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NIJHOFF

CLIMATE LAW 8 (2018) 207-228



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Exploring the Crystallization of ‘Climate Change Jurisdiction’: A Role for Precaution?

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Abstract

Amidst the lively discussion on legal fragmentation and climate change, this article seeks to highlight the windows for the potential interaction of jurisdictional and environmental norms. This is relevant for climate-protective trade measures, which, it is argued, are not exhaustively regulated by WTO law. Exploring the contours of ‘climate change jurisdiction’ in customary international law, the article considers how the traditional jurisdictional principles may be operationalized in the untested territory of cumulative and uncertain environmental harm. With their origins in criminal and economic law, the jurisdictional principles were not originally designed for these challenges. This paper argues that the environmental norm of precaution, which originated out of a need to respond to complex threats, should have a role to play. Precaution governs issues of state regulatory competence in the face of scientific uncertainty. Particularly in relation to questions of foreseeability and causation, this norm may be helpful in navigating the application of the abstract jurisdictional principles, providing opportunities for synergy in the crystallization of the climate change jurisdiction.

Keywords

jurisdiction – climate change – precaution – prevention – causation – effects

1 Introduction

The past decade has seen an increase in attention on states' legal obligations to respond to climate change.¹ While the Paris Agreement is a landmark, its regulation of states' mitigation and adaptation policies is far from exhaustive.² Such regulation is politically complex, as climate change measures are deeply entrenched in a state's broader economic policy. To protect the competitive position of domestic industry, states, or regional organizations such as the European Union, have an incentive to level the playing field, applying greenhouse gas reduction requirements to all products and services wishing to access the domestic market.³ The motives need not be purely economic, as measures with a broader geographical scope have the potential to achieve greater emission reductions and may reduce the risk of carbon leakage.⁴ However, unilateral climate protection measures that effectively seek to regulate foreign conduct may well trigger jurisdictional tensions.⁵ This has been clearly visible in the discussions surrounding the 'extraterritorial' nature of the EU's ambitious climate change policy.⁶ As states craft their national (and supranational) responses to climate change, questions arise as to the basis of such measures in international law.

1 For a comprehensive overview of states' current legal obligations, see Daniel Bodansky et al., *International Climate Change Law* (Oxford: Oxford University Press, 2017). The author would like to thank the editors of this special issue for their invaluable comments during the writing of this article.

2 At the time of writing, the parties are negotiating the Paris Rulebook, with more detailed rules on the implementation of the Agreement. See further, Daniel Bodansky and Lavanya Rajamani, *General Issues in Elaborating the Paris Rulebook*, Center for Climate and Energy Solutions (April 2018). See further on compliance, Sebastian Oberthür and Eliza Northrop, 'Towards an Effective Mechanism to Facilitate Implementation and Promote Compliance under the Paris Agreement', 8 *Climate Law* 39 (2018).

3 Gabrielle Marceau, 'The Interface Between the Trade Rules and Climate Change Actions', in *Legal Issues on Climate Change and International Trade Law*, edited by Deok-Young Park (Switzerland: Springer, 2016), at 3.

4 *Ibid.*, at 4.

5 See further, Cedric Ryngaert, *Jurisdiction in International Law*, 2nd ed. (Oxford: Oxford University Press 2015), at 5.

6 See, e.g., Joanne Scott, 'Extraterritoriality and Territorial Extension in EU Law', 62 *American Journal of International Law* 87 (2014); Claudia Hermeling et al., *Sailing Into a Dilemma: An Economic and Legal Analysis of an EU Trading Scheme for Maritime Emissions* (Discussion Paper No 14-021 14, Centre for European Economic Research, 2014); Brian Havel and John Mulligan, 'The Triumph of Politics: Reflections on the Judgment of the Court of Justice of the European Union Validating the Inclusion of Non-EU Airlines in the Emissions Trading Scheme', 37 *Air and Space Law* 3 (2012).

Climate-protection measures find themselves at the intersection of various fields of international law, making this a complex issue.⁷ There has been considerable discussion in the literature as to the applicable jurisdictional rules found in specialized regimes, such as WTO law and the law of the sea.⁸ As climate-protection measures are likely to affect the competitive position of imported goods and services, WTO law is of particular relevance.⁹ However, as I will argue in Section 2, when examining the jurisdictional limitations of such measures, there is a need to look beyond WTO law to customary international law as a *lex generalis*. This raises the question central to this paper, of how the customary international law of state jurisdiction should be applied in the context of climate change. This application is referred to here as ‘climate change jurisdiction’. In examining this issue, I argue that precaution, which may be considered part of the dynamic body of climate law, should have a role to play.¹⁰ While precaution has been considered in the literature in the context of climate change and state responsibility, there the focus is largely on its implications for the burden of proof.¹¹ This article examines another aspect

7 See, e.g., Harro van Asselt, et al., ‘Global Climate Change and the Fragmentation of International Law’, 30 *Law and Policy* 423 (2008). On fragmentation more generally, see Anne Peters, ‘The Refinement of International Law: From Fragmentation to Regime Interaction and Politicization’, 15 *International Journal of Constitutional Law* 671 (2017), at 679, noting that the sometimes ‘one treaty (or soft regime) may frustrate the goals of another one’.

8 This issue has been considered in more detail in the present author’s doctoral dissertation, *Extraterritoriality in International Law: The Case of EU Climate Protection* (unpublished PhD dissertation, Utrecht University, 2018). Over the past years the literature has placed particular emphasis on WTO law; e.g., Barbara Cooreman, ‘Addressing Environmental Concerns through Trade? A Case for Extraterritoriality’, 65 *International and Comparative Law Quarterly* 229 (2015).

9 See in particular, the General Agreement on Tariffs and Trade 1994 (adopted 15 April 1994, entered into force 1 January 1995) 1867 UNTS 154, and the General Agreement on Trade in Services (adopted 15 April 1994, entered into force 1 January 1995) 1869 UNTS 183.

10 Though note Zahar’s observation in 2015 that ‘climate change law ... has yet to give rise to a system of rules. The few rules that it can lay claim to are fragmented and weak. There is some potential for this to change, although the day when climate law becomes a regular legal specialization seems far off’: Alexander Zahar, *International Climate Change Law and State Compliance* (London: Routledge 2015), at 11.

