manufacturing firms belong to China.[1245] It is clear that the renewable energy industry has come a long way within a short period in China. With a stable and coherent renewable energy policy in place, the magnitude of opportunities in China's renewable energy investment and manufacturing capacity could be expected.

Climate Action Tracker analysis shows that China's CO2 emissions appear to have peaked more than a decade ahead of the timeline set in its Paris Agreement NDC commitment, which is before 2030.[1246] With China's rigorous policy disciplining the use of coal in place, total greenhouse gas emissions will only be expected to grow slightly in the period 2015 to 2030.[1247] PwC Low Carbon Economy Index also reveals that China topped an index measuring the carbon intensity of the major economies for the first time in 2015.[1248] This means that China has achieved remarkable progress to reduce the use of coal and decarbonize in line with national targets, which contributed to doubling the rate of de-carbonization globally.[1249] There is a clear correlation between development of renewable energy and de-carbonization of economy.

In addition, it is worth mentioning that China's manufacturing development in renewable energy sector has contributed to the plummeting costs of renewable

[1241] UNEP, 'Global Trends in Renewable Energy Investment' (2016, Frankfurt School – UNEP Center and Bloomberg New Energy Finance), available at: http://fs-unep-centre.org/sites/default/files/attachments/press_release_gtr_2016_in_english.pdf, accessed on 27 November 2017.
[1242] See, China's National Energy Administration, 'The Overall Investment in Renewable Energy during '13th Five Year Plan' Will Reach 2500 Billion RMB' (5 January 2017), available at: http://www.nea.gov.cn/2017-01/05/c_135956835.htm, accessed on 12 December 2017.
国家能源局，"'十三五'期间可再生能源总投资规模将达到 2.5 万亿元"（2017-01-05）
[1243] See, IEA, 'Renewable Energy Medium-Term Market Report: Market Analysis and Forecasts to 2021' (OECD/IEA, 2016), at 3.
[1244] See, IEA, 'Renewables 2017: A New Era for Solar Power' (2017), available at: https://www.iea.org/publications/renewables2017/, accessed on 27 November 2017.
[1245] Michael Slezak, 'China Cementing Global Dominance of Renewable Energy and Technology' (The Guardian, 2017), available at: https://www.theguardian.com/environment/2017/jan/06/china-cementing-global-dominance-of-renewable-energy-and-technology, accessed on 29 November 2017.
[1246] See, Climate Action Tracker: 'China 2017', available at: http://climateactiontracker.org/countries/china.html, accessed on 12 December 2017.
[1247] *Ibid.*
[1248] See, PWC, 'China Sets the Pace for Record-Breaking De-carbonization Levels, Doubling the Worldwide Average for First Time Since 2000', available at: https://press.pwc.com/News-releases/china-sets-the-pace-for-record-breaking-decarbonisation-levels--doubling-the-worldwide-average-for-f/s/c70b3680-55bc-414b-9b2e-66ea781abec8, accessed on 12 December 2017
[1249] *Ibid.*

energy equipment around the world.[1250] There are more investment opportunities as costs go down. As Erik Solheim, executive director of UN environment said: 'ever-cheaper clean technology provides a real opportunity for investors to get more for less.'[1251] The year 2016 witnessed the falling investment in renewable energy on the one hand yet the increase of installed renewable energy capacity to a record amount on the other hand.[1252] This reflects the significance of bringing down the capital costs of renewable energy equipment. A robust policy framework established for China's renewable energy development has positive spillovers globally due to the trade of renewable energy equipment.

9.3.1.4 India

Another remarkable example in bolstering renewable energy development under ambitious targets setting is India. Similar to China, India was challenged at the WTO Dispute Settlement Body for employing illegal LCRs in its renewable energy development. However, the implementation of renewable energy targets generally depends on a mix of supportive policy measures instead of any single one. LCRs may constitute part of the policy package for the realization of the renewable energy targets, not to mention that the effectiveness of LCRs adopted in India's solar energy sector remains questionable. This part examines India's renewable energy targets setting and its growth in renewable energy electricity generation and manufacturing capacity.

