Mapping the International and European Governance of Renewable Energy

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I. Introduction

The aim of this article is to map the governance of renewable energy so as to identify gaps and overlaps and propose ways in which these gaps could be filled and overlaps eliminated. In line with the overall theme of this Special Issue, we will do so by looking at the interplay between public international law and European Union (EU) law in the context of renewables, the interconnection between these two legal regimes and how they influence each other. Renewable energy comes from sustainable sources of energy, as opposed to conventional sources of energy such as oil, natural gas, coal, and uranium. Renewable energies, unlike the ones listed, are available in infinite supply, as they have natural...
forces that continuously replenish them. They include solar, wind (onshore or offshore), wave, hydro, tidal, geothermal, and biomass sources. By renewable energy governance, we understand the ensemble of the various institutions, legal instruments, and processes that deal with renewable energy towards the aim of mitigating climate change, which is a global public good.

Currently, governance of renewable energy is fragmented, with selective membership, and guided by state interests. This hinders transnational energy flows. Despite apparent overlaps between institutions and regimes involved in renewable energy governance, there are significant gaps in the system. The result is a mixed bag of incidental outcomes arising from an array of renewable energy-related institutions and processes operating at various scales (bilateral, regional, etc), often with each having its own selective membership.

The article argues that effective renewable energy governance at the international and European level has become a major challenge of public international law and EU law due to the fragmentation of the system and the proliferation of institutions. As a result of the various institutions that govern renewables, interesting questions arise: Where are the governance overlaps between these institutions? What is the interaction between them as a result of this fragmented governance? For instance, is it hierarchical or is it polycentric?

Renewable energy has characteristics of a global public good and requires local and global action. Currently, there is no cohesive governance for global renewable energy. Governance of renewable energy arises by default, rather than design, through the *ad hoc* interplay of different aspects of the international economic system. Several institutions involving different actors and

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3 Volker Oschmann, ‘Introduction to European Law on Renewable Energy Sources’ in Leslie Parker, Jennifer Ronk, and Rachel Maxwell (eds), *From Debate to Design: Issues in Clean Energy and Climate Change Law and Policy* (New Haven, CT: Yale School of Forestry and Environmental Studies, 2008) 19.

4 Regarding the reliability of both wind and solar energy, there is the concern that the wind does not always blow and the sun does not always shine. This means that energy storage solutions are necessary.

5 For further details on public goods, see Inge Kaul, Isabelle Grunberg, and Marc A Stern, ‘Defining Global Public Goods’ in Inge Kaul, Isabelle Grunberg, and Marc A. Stern, *Global Public Goods: International Cooperation in the 21st Century* (Oxford: Oxford University Press, 1999); Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, MA: Harvard University Press, 1965); Todd Sandler, *Global Collective Action* (Cambridge: Cambridge University Press, 2004); Michael Taylor, *The Possibility of Cooperation* (Cambridge: Cambridge University Press, 1987); Katharina Holzinger, *Transnational Common Goods: Strategic Constellations, Collective Action Problems, and Multi-level Provision* (Basingstoke: Palgrave Macmillan, 2008).

6 Similar arguments have been made about developing a framework global (renewable) energy governance more generally. See S Bruce, ‘International Law and Renewable Energy: Facilitating Sustainable Energy for All?’ (2013) 18 *Melbourne Journal of International Law*, A Florini and BK Sovacool, ‘Who governs energy? The challenges facing global energy governance’ (2009) 37 *Energy Policy*, 5239–5248; B Sovacool and A Florini, ‘Examining the complications of global energy governance’ (2012) 30 *Journal of Energy & Natural Resources Law* (2012) 3, 235; A Bradbrook, ‘Creating law for next generation energy technologies’ (2011) 22 *Colorado Journal of International environmental Law. & Policy* 251 (2011); A Bradbook, and R Wahnschafft, ‘International Law and
geographical scope address renewable energy. As a result, we have a polycentric and very complex institutional structure. Arguably, the complexity of the renewable energy system lends itself to polycentric governance. The situation has resulted in a fragmentation of the global and European energy regimes, a lack of cohesiveness of the global and European renewable energy systems, divergent national interests, and a diversity of energy sources. For such a polycentric system to succeed, a high level of coordination and trust is necessary between the various actors involved. As it stands, the governance regime for renewable energy is not conducive to sustainable energy.