11 See e.g., Roda Verheyen, *Climate Change Damage and International Law: Prevention, Duties and State Responsibility* (Leiden: Brill 2005); John Quiggin, *Complexity, Climate Change and the Precautionary Principle* (Climate Change Working Paper C07:3, Risk and Sustainable Management Group, 2007); Christina Voigt, ‘State Responsibility for Climate Change Damages’, 77 *Nordic Journal of International Law* 1 (2008), at 12; Lydia A. Omuko, ‘Applying the Precautionary Principle to Address the “Proof Problem” in Climate Change Litigation’, 21 *Tilburg Law Review* 51 (2016).

of precaution, namely its implications for the relationship between state regulatory competence and anticipatory action to prevent environmental degradation in the face of scientific uncertainty. It is this aspect that is key for the law of jurisdiction, which concerns state competence to regulate the conduct and consequences of an event.¹² Section 3 first considers the classical principles of state jurisdiction and their roots in criminal and economic law. Section 4 then examines precaution in the context of climate change, and explores how this norm may inform the crystallization of climate change jurisdiction.

2 The Jurisdictional Analysis of Climate-Protective Trade Measures: The Need to Look Beyond WTO Law

Over the past years, climate change has clearly emerged as a trade issue, given its close nexus with the production and consumption of goods and services in today's global economy.¹³ Key examples of controversial measures include the EU's Emission Trading Scheme for Aviation and the EU Renewable Energy Directive.¹⁴ WTO law does not directly address the question of state jurisdiction, and the relevant Agreements contain no explicit territorial limitations.¹⁵ For climate-protective trade measures that seek to regulate foreign greenhouse gas emissions, these Agreements are the General Agreement on Tariffs and Trade (GATT), and the General Agreement on Trade in Services (GATS).¹⁶ In addition, such measures may fall under the Technical Barriers to Trade (TBT) Agreement, which is *lex specialis* in relation to GATT.¹⁷ There is, however, considerable discussion as to whether all conditions on production processes

12 Vaughan Lowe and Christopher Staker, 'Jurisdiction', in Malcolm Evans (ed.), *International Law* (Oxford: Oxford University Press, 2010), at 313.

13 Marceau, *supra* note 3, at 4.

14 *Parliament and Council (EC) Directive 2008/101/EC of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community* [2008] OJ L8/3; and *Parliament and Council (EC) Directive 2009/28 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC* [2009] OJ L 140/16.

15 Henrik Horn and Petros Mavroidis, 'The Permissible Reach of National Environmental Policies', 42 *Journal of World Trade* 1107 (2008), at 1113–14, with the notable exemption of the Agreement on the Application of Sanitary and Phytosanitary Measures, not discussed further here.

16 See GATT, Article III, referring to 'measures affecting the sale of products'; and GATS, art I:1: 'This Agreement applies to measures ... affecting the trade in services'.

17 Agreement on Technical Barriers to Trade (adopted 15 April 1994, entered into force 1 January 1995) 1868 UNTS 120, Annex 1.

can be considered ‘technical regulations’ so as to fall within the scope of the TBT Agreement.¹⁸

The question of whether WTO law, in particular GATT, poses jurisdictional limitations on measures which seek to protect public interests beyond a state’s territory, has been a source of lively discussion in legal discourse.¹⁹ A full analysis of this rather technical topic goes beyond the scope of this paper, and this section will limit itself to a brief sketch of the core debate. The primary aim here is to demonstrate that WTO law does not exhaustively regulate the territorial scope of states’ regulatory competences in relation to climate change measures. Rather, customary international law remains an important *lex generalis* for the jurisdictional analysis.

Measures that seek to regulate emissions during the production process of goods and services prior to their entrance into a state’s territory are likely to violate the two key non-discrimination conditions of the relevant WTO Agreements, namely the ‘national treatment’ and the ‘most-favoured nation’ principles.²⁰ While the precise application of these processes and production method (PPM) requirements differs for each provision, their shared core is that ‘like’ products must be treated equally.²¹ With its emphasis on the Border Tax Adjustment criteria, the Appellate Body’s interpretation of ‘likeness’ is predominantly based on physical characteristics.²² The key window through which the lifecycle emissions of a good or service may be considered is that of consumer preferences; however, these will only play a definitive role if consumers actively differentiate products and services based on emissions in

18 This issue was left undecided by the Appellate Body in the case: WTO, *European Communities – Measures Prohibiting the Importation and Marketing of Seal Products—Report of the Appellate Body* (18 June 2014) WT/DS401/AB/R (hereinafter *EC-Seals*).

19 See e.g. Cooreman, *supra* note 8; Lorand Bartels, ‘Article XX of GATT and the Problem of Extraterritorial Jurisdiction: The Case of Trade Measures for the Protection of Human Rights’, 36 *Journal of World Trade* 353 (2002); Robert Howse and Donald Regan ‘The Product/Process Distinction: An Illusory Basis for Disciplining “Unilateralism” in Trade Policy’, 11 *European Journal of International Law* 249 (2011).

20 The national treatment requirement can be found in Article III of GATT, Article XVII of GATS, and Article 2.1 of the TBT. The most-favoured-nation requirement can be found in Article I of GATT, Article II of GATS, and Article 2.1 of the TBT.

21 See further, C. Conrad, *Process and Production Measures (PPMs) in WTO Law* (Cambridge, UK: Cambridge University Press 2011), at 163.

22 GATT, ‘Report of the Working Party on Border Tax Adjustments’ (2 December 1970) BISD 18S/97, containing the following categories: physical properties; end-uses; consumers’ tastes and habits; and tariff classification. For application, see e.g. WTO, *European Communities: Measures Affecting Asbestos and Asbestos-Containing Products: Report of the Appellate Body* (5 April 2001) WT/DS135/AB/R, at paras. 101 and 133 (hereinafter *EC-Asbestos*).

the production process.²³ As this does not currently appear to be the case,²⁴ physically identical end-products will tend to be considered 'like' in a discrimination analysis. In relation to the equal treatment requirement, climate-protection measures are almost inherently more favourable for some states than for others, because they relate to both factual and regulatory characteristics of states where the emissions occur. As the Appellate Body has confirmed that a state's 'legitimate' regulatory objectives have no role to play in determining whether there is discriminatory treatment under GATT or GATS, such measures are likely to constitute *prima facie* violations.²⁵

Such *prima facie* violations may be justified under the general exemptions provisions of Article XX of GATT and XIV of GATS. GATT has received by far the most attention—the two environmental exemptions being paragraph (b) measures 'necessary' for the 'protection of human, plant and animal life and health', and paragraph (g) measures 'related to' the 'conservation of exhaustible resources'.²⁶ According to the chapeau, their *application* must not constitute 'a means of arbitrary or unjustifiable discrimination' or 'a disguised restriction on international trade'. While untested by the Appellate Body, there is considerable support in the literature for the view that climate-protective measures may in principle be justified under both of these paragraphs.²⁷ However, the