In 2015, the government announced an ambitious plan to increase the share of renewable energy to 175 gigawatts of installed renewable energy capacity by 2022, with 100 gigawatts of solar, 60 gigawatts of wind.[1253] This means increasing renewable power capacity five times within seven years. The scale-up in solar power capacity from 20 GW to 100 GW by 2022 represents a very ambitious target. The scale-up in solar target requires a remarkable shift in the current trajectory of deployment in solar area, which has also coincided with efforts to further reduce the cost of solar generation through the development of large-scale solar parks. India's Prime Minister Narendra Modi called solar energy the 'ultimate solution' to India's energy crisis.[1254]

[1250] Michael Forsythe, 'China Aims to Spend at Least $360 Billion On Renewable Energy by 2020' (The New York Times, 2017), available at: https://www.nytimes.com/2017/01/05/world/asia/china-renewable-energy-investment.html, accessed on 12 December 2017.
[1251] See UN News Online, 'Cost of renewables fell in 2016, lowering global investment in clean energy' (6 April 2017), available at: http://www.un.org/apps/news/story.asp?NewsID=56512#.WleA-SN97oA, accessed on 24 December 2017.
[1252] Frankfurt School and UNEP/BNEF, 'Global Trends in Renewable Energy Investment 2017', available at: http://fs-unep-centre.org/sites/default/files/publications/globaltrendsinrenewableenergyinvestment2017.pdf, at 12.
[1253] India Brand Equity Foundation, 'Indian Renewable Energy Industry Analysis', available at: https://www.ibef.org/industry/renewable-energy-presentation, accessed on 12 December 2012.
[1254] See, Vishwamohani TNN, 'Prime Minister Modi Pitches for Solar Energy As Ultimate Solution to India's Energy Problem' (The Times of India, 2015), available at: https://timesofindia.indiatimes.com/home/environment/developmental-issues/Prime-Minister-Modi-pitches-for-solar-energy-as-ultimate-solution-to-Indias-energy-problem/articleshow/48548062.cms, accessed on 28 December 2017.

This requires a tremendous shift in the current trajectory of deployment in solar area. India's National Solar Mission offers various incentives, such as: zero import duty on capital equipment, raw materials; low interest rates and priority sector lending; single window mechanism for all related permissions; tax exemptions and capital subsidies.[1255] One of the goals is to aggressively bring down the costs of solar power to achieve grid parity in that same timeframe. India issued its first call for solar power projects with energy storage and set out about USD 3 billion in state funding for developing the country's solar panel manufacturing infrastructure and around USD 100 billion global investment that supports solar development.[1256] India also charts a roadmap, which consists yearly targets and indicates the concerted plans that India has to go to reach the goal.[1257] These annual targets ensue transparency and ambition in the sense that stakeholders could hold the government accountable and attract finance.[1258] Clearly defined medium to long-term objectives are broken down into measurable performance indicators.

This ambitious target set by India's government has increased the investment in renewable energy to a great extent, the potential amount of which is estimated to reach around USD 411 billion by 2022.[1259] The availability of sufficient investment potential to finance India's renewable energy targets is encouraging. In addition, the India National Institution for Transforming India initiated the Renewable Energy Electricity Roadmap 2030, in which a new comprehensive national renewable electricity law and its components as well as support mechanisms to ensure implementation in a timely manner are outlined.[1260]

As the third largest electricity user in the world after China and the US, India is determined to enable the transformation of electricity sector. India's Central Electricity Authority (CEA) also recently published the Draft National Electricity plan, which serves as a 10-year energy blueprint and predicts that 57% of India's total electricity capacity will come from non-fossil fuel sources by 2027.[1261] This target is even more ambitious than the pledge made by India under Paris

[1255] See, Jawaharlal Nehru National Solar Mission: Towards Building Solar India, available at: http://www.mnre.gov.in/file-manager/UserFiles/mission_document_JNNSM.pdf.
[1256] Katherine Ross, 'India Charts A Roadmap to Achieve Ambitious Solar Targets' (Renewable Energy World, 8 June 2016), available at: http://www.renewableenergyworld.com/articles/2016/06/india-charts-a-roadmap-to-achieve-ambitious-solar-targets.html, accessed on 12 December 2017.
[1257] For India's yearly targets in achieving 2022 goal, please see Government of India, Ministry of New and Renewable Energy (National Solar Mission) Office Memorandum, available at: http://mnre.gov.in/file-manager/UserFiles/OM-year-wise-cumulative-target-for-100000MW-grid-connected-SP-project.pdf, accessed on 23 December 2017.
[1258] Ross, (n 1256).
[1259] Vivek Sen, Kuldeep Sharma and Gireesh Shrimali, 'Reaching India's Renewable Energy Targets: The Role of Institutional Investors' (Climate Policy Initiative, 2016), available at: https://climatepolicyinitiative.org/publication/reaching-indias-renewable-energy-targets-role-institutional-investors/, accessed 17 November 2017.
[1260] NITI Aayog Government of India, Report on India's Renewable Electricity Roadmap 2030: Toward Accelerated Renewable Electricity Deployment' (2015), available at: http://niti.gov.in/writereaddata/files/document_publication/RE_Roadmap_ExecutiveSummary.pdf, accessed on 12 November 2017.
[1261] For details of this Plan, see Government of India, Ministry of Power Central Electricity Authority: Draft National Electricity Plan, available at: http://www.cea.nic.in/reports/committee/nep/nep_dec.pdf, accessed on 12 December 2017.