How can we explain the proliferation of renewable energy institutions? Some scholars focused on the international level suggest that the regulatory activity of various international institutions represents a ‘regime complex’. This concept is used to refer to ‘partially overlapping and nonhierarchical institutions governing a particular issue-area’. Others propose understanding the governance activities by private and public actors in terms of a ‘transnational regime complex’, which is composed of civil society organizations, governments and business, which is coined as a ‘governance triangle’. In the same manner, how can we explain the fragmentation of renewable energy governance? And does it lead to forum-shopping?

It is vital that countries take the right steps and decisions to ensure renewable energy. A more cohesive governance system for renewable energy would facilitate its usage, avoid unnecessary legal disputes, and provide predictability. Achieving this will require a thorough understanding of the elements, workings, and evolution of the current renewable energy governance regime.

Renewable energy spans a number of policy areas, including trade, investment, economic development, and environmental protection. The World Trade Organization (WTO) provides governance over trade within its scope, including

Global Sustainable Energy Production and Consumption’ in A. Bradbrook and others, The Law of Energy for Sustainable Development (Cambridge: Cambridge University Press, 2012).

7 K Abbott, ‘The Transnational Regime Complex for Climate Change’ (2012) 30 Environment and Planning C: Government and Policy, 571–90.
8 P Andrews-Speed, and X Shi, ‘What Might the G20 under China’s Presidency Deliver for Global Energy Governance?’ (2015) 8 Energy Studies Institute Policy Brief.
9 T Meyer, ‘Global Public Goods, Governance Risk, and International Energy’ (2012) 22 Duke Journal of Comparative and International Law, 319–48.
10 R Leal-Arcas and A Filis, ‘Conceptualizing EU Energy Security through an EU Constitutional Law Perspective’ (2013) 36 Fordham International Law Journal, 1225–301.
11 R Keohane and D Victor, ‘The Regime Complex for Climate Change’ (2011) 9 Perspectives on Politics, 7–23; A Orsini and others, “Regime Complexes: A Buzz, a Boom, or a Boost for Global Governance?’ (2013) 14 Global Governance, 419–435.
12 K Raustiala, and D Victor, ‘The Regime Complex for Plant Genetic Resources’ (2004) 58 International Organization, 277–309.
13 K Abbott and D Snidal, ‘The Governance Triangle: Regulatory Standards Institutions and the Shadow of the State’ in W Mattli and N Woods (eds), The Politics of Global Regulation (Princeton, NJ: Princeton University Press, 2009) 44–88.
14 On forum shopping in global governance, see K Alter and S Meunier, ‘The Politics of International Regime Complexity’ (2009) 7 Perspectives on Politics, 13.
over renewable energy trade. Many other institutions exist that provide degrees of governance over aspects of renewable energy at the inter-state level. This patchwork of institutions and regimes amounts to a sort of ‘accidental’ renewable energy governance, and presents some areas of overlap. For instance, both the WTO and the Energy Charter Treaty have rules that apply to the trade, investment, and environmental protection aspects of energy.

Alongside the crisis of climate change, there remains significant unmet energy demand in the least developed and developing countries as well as significant barriers (including expense, technology, and grid capacity) to the growth of renewable energy in many such countries. At the national level, renewable energy law and policy is often characterized by innovation and experimentation. A recent study conducted in fifty-five developing nations found at least 359 ‘clean energy-supportive policies’—almost half of which were introduced in 2012–13. However, the challenge of effective steering from the international level remains.