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- 23 The AB has noted that 'consumer perceptions may similarly influence—modify or even render obsolete—traditional uses of the products' (*EC-Asbestos*, supra note 22, at para 102).
- 24 On the extent of consumers 'willingness to pay' for greenhouse gas emissions see, Carol McAusland and Nouri Najjar, 'The WTO Consistency of Carbon Footprint Taxes', 46 *Georgetown Journal of International Law* 765 (2014), at 767, discussed further by this author in, Natalie L. Dobson, 'The EU's Conditioning of the "Extraterritorial" Carbon Footprint: A Call for an Integrated Approach in Trade Law Discourse', 27 *Review of European Comparative and International Environmental Law* 75 (2017).
- 25 In the context of GATT see, *EC-Seals*, supra note 18, at para. 5.125. In the context of GATS, the consideration of regulatory intent during the discrimination analysis of both the MFN and NT principles was rejected in, WTO, *European Communities: Regime for the Importation, Sale and Distribution of Bananas: Report of the Appellate Body* (9 September 1997) WT/DS27/AB/R, at para. 132.
- 26 The GATS general exemption largely mirrors that of GATT, though notably without paragraph (g) on exhaustible natural resources.
- 27 For a selection of analyses see; Marceau, supra note 3, at 18; Steve Charnovitz, 'The Law of Environmental "PPMs" in the WTO: Debunking the Myth of Illegality', 27 *Yale Journal of International Law* 59 (2002); Henrik Ringbom, 'Global Problem—Regional Solution? International Law Reflections on an EU CO₂ Emissions Trading Scheme for Ships', 26 *International Journal of Marine and Coastal Law* 613 (2011); Laurand Bartels, 'The Inclusion of Aviation in the EU ETS: WTO Law Considerations' (ICSID Paper, 2012) Issue Paper No. 6.

question remains whether Article XX of GATT (and its GATS counterpart) contains an implied jurisdictional limitation.

To date this has been left unanswered by the Appellate Body, though it has touched upon the issue—two particularly relevant cases being *US-Shrimp* and *EC-Seals*.²⁸ In *US-Shrimp* the Appellate Body assessed the WTO-law compatibility of a US measure banning the import of shrimp from countries which did not require the use of Turtle Excluder Devices when fishing.²⁹ In examining whether the measure could be justified under Article XX(g) of GATT, the Appellate Body found that ‘conditioning access to a Member’s domestic market on whether exporting Members comply with, or adopt, a policy or policies unilaterally prescribed by the importing Member may, to some degree, be a common aspect of measures falling within the scope of one or another of the exceptions ... of Article XX’.³⁰ The categories serve as exemptions to the substantive GATT obligations because ‘the domestic policies embodied in such measures have been recognized as important and legitimate in character’.³¹ As such, ‘requiring from exporting countries compliance with ... certain policies’ does not render a measure ‘a priori incapable of justification under article XX’.³² The Appellate Body thus did not categorically prohibit unilateral measures for which compliance is contingent on conduct abroad. It refused, however, to ‘pass upon the question of whether there is an implied jurisdictional limitation in Article XX(g), and if so, the nature or extent of that limitation’.³³ Instead, it restricted itself to noting that ‘in the specific circumstances of the case’ there was ‘a sufficient nexus between the migratory and endangered marine populations involved and the United States for purposes of Article XX(g)’.³⁴

The notion of a ‘sufficient nexus’ came up again in the 2014 *EC-Seals* case, which concerned an EU measure banning seals and seal products, though allowing for certain exemptions which the appellants claimed were discriminatory. The EU attempted to justify its measure based on the ‘public morals’ exemption in Article XX(a) of GATT.³⁵ On the question of whether Article XX of GATT contained a jurisdictional limitation, the Appellate Body referred to

28 WTO, *United States: Import Prohibition of Certain Shrimp and Shrimp Products: Report of the Appellate Body* (6 November 1998) WT/DS58/AB/R (hereinafter *US-Shrimp*); *EC-Seals*, supra note 18.

29 *US-Shrimp*, supra note 28 at para. 98.

30 *Ibid.*, at para. 121.

31 *Ibid.*

32 *Ibid.*

33 *Ibid.*, at para. 133.

34 *Ibid.*

35 *EC-Seals*, supra note 18, at para. 1.4.

its finding of a 'sufficient nexus' in *US-Shrimp* and its refusal to provide general guidance on this question in the context of Article XX(g).³⁶ Turning to the case before it, it noted that the EU Seal Regime was 'designed to address seal hunting activities occurring "within and outside the Community" and the seal welfare concerns of "citizens and consumers" in EU Member States'.³⁷ Yet, as this issue was not raised by appellants, 'while recognizing its 'systemic importance', the Appellate Body once again decided 'not to examine this question further'.³⁸

Commentators have suggested a variety of theories on how one should interpret the Appellate Body's reference to a 'sufficient connection'.³⁹ In a study predating the *EC-Seals* case, Van den Bossche, Schrijver, and Faber appear to require a physical connection, arguing that a 'nexus "definitely exists" when the measure concerns unincorporated PPMS affecting a global situation (e.g., climate change), and also possibly those affecting a transboundary situation or a situation in "undetermined national territories" such as the protection of migratory species'.⁴⁰ Other commentators base their analyses on the location of a measure's *focus*; Charnovitz, for example distinguishes between 'inwardly-' and 'outwardly-directed' measures under Article XX(a) of GATT—the outwardly directed measures being the more likely to constitute a violation.⁴¹ Extending this to an environmental context, Cooreman also distinguishes between permissible 'inward-looking' measures that focus on environmental issues located within the territory of the regulating state, and more problematic 'outward-looking' measures that seek to regulate concerns located outside the state.⁴²

In light of the continued uncertainty, a more straightforward approach, in my view, is to turn to the customary international law of state jurisdiction as

36 Ibid., at para. 5.173.

37 Ibid.

38 Ibid.

39 This discussion has been considered in more detail by the present author: Dobson, *supra* note 24, at 81.

40 Peter Van den Bossche, et al., *Unilateral Measures addressing Non-Trade Concerns: A Study on WTO Consistency, Relevance of other International Agreements, Economic Effectiveness and Impact on Developing Countries of Measures concerning Non-Product-Related Processes and Production Methods* (The Ministry of Foreign Affairs of the Netherlands 2007), at 94.

41 Steve Charnovitz, 'The Moral Exception in Trade Policy', 38 *Virginia Journal of International Law* 689 (1997), at 695.