Agreement, which was 40% by 2030.[1262] This means that renewable energy installation needs to increase 21 to 22 gigawatts annually, which is expected to drive an increase of investment, particularly from domestic and overseas private sectors, such as Japan's Softbank has committed to invest USD 20 billion in Indian solar energy sector. In addition, Indian Business group Bharti Enterprises, Taiwanese company Foxcoon and French company EDF have announced their plan to invest in India's renewable energy sector.[1263] India's experiences in developing its renewable energy industry illustrates the significance of a robust target set in this sector, combined with government support in various forms. At the same time, India has decided that no new coal-fired power plants would be needed after 2022, despite of the increasing electricity demand.[1264] The shift away from coal consumption also has potential to incentivize renewable energy development as a replacement.

Although lagging in the renewable energy race for many decades, India has overtaken the US to become the second-most attractive country after China for renewable energy investment, according to Ernst & Young report.[1265] Strong government support for renewable energy development, accompanied by a robust renewable energy target can explain India's high ranking. Meanwhile, India is on the track to exceed its current Paris agreement commitments by wide margin, with room to raise ambition if it chooses.[1266] India's renewable energy targets setting and its achievement in de-carbonization and green industrialization is positively related.

9.3.2 Renewable Energy Target Setting: A Positive Role?

Targets set for renewable energy development continues to be a primary means in which an increasing number of governments around the world have committed to. It is about anticipating relevant medium- to long-term trends of renewable energy development and thus, delivering strong policy signals to all stakeholders. Lack of clarity on medium- to long-term planning for demand growth, capacity additions and other goals will be likely to discourage investors. The preceding part develops the analytical discussions on the basis of four different jurisdictions' experience in establishing renewable energy targets within recent two decades.

Renewable energy value chain is generally expansive, which includes upstream players, such as R&D, manufacturing and distribution companies and downstream

[1262] See, India's Nationally Determined Contribution: http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf.
[1263] Michael Safi, 'India Plans Nearly 60% of Electricity Capacity from Non-Fossil Fuels by 2027' (The Guardian, 2016), available at: https://www.theguardian.com/world/2016/dec/21/india-renewable-energy-paris-climate-summit-target, accessed on 12 December 2017.
[1264] See, Government of India, Ministry of Power Central Electricity Authority: Draft National Electricity Plan, available at: http://www.cea.nic.in/reports/committee/nep/nep_dec.pdf, accessed on 12 December 2017.
[1265] See, Ernest & Young (n 1225).
[1266] Niklas Hohne et al., 'Action By China and India Slows Emissions Growth, Present Trump's Policies Likely to Cause Emissions to Flatten' (Climate Action Tracker Update, 2017), available at: http://climateactiontracker.org/assets/publications/briefing_papers/CAT_2017-05-15_Briefing_India-China-USA.pdf, accessed on 12 December 2017.

players, such as integrators and financing companies.[1267] Targeting all portions of the renewable energy value chain is expected to bring a wide range of benefits, more than these that can accrue in manufacturing sector. It is analytically useful to explore why the target setting has the potential to bring about considerable benefits to the host country.

Target setting in wind power sector is telling in this aspect. For example, setting a wind power capacity target can generate incentives for R&D activities, wind monitoring companies, installers as well as manufacturers of wind power equipment and components.[1268] The size of wind turbines as well as wind power plants turns out be increasing.[1269] Statistics shows that blade sizes have increased six fold over the past three decades, and this trend is likely to continue since wind turbines with larger blades and higher hub heights could provide cost effective deployment in lower wind speed environments. [1270] The growing size and complexity of wind turbines can lead to the rising cost of the manufacturing process requirements and component transportation costs.[1271] The large size of the blades and towers favors manufacturing close to the market to reduce transportation costs.