Renewable energy governance is in many ways a subset of energy and climate change governance, and has been described as ‘seriously underdeveloped’ at the global level. Former International Atomic Energy Agency director general, Mohamed ElBaradei, has remarked that

[w]e have a World Health Organization, two global food agencies, the Bretton Woods financial institutions and organizations to deal with everything from trade to civil aviation and maritime affairs. Energy, the motor of development and economic growth, is a glaring exception. Although it cries out for a holistic, global approach, it is actually dealt with in a fragmented, piecemeal way.

Part of the difficulty is that energy, as an issue area, straddles ‘highly autonomous’ systems of international economic and environmental law. Particular

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15 <https://www.wto.org/english/docs_e/legal_e/final_e.htm>.
16 Energy Charter Treaty (ECT; opened for signature 17 December 1994, entered into force 16 April 1998) 2080 UNTS 95.
17 Shehu Usman Yamusa and Abdul Haseeb Ansari, ‘Renewable Energy Development in Two Selected African Countries: An Overview and Assessment’ (2013) 4 Renewable Energy Law & Policy Review, 151–6.
18 ‘Climatescope 2014: Mapping the Global Frontiers of Clean Energy Investment—Focus: Asia’ (Bloomberg New Energy Finance, 2014) 7.
19 Interestingly, energy policy has different—and often competing—goals, including security of energy supply, reducing energy poverty, and ensuring sustainability. All these goals could be met via renewable energy.
20 Neil Gunningham, ‘Confronting the Challenge of Energy Governance’ (2012) 1 Transnational Environmental Law 119, 130–1.
21 Mohammed ElBaradei, ‘A Global Agency is Needed for the Energy Crisis’ Financial Times (23 July 2008); cited in Gunningham (n 20), 130–1.
22 Oren Perez, Ecological Sensitivity and Global Legal Pluralism: Rethinking the Trade and Environment Conflict (Oxford: Hart Publishing, 2004) 8–9. So autonomous, indeed, that Víñuelas has reported that, ‘[i]nvestment lawyers and environmental lawyers rarely speak to each other’. Jorge E Víñuelas, Foreign Investment and the Environment in International Law (Cambridge: Cambridge University Press, 2012) 1.
‘institutional and structural diversity’ has also been noted in the case of energy governance, as it relates to climate change. A further dimension of complexity comes from the different properties of different sources of renewable energy. Indeed, there is also controversy as to what ‘qualifies’ for the label of renewable energy. As Bradbrook has observed, ‘every energy resource involves a different interface with the law in terms of its exploitation’.

A glance at the multiplicity of processes through which governance of renewable energy is channelled at the international level may leave one with the impression that renewables are indeed a case study in the ‘fragmentation’ of international law. However, as will become apparent, a countervailing force to fragmentation has emerged in the networking and collaboration taking place across processes and between organizations. The international governance of renewables is increasingly the work of networks. As the International Renewable Energy Agency (IRENA) has averred, ‘partnerships remain embedded in every aspect of IRENA’s programmatic activities’. The sections below discuss how this constellation of actors and processes shape the development of public international law and governance relating to renewable energy.

There is evolving literature that tries to explain the complexity of governance in transnational networks and regimes. Although much has been written regarding regimes complexes and transnational networks, and a smaller volume

23 Aleh Cherp, Jessica Jewell, and Andreas Goldthau, ‘Governing Global Energy: Systems, Transitions, Complexity’ (2011) 2(1) Global Policy, 75.

24 Adrian J Bradbrook, ‘Energy Law as an Academic Discipline’ (1996) 14 Journal of Energy & Natural Resources Law, 193, 197.

25 International Renewable Energy Agency, ‘Work Program and Budget for 2014–2015: Report of the Director-General’ (18 January 2014) A/4/3, para. 16.