42 Cooreman, *supra* note 8, at 234–5, arguing that (purely) inward-looking measures, 'will have a much stronger (territorial) connection or nexus than purely outward-looking measures'. The author notes, however, that some measures, like those for climate change, may be both inward and outward-looking.

a *lex generalis* for the jurisdictional analysis. This aligns with Article 3.2 of the WTO Dispute Settlement Understanding (DSU), which provides that the covered agreements must be interpreted ‘in accordance with customary rules of interpretation of public international law’.⁴³ In *US-Gasoline*, it was confirmed that this includes Article 31 of the Vienna Convention on the Law of Treaties, which also refers to ‘relevant rules of international law applicable in the relations between the parties’ for interpretative assistance.⁴⁴ The ‘direction’ in Article 3.2 of the DSU ‘reflects a measure of recognition that [GATT] is not to be read in clinical isolation from public international law’.⁴⁵ Another relevant case, referred to in the ILC Report on the Fragmentation of International Law is *Korea: Measures Affecting Government Procurement*, where it was found that the relationship between customary international law and the WTO agreements is ‘broader’ than the requirement in Article 3.2 of the DSU which applies within the context of a particular dispute:⁴⁶

Customary international law applies generally to the economic relations between WTO members. ... [T]o the extent that there is no conflict or inconsistency, or an expression in a covered WTO agreement that applies differently, we are of the view that the customary rules of international law apply to the WTO treaties and to the process of treaty formation under the WTO.⁴⁷

As the customary law of state jurisdiction has not been ruled out by either the covered agreements or the WTO adjudicative bodies, it would seem consistent that one should turn to this field as the most ‘relevant’ applicable law for interpreting the scope of states’ regulatory competence.⁴⁸

43 Dispute Settlement Rules: Understanding on Rules and Procedures Governing the Settlement of Disputes, Marrakesh Agreement Establishing the World Trade Organization (adopted 15 April 1994, entered into force 1 January 1995), Annex 2, 1869 UNTS 401.

44 WTO, *United States: Standards for Reformulated and Conventional Gasoline: Appellate Body Report* (20 May 1996) WT/DS2/AB/R, at 17.

45 Ibid.

46 ILC, ‘Fragmentation of International Law: Difficulties arising from the Diversification and Expansion of International Law: Report of the Study Group of the International Law Commission’, UN Doc. A/CN.4/L.702 (18 July 2006), at 13, citing WTO, *Korea: Measures Affecting Government Procurement* (19 January 2000) WT/DS163/R, para. 7.96.

47 Ibid.

48 For support of this view, see Bartels, ‘Article XX of GATT and the Problem of Extraterritorial Jurisdiction’, *supra* note 19, at 360.

Pre-empting the argumentation in Section 4, it must further be noted that whether or not one considers precaution to constitute a customary norm, its infusion in trade law has also not been ruled out by the Appellate Body.⁴⁹ It has been argued that there are ‘gateways’ (or even implicit acceptance by the Appellate Body) for precaution in the context of both Article XX(b) and (g) of GATT.⁵⁰ In *EC-Asbestos* the Appellate Body found that members had an undisputed right to choose the level of health protection ‘they consider appropriate’ under Article XX(b).⁵¹ According to Cheyne, while there is a need for some objective justification based on evidence of a risk, this allows states to ‘take a precautionary approach when determining the appropriate level of protection’.⁵² In *US-Shrimp* another ‘gateway’ for precaution lies in the weak causation test applied by the Appellate Body for measures ‘relating to’ the conservation of exhaustible natural resources under Article XX(g) of GATT.⁵³ Thus the Appellate Body’s broad requirement of a ‘close and genuine relationship between ends and means’, ‘grants Members discretion to introduce measures that have a general rather than a very specific conservation objective’.⁵⁴ This is buttressed by the Appellate Body’s finding, ‘in light of contemporary concerns of the community ... about the protection and conservation of the environment’, that ‘exhaustible natural resources’ may include renewable resources.⁵⁵ Before considering why and how precaution should inform the law of jurisdiction, Section 3 sets out the classical principles of jurisdiction in their theoretical context.

3 The Classical Jurisdictional Principles

The law of state jurisdiction is premised on the protection of sovereign equality, which is seen as an important means of maintaining international political

49 For further discussion on the nature of precaution, see Section 4.1.

50 See, e.g., Markus Gehring and Marie-Claire Cordonier-Segger, ‘Precaution in World Trade Law: The Precautionary Principle and its Implications for the World Trade Organization’ (CISDL Research Paper, 2002); and Ilona Cheyne, ‘Gateways to the Precautionary Principle in WTO Law’, 19 *Journal of Environmental Law* 155 (2007).

51 *EC-Asbestos*, supra note 22, at para. 168.

52 Cheyne, supra note 50, at 163.

53 *Ibid.*, 165.

54 *Ibid.*, 165, referring to *US-Shrimp*, supra note 28, at para. 136.

55 *US-Shrimp*, supra note 28, at paras. 128–9. See also, Cheyne, supra note 50, at 164 noting, however, the critics of this move.

stability.⁵⁶ Simply put, under the law of state jurisdiction, respecting sovereign equality largely entails 'leaving other States alone' and avoiding infringements on their regulatory autonomy.⁵⁷ As such, the law of state jurisdiction frowns upon measures that seek to engage non-national actors abroad, and the concepts of 'extraterritoriality' and 'extraterritorial jurisdiction' are hotly debated and pejorative in nature.⁵⁸

As to the available bases of jurisdiction, I focus on a regulator's 'prescriptive' or 'legislative' jurisdiction to create rules with a broader geographical scope.⁵⁹ This must be distinguished from 'enforcement' jurisdiction 'to ensure compliance with its laws', which is generally confined to a state's own territory.⁶⁰ That having been said, the *territoriality principle* also serves as the point of departure in a prescriptive context, setting out the general rule that states may only legally exercise certain competences within their defined territory.⁶¹ Greenhouse gas reduction measures that seek to regulate conduct or circumstances abroad *prior* to the entry of a good or service into the domestic market cannot be based on the territoriality principle alone. Such measures are aimed at influencing the behaviour of actors in other states, where the regulator has not necessarily opted for the same level of environmental protection. This causes a practical 'interference' with the regulatory freedom of other states, which a blanket application of the territoriality principle appears to ignore.⁶² Furthermore, as is well established in WTO law commentary, requirements pertaining to how a product is produced, such as the extraction and transportation conditions for raw materials in the EU Biofuels Directive and Ecodesign Directive, may not leave any physical trace in the good eventually imported into a

56 See further, Juliane Kokott, 'States, Sovereign Equality', in *Max Planck Encyclopaedia of Public International Law (online ed.)*, edited by Rüdiger Wolfrum (Oxford University Press, 2011), at para. 11.

57 On sovereign equality and regulatory autonomy, see Karl M. Meessen, 'Antitrust Jurisdiction under Customary International Law', 78 *American Journal of International Law* 783 (1984), at 804.

58 See e.g., Scott *supra* note 6, at 89.

59 *Report of the International Law Commission on the Work of its 58th Session (May-June and July-August 2006)*, UN Doc. A/61/10, Annex E: Extraterritorial Jurisdiction (hereinafter 'ILC Report on Extraterritorial Jurisdiction'), at 518.