Another distinct feature of wind power development is that wind turbine needs to be adjusted with local wind conditions, which also explains why wind turbine components are less tradable.[1272] Therefore, outlining an ambitious wind power capacity target can provide an enormous opportunity for local manufacturers to overcome both technical and logistical challenges.[1273] The components required for larger wind turbines, such as the blades, can be manufactured more cost-effectively in the country as opposed to being imported.[1274] In return, manufacturing can create particularly large productivity in non-manufacturing activities. In the light of this, even without localization requirements in place, an ambitious renewable energy target has the potential to drive up local manufacturing capacities, which constitutes the core of industrialization and other sectors' growth.

[1267] Isabelle Christensen, 'How to Land a Job in the Solar Industry: Upstream vs. Downstream', (Renewable Energy World, 2007), available at: http://www.renewableenergyworld.com/articles/2007/12/how-to-land-a-job-in-the-solar-industry-upstream-vs-downstream-50949.html, accessed on 17 November 2017.
[1268] Tore Wizelius, *Wind Power Projects: Theory and Practice* (Routledge, 2015), at 215.
[1269] *Ibid.*
[1270] Ted James and Alan Goodrich, 'Supply Chain and Blade Manufacturing Considerations in the Global Wind Industry' (National Renewable Energy Laboratory, 2013), available at: https://www.nrel.gov/docs/fy14osti/60063.pdf, accessed on 17 November 2017.
[1271] U.S. Department of Energy, 'Wind Manufacturing and Supply Chain', available at: https://energy.gov/eere/wind/wind-manufacturing-and-supply-chain, accessed on 17 November 2017.
[1272] Iacob Koch-Weser and Ethan Meick, 'China's Wind and Solar Sectors: Trends in Development, Manufacturing, and Energy Policy', US – China Economic and Security Review Commission Staff Research Report (2015), available at: https://www.uscc.gov/sites/default/files/Research/Staff%20Report_China%27s%20Wind%20and%20Solar%20Sectors.pdf.
[1273] See, James and Goodrich (n 1272).
[1274] *Ibid,* see also, Jason Cortell et al., 'Analysis of Transportation and Logistics Challenges Affecting the Deployment of Larger Wind Turbines: Summary of Results" (National Renewable Energy Laboratory, 2014), available at: https://www.nrel.gov/docs/fy14osti/61063.pdf, accessed on 17 November 2017.

In non-wind sectors, renewable energy companies are committed to sourcing labor and equipment locally wherever possible as long as the local supplies even the equipment are tradable. In the case when renewable energy equipment is sourced from foreign resources, there are still many opportunities of creating jobs during construction, operation and maintenance stage of renewable energy projects. For instance, nearly all works during the construction, installation and system integration of the solar PV plant could be performed with local labor. Although large-scale PV plants have a limited local content potential during the operational stage, small-scale applications require a significant local potential.

Establishing renewable energy targets with legally binding nature is an important part in ensuring certainty and credibility. Legally binding renewable energy targets could provide investment confidence to investors by making clear that a local market would exist for their product. These targets would be much less vulnerable to political changes and thus remain in effect for a medium to long term. A number of countries around the world are now enacting their renewable energy targets in law, although most targets lack clearly stipulated enforcement mechanism.[1275] Jurisdictions with binding targets turn out to have stronger track record, in comparison to jurisdictions with non-binding targets.[1276] Therefore, it is very important for governments to send clear signals of the eagerness to attract investments and to do so in a way that is beneficial to all stakeholders.

From trade law perspective, it is important that targets setting by the Members could remain trade-neutral as long as it does not incorporate any condition that favors local or domestic producers over foreign ones. The scope of policy space under the WTO regime for the Members to establish targets is wide without undue restriction. The reasons are rather straightforward: firstly, under the renewable energy targets setting scheme, domestic trade interests and foreign ones are not subjected to any form of trade discrimination. International trade also would not be restricted in an arbitrary or unjustifiable manner. Secondly, renewable energy targets setting would not fall under the ambit of subsidy within the meaning of SCM Agreement, because it is not a financial contribution nor price or income support. Therefore, the WTO subsidy rules do not apply in this case. In comparison to some forms of green industrialization measures, renewable energy targets setting does not violate national treatment and thus, can pass the scrutiny of the GATT and the TRIMs. In comparison to de-carbonization measures, renewable energy targets setting would not be subjected to legal uncertainties or undue restraints.