26 E Moe and P Midford, The Political Economy of Renewable Energy and Energy Security: Common Challenges and National Responses in Japan, China and Northern Europe (Basingstoke: Palgrave, 2014); R Ottinger, Renewable Energy Law and Development: Case Study Analysis (Cheltenham: Edward Elgar, 2013); S Tagliapietra, The Geoecomics of Sovereign Wealth Funds and Renewable Energy (Deventer: Claeyes & Casteels, 2012); USAID, Encouraging Renewable Energy Development: A Handbook for International Energy Regulators (Washington, DC: USAID, 2014); T Van de Graaf, The Politics and Institutions of Global Energy Governance (Basingstoke: Palgrave/Mamillan, 2013); B Sovacool and A Florini, ‘Examining the Complications of Global Energy Governance’ (2012) 30 Journal of Energy and Natural Resources Law; A Florini and BK Sovacool, ‘Bridging the Gaps in Global Energy Governance’ (2011) 17 Global Governance, 57; A Florini and BK Sovacool, ‘Who governs energy? The challenges facing global energy governance’ (2009) 37 Energy Policy, 5239–48, 2009; T Meyer, ‘The Architecture of International Energy Governance’ (2013) 106 American Society International Law. Proceedings; R Leal-Arcas and others, International Energy Governance: Selected Legal Issues (Cheltenham: Edward Elgar, 2014).

27 See for instance KW Abbott, J Green, and R Keohane, ‘Organizational Ecology and Institutional Change in Global Governance’ (2016) International Organization; Thomas Hale and Charles Roger, ‘Orchestration and transnational climate governance’ (2014) 9 The Review of International Organizations, 59–82; KW Abbott, ‘The transnational regime complex for climate change’ (2012) 30 Environment and Planning C: Government and Policy, 571–90; Thomas Gehring and Benjamin Faude, ‘The dynamics of regime complexes: Microfoundations and systemic effects’ (2013) 19 Global Governance: A Review of Multilateralism and International Organizations, 119–30; Abraham Newman and David T Zaring, ‘Regulatory networks: Power, legitimacy, and compliance’ in J Dunoff and M Pollack (eds), Interdisciplinary Perspectives on International Law and International
of literature exists regarding the role of private instruments in these transnational regulations and regime complexes and how they relate to social network analysis, this article tries to add to the literature by filling an

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[28] Kenneth W Abbott, and Duncan Snidal, ‘International regulation without international government: Improving its performance through orchestration’ (2010) 5 The Review of International Organizations, 315–344; Daniel Berliner and Aseem Prakash, “‘The United Nations Global Compact: An institutionalist perspective’ (2014) 122 Journal of Business Ethics, 217–23; Luc Fransen and Brian Burgoon, ‘Privatizing or socializing corporate responsibility: Business participation in voluntary programs’ (2014) 53 Business & Society, 583–619; Hervina Dashwood, ‘Sustainable development and industry self-regulation: Developments in the global mining sector’ (2014) 53 Business & Society, 551–82; JF Green, ‘Order out of chaos: Public and private rules for managing carbon’ (2013) 13 Global Environmental Politics, 1–25; SP Borgatti, C Jones, and MG Everett, “Network measures of social capital,” (1998) 21 Connections, 27–36; SP Borgatti, A Mehra, DJ Brass, and G Labianca, ‘Network analysis in the social sciences’ (2009) 323 Science, 892–5; David Easley and Jon Kleinberg, Networks, Crowds, and Markets: Reasoning about a highly connected world (Cambridge: Cambridge University Press, 2010); Charles F Sabeland Jonathan Zeitlin, ‘Experimentalism in transnational governance: Emergent pathways and diffusion mechanisms’, Paper presented at the International Studies Association Conference, Montreal, 2011; Christine Överdvest and Jonathan Zeitlin, ‘Assembling an experimentalist regime: Transnational governance interactions in the forest sector’ (2014) 8 Regulation & Governance, 1–21; Jonathan Zeitlin, ‘Pragmatic transnationalism: Governance across borders in the global economy’ (2011) 9 Socio-Economic Review, 187–206; B Eberlein, KW Abbott, J Black, E Meidinger, and S Wood, ‘Transnational business governance interactions: Conceptualization and framework for analysis’ (2014) 8 Regulation & Governance, 1–21.