60 Menno T. Kamminga, 'Extraterritoriality', in Wolfrum, *supra* note 56, at para. 1.

61 Bernard Oxman, 'Jurisdiction of States', in Wolfrum, *supra* note 56, at para. 13.

62 The consideration of 'interference' with sovereignty can also be found in the ILC Report on Extraterritorial Jurisdiction, *supra* note 59, at 518.

particular territory.⁶³ It is then difficult to argue that a state has a *territorial* connection with the foreign conduct causing these emissions.⁶⁴

In addition to the territoriality principle, several other principles have been recognized as lending support to states' jurisdictional assertions in different circumstances. The first of these is the *nationality (or personality) principle*, according to which a state may exercise jurisdiction in respect of its citizens.⁶⁵ Yet this principle too offers little solace where climate-protective measures apply to foreign producers beyond a state's territory. The *effects doctrine* has more potential, granting a basis for state jurisdiction where it can be shown that 'conduct outside its territory ... has or is intended to have substantial effects within its territory'.⁶⁶ The origins of this doctrine lie in the field of economic regulation, where both US and EU case law require, in addition, that the effects be 'direct' and 'foreseeable'.⁶⁷ It is these elements that are of particular relevance and difficulty, should they be considered applicable in the context of climate change. While initially controversial, the Report of the IBA Taskforce on Extraterritorial Jurisdiction notes that today 'virtually all jurisdictions apply some form of the effects test', although the meaning and application vary considerably.⁶⁸ The growth in acceptance of the effects doctrine illustrates the capacity of the law of jurisdiction to adapt to the changing realities of increased economic interdependence. It is quite plausible that this same interdependence may drive an extension of this doctrine beyond the field of economic regulation to that of environmental concerns.

63 These are referred to as 'unincorporated' or 'non-product related' production-process measures (PPMs). See, e.g., Donald Regan, 'How to Think about PPMs (and Climate Change)', in *International Trade Regulation and the Mitigation of Climate Change: World Trade Forum*, edited by Thomas Cottier et al. (Cambridge, UK: Cambridge University Press, 2009), 97.

64 For more extensive arguments on this point, see Natalie L. Dobson and Cedric Ryngaert, 'Provocative Climate Protection: EU "Extraterritorial" Regulation of Maritime Emissions', 66 *International and Comparative Law Quarterly* 295 (2017), at 306.

65 ILC Report on Extraterritorial Jurisdiction, supra note 59, at 522.

66 *Restatement (Third) of the Foreign Relations Law of the United States, Volume 1* (St Paul, Minnesota: American Law Institute, 1986) (hereinafter 'US Third Restatement'), Comment to §402(1)c.

67 EU case law refers to the 'implementation doctrine' and not the effects doctrine. For an analysis of further practice, see *Restatement (Fourth) of the Foreign Relations Law of the United States* (Draft No. 2, 2016), (Draft No. 3, 2017) (approved by Membership in 2017) (hereinafter 'US Fourth Restatement'), at §213, Comment b.

68 International Bar Association, *Report of the Taskforce on Extraterritorial Jurisdiction* (2009) <<http://tinyurl.com/taskforce-etj-pdf>>, at 13 (hereinafter 'IBA Report').

Sometimes seen as an application of the effects doctrine, the *protective principle* provides a basis for jurisdiction over persons, property, or acts outside a state's territory that threaten its 'vital national interests'.⁶⁹ According to the Harvard Draft Convention on Jurisdiction with Respect to Crime, this narrow category includes national security, political independence, and territorial integrity.⁷⁰ Based on the principle's logic and plain meaning, the 'threat' requirement would appear to encompass foreseeable and direct harm to an established 'vital' interest. Unlike the effects doctrine, however, actual or intended effects 'need not be shown'.⁷¹

Finally, and more controversially, the *universality principle* provides a basis for jurisdiction in relation to threats to the fundamental values of the international community in the absence of any link or nexus with the legislating state.⁷² Here one can distinguish between 'pure universal concern' jurisdiction, assertions of which are 'based solely on the universal concern character of the crime', and treaty-based or 'quasi' universal jurisdiction.⁷³ To date, this basis is primarily recognized with respect to certain grave crimes under international law.⁷⁴

Taken individually or together, these principles are understood to evidence the existence of a 'substantial connection' between the acting state and the regulated subject matter, justifying the exercise of its sovereign power, including over situations beyond its territory.⁷⁵ While there remains discussion on this, several commentators also consider an element of jurisdictional 'reasonableness', which balances the acting state's interest against those of other parties.⁷⁶ Some consider this to be an element of the substantial-connection

69 ILC Report on Extraterritorial Jurisdiction, *supra* note 59, at 522.

70 Harvard Draft Convention on Jurisdiction with Respect to Crime, 'Article 7: Protection—Security of the State', 29 *AJIL Supplement: Research in International Law* 543 (1935).

71 US Fourth Restatement (Draft No.2), *supra* note 67, at §216, Reporters Notes 1.

72 Roger O'Keefe, 'Universal Jurisdiction: Clarifying the Basic Concept', 2 *Journal of International Criminal Justice* 735 (2004), at 745.

73 See, further, Sienho Yee, 'Universal Jurisdiction: Concept, Logic, and Reality', 10 *Chinese Journal of International Law* 503 (2011).

74 ILC Report on Extraterritorial Jurisdiction, *supra* note 59, at 522.

75 See e.g., Frederick A. Mann, 'The Doctrine of International Jurisdiction Revisited After Twenty Years', 186 *Recueil des Cours* 19 (1984), at 28; and Kamminga, *supra* note 60, at 9.

76 See e.g., US Fourth Restatement (Draft No. 2), *supra* note 67, Reporter's Notes 6 to §211, and Reporter's Note 13 to §201. See further, Andreas F. Lowenfeld, 'Sovereignty, Jurisdiction, and Reasonableness: A Reply to A. V. Lowe', 75 *American Journal of International Law* 629 (1981); Harold G. Maier, 'Interest Balancing and Extraterritorial Jurisdiction', 31 *American Journal of Comparative Law* 579 (1983).

requirement referring to a ‘reasonable interest’ in the subject matter, while others, including myself, consider it to be a second-order interest-balancing tool.⁷⁷ With little in terms of codification,⁷⁸ the prescriptive principles are starting points and not comprehensive answers in the jurisdictional analysis.⁷⁹ This would seem inherent in their very nature as abstract principles, which, as will now be argued, offer opportunities for harmonization with environmental norms.