By shaping an enabling environment in which domestic manufacturing capacities could be enhanced, renewable energy target also provides opportunities for foreign producers. A level playing field between domestic producers and foreign ones without trade barriers can play a positive role from international trade and climate-related perspectives.

Renewable energy target setting, if designed in a proper way could enhance the capacity of renewable energy manufacturing and attract global business to invest in the host country. Meanwhile, other renewable energy sectors, such as distribution, research and development sectors would also be improved in competitiveness.

[1275] IRENA, 'Renewable Energy Target Setting' (June 2015), at 10.
[1276] *Ibid.*

Setting robust renewable energy targets can send strong signal of political commitment and provide long-term investment stability and innovation incentives, which enhance coordination and facilitate action among stakeholders.[1277] With support directly given to electricity generation, the producers of the equipment and inputs used to generate the electricity, regardless of their origin can be supported. This shows that even one single country's targets setting in renewable energy sector can affect various markets and obviously countries.

It is highly recommended that policy makers resort to less trade distorting green industrialization measures and reduce the likelihood of being challenged under the WTO dispute settlement. Instead, policy makers can shift towards providing an enabling environment in which market players, regardless of national origin can equally participate. The effectiveness of renewable energy targets setting in this area cannot be dismissed or underestimated.

Nevertheless, renewable energy targets need to be accompanied by a clear strategy, including specific policies and measures to make these targets effective at the implementation stage. The creation of an enabling and stable legal framework could become an important step to ensuring the emergence of a renewable energy market and incentivizing stakeholders to invest and engage in the sector. Ensuring investment in renewable energy technologies take place on an appropriate scale is a critical task facing policy-makers in facilitating de-carbonization and green industrialization.[1278]

[1277] *Ibid*, at 9.
[1278] Rodrik (n 117), at 469.

Chapter 10: Overall Conclusion

The relationship between international trade rules and climate change mitigation is complex, multilayered and cannot be easily described as either mutually enhancing or mutually conflicting. The ever-evolving circumstances in both the trade regime and climate regime further compound the interaction between the two regimes. In order to meaningfully understand the relationship and its future direction, it is vitally important to examine this issue in a holistic manner.

Renewable energy development represents an important area where the trade regime and climate regime increasingly interact, and one where future challenges will need to be tackled in such a way that the trade regime allows policy space for climate action. The increased attention of world leaders and international organizations on climate change has led governments in a large number of countries to resort to a wide array of policy measures aimed at promoting the use of renewable energy. The universal commitment to ambitious targets established by parties in the Paris Agreement signals unprecedented momentum in transitioning to a green economy. These movements will also add to the complexity of how trade-related values and climate-related ones intertwine, which of course vary on a country-specific basis. In this regard, it is incorrect to overgeneralize on the practice of governments around the world in designing and implementing renewable energy measures due to the divergence and variety.

The focus of this thesis lies on the measures introduced to promote the use of electricity sourced from renewable energy and to increase the manufacturing capacity of renewable energy equipment. The former objective falls under the category of de-carbonization and the latter green industrialization. The crucial questions become whether the international trade system and WTO rules can serve as a catalyst for facilitating renewable energy development to ensure the transition to a green economy? In what ways can the WTO rules promote the expansion of renewable energy so as to facilitate de-carbonization and green industrialization objectives? In what ways do the WTO rules impede the realization of the abovementioned goals and how to address these issues?

It is recognized that the WTO is not a climate change organization and does not have specific rules drafted to tackle energy issues or to cope with climate change *per se*. However, the trade rules are highly relevant in influencing the Members' policymaking in the renewable energy sector with possible implications on the trading system. The crucial issue is no longer whether the WTO could be an appropriate forum to address the issue and enhance the synergy between trade and climate regimes but rather how to maximize the positive contribution that trade and trade rules can make to this end.

Until a truly global consensus emerges on how to cope with climate change, the WTO Members will diverge to a large extent on what the multilateral trading system can and must do to address this issue.[1279] There are indeed many perspectives on the issue of how to enhance the supportiveness of trading system to

[1279] Pascal Lamy, 'Doha Could Deliver Double-Win for Environment and Trade', speech given at the Informal Trade Ministers' Dialogue on Climate Change in Bali on 8-9 December 2007, available at: https://www.wto.org/english/news_e/sppl_e/sppl83_e.htm.

achieving climate change mitigation objectives and removing the stumbling blocks that otherwise would have existed to impede climate actions. The different views held by Members are likely to give rise to frictions and even disputes in front of the WTO Dispute Settlement. With the WTO's legislative wing broken and in hibernation for more than a decade, the Dispute Settlement System has faced unprecedented pressure not only from heavy workload, but also the challenge about how to address newly emerging trade disputes – for instance, the use of trade-related measures to develop renewable energy using 'old' treaty language which most has never been updated or amended.