4 The Emerging Contours of ‘Climate Change Jurisdiction’: A Role for Precaution?

The law of jurisdiction governs states’ right or competence to ‘regulate the conduct and consequences of an event.’⁸⁰ Based on the analysis in the previous section, this right arises where the conduct or circumstances at issue cause substantial and foreseeable harm to a state’s territory. This gives rise to a ‘substantial connection’ with the acting state, which is further strengthened when there is a threat or actual harm to a vital state interest or to fundamental values of the international community. To date, however, the classical jurisdictional principles are yet to be authoritatively applied to climate-protective measures.⁸¹ This is no straightforward task, as the traditional legal mechanisms within the law of state jurisdiction are not easily applied to the practical and normative complexities of climate change, in particular the spatial and temporal diffusion of cause and effects.

I argue that the precautionary principle should have a role to play in the analysis of climate change jurisdiction, as it too concerns the relationship between states’ regulatory action and the prevention of grave environmental harm in the face of scientific uncertainty. While precaution is by no means a mirror of prescriptive jurisdiction, I seek to demonstrate that the international

77 For the former approach, see, e.g., James Crawford, *Brownlie’s Principles of Public International Law*, 8th ed. (Oxford: Oxford University Press, 2012), at 456–7. For the latter, see, e.g., Ryngaert, *supra* note 5, chapter 5 and 6.

78 See, Ryngaert, *supra* note 5, at 4; IBA Report, *supra* note 68, at 88.

79 Kamminga, *supra* note 60, at para. 13.

80 Lowe and Staker, *supra* note 12, at 313.

81 There was an opportunity in case C-366/10, *Air Transport Association of America, American Airlines, Inc., Continental Airlines, Inc., United Airlines, Inc. v. The Secretary of State for Energy and Climate Change* [2011] ECR I-0000. However, the Court of Justice of the EU evaded the issue, considering the EU to have ‘unlimited jurisdiction’ based on territory (at para. 124).

consensus and debates on the foreseeability and causation requirements in the context of precaution are both relevant and helpful in a jurisdictional context. In order to show their integrative potential in the context of climate change, it is necessary to examine the norm of precaution in more detail.

4.1 *Precaution in the Context of Climate Change*

At the outset it must be noted that there is no single agreed definition of precaution, and while some argue that it is a principle, others consider it better characterized as an 'approach' or 'general posture for policy-making'.⁸² An authoritative formulation can be found in Principle 15 of the Rio Declaration, which provides that:

Where there are threats of serious irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

As noted by Wiener, this formulation takes a permissive approach, and is helpful 'as a rebuttal to the mistaken claim that uncertainty warrants inaction'.⁸³ An alternative version goes a step further, providing that uncertainty not only removes a defence for inaction, but positively mandates action.⁸⁴ This is based on the risk of grave and 'irreversible' harm.⁸⁵

Notably, there is also support for considering precaution as part of the prevention principle.⁸⁶ While there is also discussion on the precise contours of the prevention principle, a well-accepted version can be found in Principle 21 of the 1972 Stockholm Declaration, which provides that states, while maintaining the sovereign right to exploit their own resources, have a 'responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction'. In *Responsibilities in the Area*, ITLOS used due diligence to 'build

82 On the debates surrounding the substance and legal status of precaution, see Jonathan B. Wiener, 'Precaution', and Ulrich Beyerlin, 'Policies, Principles and Rules', in *The Oxford Handbook of International Environmental Law*, edited by Daniel Bodansky, Jutta Brunnée, and Ellen Hey (Oxford: Oxford University Press 2007), 597 and 425, respectively. See also, Jonathan B. Wiener, 'Precaution and Climate Change', in *The Oxford Handbook of International Climate Change Law*, edited by Kevin R. Gray, Richard Tarasofsky, and Cinnamon Carlame (Oxford: Oxford University Press, 2016), at 168.

83 Wiener, 'Precaution', supra note 82, at 610.

84 Ibid., 604.

85 Ibid., referring among others to Article 5 of the 2004 the French Environment Charter.

86 Ibid., 603.

a bridge' between prevention and precaution,⁸⁷ considering the precautionary approach in the regulations at issue to be:

an integral part of the general obligation of due diligence of sponsoring States, which is applicable even outside the scope of the Regulations. The due diligence obligation of the sponsoring States requires them to take all appropriate measures to prevent damage that might result from the activities of contractors that they sponsor. This obligation applies in situations where scientific evidence concerning the scope and potential negative impact of the activity in question is insufficient but where there are plausible indications of potential risks.⁸⁸

As noted by Wiener, while 'sharply controversial', 'if there is any sensible form of precaution to apply to any problem, then climate change seems an especially apt and urgent case'.⁸⁹ Article 3(3) of the UNFCCC lends support for the norm's applicability in general terms, providing that the 'Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects'. De Sadeleer points out that this language is 'less forceful' than in other multilateral environmental agreements, using the term 'should' rather than 'shall', and 'encapsulating a right to take preventative measures and not an obligation to act'.⁹⁰ This permissive approach, where precaution is seen to legitimize but not require state action, aligns with the permissive principles of prescriptive jurisdiction in that the latter also concern state competence to respond to the risk of grave harm.

To the extent that precaution is seen as part of the prevention principle, it must be noted that there is also discussion as to whether this latter principle applies to climate change.⁹¹ While climate change is a case of cumulative damage, the prevention principle has traditionally been applied in cases of direct transboundary harm across a border.⁹² Still, there is considerable support for a

87 Bodansky et al., *International Climate Change Law*, supra note 1, at 44.

88 *Responsibilities and obligations of States sponsoring persons and entities with respect to activities in the Area* (Advisory Opinion, Order of 1 February 2011), ITLOS Reports 2011, at 131.

89 Wiener, 'Precaution and Climate Change', supra note 82, at 164.

90 Nicolas de Sadeleer, *Climate Change, Uncertainties and the Precautionary Principle* (Jean Monnet Working Paper Series Vol. 2016/1, Environment and Internal Market, 2016), at 5.

91 See, in particular, Alexander Zahar, 'Mediated versus Cumulative Environmental Damage and the International Law Association's Legal Principles on Climate Change', 4 *Climate Law* 217 (2014).

92 *Ibid.*, analysing among others the *Trail Smelter Case (United States v. Canada)*, Arbitration, 1938 and 1941 Decisions, UNRIAA, vol. III, 1941, pp. 1905–1982; *the Arbitration Regarding*

broader understanding of this principle. As noted by Mayer, customary international law, as evidenced for example by Article 21 of the Stockholm Convention and Article 2 of the Rio Declaration on Environment and Development, recognizes the principle's applicability to 'areas beyond the limits of national jurisdiction', which are protected under international law in order to prevent indirect cumulative damage.⁹³ This recognition can also be found in recital 8 of the preamble of the UNFCCC itself, which refers to states' 'sovereign right to exploit their own resources pursuant to their own environmental and developmental policies', and the 'responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction'.

Considering that the rationale of both prevention and precaution is to prevent grave environmental harm, it seems only logical that they apply to states' climate change policies.⁹⁴ On a practical level, even though individual activities have a relatively small impact, state policies seeking structural, cumulative, reductions may achieve results. As such, while climate change damage is a case of cumulative harm, climate change mitigation can be characterized as an 'aggregate effort' *good*.⁹⁵ This is very much related to how one 'frames' the climate change regime, which Mayer argues 'should be thought of as a regime recognizing obligations and responsibilities rather than a regime of voluntary participation and assistance'.⁹⁶ Such an approach aligns with the premise of existing international law, which being 'still mostly a law applicable to sovereign states ... is based on a recognition that collective obligations [are] a practical and morally acceptable way of addressing global concerns'.⁹⁷

the Iron Rhine ('Ijzeren Rijn') Railway (Belgium v. Netherlands), Award of 2005, Permanent Court of Arbitration, UNRIIAA, vol. XXVII, 1941, pp. 35–125; and *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, ICJ Reports 2010, pp. 14–107.

93 Benoit Mayer, 'The Applicability of the Principle of Prevention to Climate Change: A Response to Zahar', 5 *Climate Law* 1 (2015), at 9–10, noting that the prevention principle has been internationally recognized as applying in the context of cumulative damage, for example in the 1985 Vienna Convention for the Protection of the Ozone Layer, recital 2, and article 2(1).

94 Mayer, 'A Response to Zahar', *supra* note 6093, at 14–15; Wiener, 'Precaution and Climate Change', *supra* note 93, at 164.

95 Daniel Bodansky, 'What's in a Concept? Global Public Goods, International Law and Legitimacy', 23 *European Journal of International Law* 651(2012).

96 Benoit Mayer, 'The Relevance of the No-Harm Principle to Climate Change Law and Politics', 19 *Asia Pacific Journal of Environmental Law* 79 (2016), at 85.

97 *Ibid.*, at 98.

4.2 *Precaution and Climate Change Jurisdiction*

Despite the different approaches to precaution, an important 'core' element is that the lack of full scientific certainty does not prevent states from taking measures to anticipate and prevent grave environmental harm.⁹⁸ The scientific uncertainty may pertain to both the extent of the future damage and the causal relationship between the activity and the damage.⁹⁹ Even if precaution is not (yet) seen as a binding norm of international law, the sources discussed above evidence a growing international consensus on the desirability of this proactive approach.¹⁰⁰ The argument here is then a simple one, namely that the widespread legal recognition for the fact that full scientific certainty is not needed for states to take regulatory action is equally applicable in a jurisdictional context. Precaution is a functional norm, enabling anticipatory action before it is too late to act. It seems logical that this very practical legal answer to scientific uncertainty should enable states to protect their own territories and respond to common concerns in a jurisdictional context. However, the emphasis there is different, as the focus is on balancing the rights of equal sovereigns, where there is a trade-off between the competence to act and its encroachment upon the regulatory freedom of other states. As such, the law of jurisdiction may in fact *constrain* precaution, setting a higher threshold for when states may regulate extraterritorial greenhouse-gas-emitting activities.¹⁰¹

Considering the operationalization of the climate change jurisdiction, the question is at which point a state has a 'substantial connection' to regulate extraterritorial conduct which it considers a threat to its environment and even vital interests. I argue that the analytical approach to determine the jurisdictional link between the state and the regulated subject matter should

98 Wiener, 'Precaution and Climate Change', supra note 82, at 168, noting the second 'core' element of the precautionary approach '(ii) a stance on knowledge, providing that scientific uncertainty about such risks does not preclude policy measures'.

99 See, UNESCO, *The Precautionary Principle* (Report of the World Commission on the Ethics of Scientific Knowledge and Technology, 2005), <<http://unesdoc.unesco.org/images/0013/001395/139578e.pdf>>, at 14; de Sadeleer, supra note 90, at 8.

100 See Gehring and Cordonier-Segger, supra note 50, at 2: Precaution 'can be considered a guiding principle and a manner to ensure that balanced decisions can be made at different levels, and in different bodies of law, when there is scientific uncertainty and a threat of serious or irreversible harm'.

101 This also holds in the context of WTO law; see further Cheyne, supra note 50, at 165: 'The only apparent restriction on the use of the precautionary principle is the unknown quantity of the "sufficient nexus" test that may potentially restrict the extrajurisdictional reach of precautionary actions.'

distinguish the same two elements to which uncertainty may pertain under the precautionary approach, namely the scope of the predicted harm and the causal link between the regulated activity and the harm. These elements can be linked to the jurisdictional requirements of 'foreseeability' and 'causation' respectively, which should be interpreted to allow for scientific uncertainty.

In general, climate change poses serious challenges to the application of causation, as it is simply impossible to attribute specific effects of climate change directly to specific conduct.¹⁰² To start with, there is a complex combination of contributing factors, both from natural and anthropogenic sources.¹⁰³ This is compounded by the fact that the actual greenhouse effect occurs through an accumulation of greenhouse gases in the atmosphere, where mixing roughly equalizes concentrations around the world.¹⁰⁴ As a complex system, the emergent effects of climate change also challenge the foreseeability requirement. Such effects arise when 'the system as a whole has properties that cannot be deduced from the behaviour of its components'.¹⁰⁵ Still, Quiggin argues that it is possible to 'rationalise' precaution as a management guide, despite the fact that 'complete understanding of such systems is unattainable'.¹⁰⁶ To do so, he argues for a reformulation of precaution which requires those acting to demonstrate the 'reasonable belief' that their course of action will not be harmful.¹⁰⁷ Article 7B of the ILA Legal Principles Relating to Climate Change also incorporates reasonableness, referring to the 'reasonably foreseeable threat of serious or irreversible damage'.¹⁰⁸ De Sadeleer, too, considers that the 'lack of full scientific certainty' element 'allows public authorities to reckon their action upon reasonable scientific uncertainty', where 'the application of the precautionary measures depends on minimal evidence of the probability of a risk ... that is to say, to scientific grounds with a demonstrated degree of consistency'.¹⁰⁹

102 See further, Omuko, *supra* note 11.

103 On the complexities and legal implications for state responsibility, see Voigt, *supra* note 11, at 15; Verheyen, *supra* note 11, at 263.

104 Jaqueline Peel, 'The Practice of Shared Responsibility in Relation to Climate Change', in *The Practice of Shared Responsibility in International Law*, edited by André Nollkaemper and Ilias Plakokefalos (Cambridge, UK: Cambridge University Press, 2016), at 1009.

105 Quiggin, *supra* note 11, at 8.

106 *Ibid.*, at 10.

107 *Ibid.*, 11. The thrust of Quiggin's argument is that this also shifts the burden of proof to the acting party.