This thesis raises two important analytical points. One is how to make the WTO regime, and in particular the subsidy rules, more climate-friendly so that policy measures adopted to promote renewable energy electricity would not be unduly restricted or curtailed. This is highly relevant in facilitating the process of de-carbonization on a global scale. The other is how to subject the Members' practice in green industrialization via enhancing the manufacturing capacity in renewable energy equipment sector into non-discrimination objection. This reflects a strong and positive role that the WTO law can play in shaping a fair and equal playing field for producers from all around the world. It is not desirable or needed to incorporate policy measures that discriminate against foreign producers' interests in a blatant manner. Both trade and trade rules, if harnessed in a proper way, can make huge contributions to achieving climate-related goals.

It is acknowledged that the current WTO system is unlikely to be amended anytime soon given the long-lasting stalemate and effective end to the Doha Round. It is critically important to reflect on how to find a stone that can kill two birds, which are facilitating the realization of de-carbonization and green industrialization objectives while paying deference to the WTO obligations.

As discussed in the thesis, establishing reasonably ambitious renewable energy targets with legally binding, quantifiable and measurable objectives could bring enormous benefits, socially, economically and environmentally. It is up to individual national and sub-national governments to set renewable energy targets within the medium- to long-term. The most challenging task is to how to design and operationalize renewable energy targets with consideration given to national or subnational conditions in political, legal, economic, environmental and institutional terms. This is to say, national circumstances and renewable energy systems are unique, and so are the details of targets that are set to develop renewable energy in each jurisdiction. As such, there is not one-size-fits-all answer to solve the challenge of targets setting. In addition, in general and for investment certainty, renewable energy targets should not be changed frequently but subjected to scheduled reviews. It is important to keep track of how the targets are implemented.

It is an irreversible trend that an increasing number of countries would formulate and implement medium to long-term renewable energy targets that cover both renewable energy electricity and manufacturing sectors. With robust targets in place, accompanied by concrete policy measures to ensure the fulfillment of targets, the carbon intensity of economic development would be reduced the competitiveness of renewable energy industries also have opportunities to grow. Another crucially important point is the compatibility of renewable energy targets

setting with the WTO rules. As long as there are no trade discriminatory conditions incorporated into the targets, this practice should withstand WTO scrutiny.

How to operationalize the targets by employing a package of renewable energy policies is essentially important to cover the full range of actions needed to achieve the ultimate goals most cost-effectively. The renewable energy policy package could consist various policy measures that could be well aligned to meet their desired objectives. For instance, regulatory measures such as renewable energy certificates, FITs and fiscal measures such as government loans and subsidies can work together. Policymakers therefore need to reflect carefully on the adoption of specific policy measures that can contribute to fulfilling the renewable energy targets.

The interaction between the WTO rules and the Members' action taken to address climate change and transition to a green economy has been filled with and will likely to be filled with controversies and tensions. This thesis refers to only a subset of renewable energy measures that give rise to trade/climate clashes. The conflicts occurring at the current stage might be replaced by conflicts in new forms in future. The WTO Dispute Settlement Body has demonstrated its positive role in resolving the possible clashes between trade values and climate values in two ways. The first is to adopt climate-friendly interpretation under the SCM Agreement to create policy space for legitimate and desirable de-carbonization measures. The second is to subject blatantly trade discriminatory green industrialization measures, which also impose negative implications on climate change mitigation to strict discipline.

As vitally important as it is, the WTO Members are advised to keep building momentum to amend the current WTO rules so as to provide policy space and legal certainty for legitimate renewable energy policy measures. Meanwhile, the Members need to bear in mind the fundamental trade obligations and adjust their policy-making in a way that is compliant with the current WTO regulatory framework. There is an opportunity to synergize and coordinate trade liberalization and climate change mitigation at both international and national levels, and to do so would be beneficial for both regimes and better provide a roadmap to Members seeking to formulate renewable energy law and policy.

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