108 ILA Resolution, 'Declaration of Legal Principles Relating to Climate Change' (April 2014), Article 7B(1).

109 De Sadeleer, *supra* note 90, at 7.

Aligning this approach with the law of jurisdiction, the requirement that harm be foreseeable should not require states to be able to identify the precise breadth or incidences of future harm. Rather, the harm must be ‘reasonably foreseeable’ based on consistent scientific evidence. It must also be sufficiently grave to merit a response, though in the case of climate change this seems a well-established premise.¹¹⁰ In a jurisdictional context, one could even argue that the harm need not be environmental in nature, as the basis for states’ regulatory competence is their sovereign right to protect their territory and respond to threats to ‘fundamental values of the international community’ more broadly.¹¹¹

Secondly, the causal link between the conduct regulated and the territorial harm should be construed in terms of ‘contribution to an increase in risk’, rather than a direct, linear relationship. The international consensus that the risk of grave environmental harm allows states to take preventative action supports a lower causation threshold in a jurisdictional context. This differentiates environmental effects from economic effects under the traditional effects doctrine. Neither a risk- nor a contribution-oriented approach to causation is new—an example of the former being the *Risikoerhöhungslehre* in German criminal law, which holds an individual liable for an increase in risk that results in harm.¹¹² As noted by Verheyen, both the ILC and the ILA have recognized that causation may in principle be based on contribution rather than a *sine qua non* test.¹¹³

In the present context, causation may be broken down into two sub-elements, namely initial consistent scientific evidence that the *type* of activity actually contributes to climate change, and a secondary threshold for the *extent* of the contribution to climate change. This latter element is particularly important in a jurisdictional context in order to set a limit on the regulatory reach of powerful states. Here, the legal discourse on causation in the field of climate change liability offers valuable considerations. It must be borne in mind, however, that the function of causation is different in a jurisdictional context, as it is not concerned with apportioning responsibility but rather legitimizing ‘extraterritorial’ regulatory action. For this reason, the legal analysis should focus on ‘causation in fact’, which bears upon the factual causal chain, and not so much on ‘normative causation’, which bears upon the fact that the actor ‘ought to have known’ and therefore should incur responsibility.¹¹⁴

110 One need only refer to the IPCC’s Fifth Assessment Report (2014).

111 I am most indebted to Benoit Mayer for this argument.

112 Verheyen, *supra* note 11, at 255, referring to *Woodyear v. Schaeffer*, 57 MD 1 (MD 1881), at 9f., though noting that this case did not apply it to cumulative causation.

113 *Ibid.*, at 256.

114 Further on this distinction, see *ibid.*, at 250.

Analysing climate change in US tort law, Duffy proposes a probabilistic ‘market share’ approach, ‘which requires plaintiffs only to show that human influences were a *measurable factor* in creating the risk of harm to the plaintiff’.¹¹⁵ Another approach is to require that the conduct regulated makes a *meaningful contribution* to the risk of harm. As noted by Peel, the ‘meaningful contribution’ requirement finds acceptance in several national systems as an approach to causation in the case of cumulative harm.¹¹⁶ In a jurisdictional context, the establishment of a *de minimis* contribution is necessary to afford protection for the regulatory space of other states.¹¹⁷ While undeniably legally challenging, this could be based on internationally recognized data and calculation methods.¹¹⁸ Qualitative factors such as the activity’s duration or divergence from international environmental standards may also be considered. The precise *de minimis* threshold would need to be determined by subsequent practice, as it comes down to a complex balancing of interests between states’ right to protect their own territory and the regulatory freedom of other states, with its implications for the costs imposed on foreign operators.

Drawing together these considerations, a state may have a substantial connection to conduct occurring beyond its territory when it can demonstrate, based on consistent scientific evidence, that the conduct measurably contributes to an increase in the risk of reasonably foreseeable grave harm. The contribution must exceed an agreed *de minimis* threshold, itself based on accepted science. It is not necessary to prove the precise scope of the future harm or its linear link with specific greenhouse-gas-emitting activities. This incorporates the more recent international consensus on the role of states in responding to complex environmental threats, and is consistent with the functional rationale of both precaution and the permissive principles of state jurisdiction.

115 Emphasis added. See, Michael Duffy, ‘Climate Change Causation: Harmonizing Tort Law and Scientific Probability’, 28 *Temple Journal of Science, Technology and Environmental Law* 185 (2009), at 242 (emphasis added). According to Duffy’s theory: ‘Liability is apportioned among tort defendants based on the percentage by which anthropogenic influences contributes to the risk of harm, and further divided based on each individual plaintiff’s share of the GHG “market” (at 189).

116 For further analysis, see Peel, *supra* note 104, at 28.

117 However, note Hertogen, who argues against a *de minimis* under the effects doctrine: Anne Hertogen, ‘Letting Lotus Bloom’, 26 *European Journal of International Law* 901 (2016), at 923. Such a *de minimis* was not found necessary to establish a causal link for the duty of care under Dutch law in the case *Urgenda Foundation v. The State of the Netherlands*, RBDHA 24-06-2015, ECLI:NL:RBDHA:2015:7145, at para. 4.90.

118 The national greenhouse gas inventories required under UNFCCC may be useful here. See, Verheyen *supra* note 11, at 254; and Mayer, ‘A reply to Zahar’, *supra* note 93, at 13, noting that, while challenging, the difficulties in determining such a threshold can be overcome.

5 Conclusion

While legal fragmentation certainly poses challenges for lawmakers in the field of climate protection, I have sought to demonstrate a window for potential interaction between jurisdictional and environmental norms. This is relevant for climate-protective trade measures, as WTO law does not provide clear jurisdictional limitations for import requirements effectively pertaining to extraterritorial conduct prior to entry. Customary international law remains an important *lex generalis*, which, in line with WTO case law and Article 3.2 of the DSU, may provide interpretative aid to the extent that it does not conflict with the specialized rules. Exploring the contours of ‘climate change jurisdiction’, I considered how the traditional principles may be operationalized in the untested territory of cumulative and uncertain environmental harm. It is precisely these obstacles to which the well-established precautionary principle seeks to respond. The development of precaution and its application to climate change demonstrate international recognition for the fact that scientific uncertainty does not, and should not, preclude states from taking regulatory action to prevent grave environmental harm. This recognition is equally relevant in a jurisdictional context, which also concerns states’ regulatory competence to respond to harm. As the jurisdictional rules must balance this competence against its potential encroachment on the sovereignty of other states, a limiting threshold is needed to constrain the regulatory reach of powerful states. I therefore propose a risk-oriented approach to the jurisdictional analysis, based on a conduct’s measurable contribution to reasonably foreseeable harm. This approach aligns with the functional objectives of the effects and protective principles, as well that of precaution, providing opportunities for synergy in the crystallization of climate change jurisdiction.