[29] See for instance S Wood, K Abbott, J Black, B Eberlein, and E Meidinger, ‘The interactive dynamics of transnational business governance: A challenge for transnational legal theory’ (2015) Transnational Legal Theory, online; Oren Perez, ‘International environmental law as a field of multipolar governance: The case of private transnational environmental regulation,” (2012) 10 Santa Clara Journal of International Law, 285.

[30] Alan Richardson, ‘Regulatory networks for accounting and auditing standards: A social network analysis of Canadian and international standard-setting’ (2009) 34 Accounting, Organizations and Society, 571–88; Reut Snirand Gilad Ravid, ‘Global nanotechnology regulatory governance from a network analysis perspective’ (2015) DOI: 10.1111/rego.12093 Regulation & Governance; Jason Thistlethwaiteand Matthew Paterson, ‘Private governance and accounting for sustainability networks’ (2015) Environment and Planning C: Government and Policy, online; J Beckfield, ‘The social structure of the world polity’ (2010) 115 American Journal of Sociology, 1018–68; Thomas Davidand Gerarda Westerhuis, The Power of Corporate Networks: A comparative and historical perspective (Vol. 26) (Abingdon: Routledge, 2014); E Heemskerk, M Fennema, and WK Carroll, ‘The global corporate elite after the financial crisis: Evidence from the transnational network of interlocking directorates’ (2016) 16 Global Networks, 68–88; DM Katz and D Stafford, ‘Hustle and flow: A social network analysis of the American federal judiciary’ (2010) 71 Ohio State Law Journal; Laura Albareda and Sandra Waddock, ‘Networked CSR governance: A whole network approach to meta-governance’ (2016) Business & Society, online; Örjan Bodinand Beatrice I Crona, ‘The role of social
important gap in the current academic literature related to renewable energy governance at various levels (i.e., international, supranational, and national). Scholars have explained climate change activities in terms of multilevel governance,\(^{31}\) transnational governance,\(^{32}\) polycentricity,\(^{33}\) or fragmentation.\(^{34}\) This article will go a step further and look at what may explain the governance of renewables. Is there a transnational legal order for renewables? If yes, what are its boundaries? If not, why did it fail to exist? The article will take the next step and examine the normative framework that relates to renewable energy governance at the inter-state level.

To understand the various and overlapping layers of renewable energy governance, this article benefits from global legal pluralism and regime theory. The latter argues that regimes or international institutions affect the conduct of States or other international actors in international cooperation. Regime theory is analysed in the context of idealism\(^{35}\) and realism\(^{36}\) to explain the knowledge gap in international renewable energy law and governance, given that it views regimes as intervening variables, such as power, interest, and networks in natural resource governance: What relational patterns make a difference?’ (2009) 19 Global Environmental Change, 366–74; MA Janssen and others, ‘Toward a network perspective of the study of resilience in social-ecological systems’ (2006) 11 Ecology and Society, 15; SR Carpenter and WA Brock, ‘Adaptive capacity and traps’ (2008) 13 Ecology and Society, 40; Michael Faure, Peter De Smedt, and An Stas, Environmental Enforcement Networks: Concepts, implementation and effectiveness (Cheltenham: Edward Elgar Publishing, 2015); Rakhyun E Kim, ‘The emergent network structure of the multilateral environmental agreement system’ (2013–14) 23 Global Environmental Change, 980–91; M Fenwick, S Van Uytse, and S Wrbka, ‘Introduction: Networks and networked governance’ Networked Governance, Transnational Business and the Law (Berlin: Springer, 2014) 3–9; Steven Bernstein and Benjamin Cashore, ‘Non-state global governance: Is forest certification a legitimate alternative to a global forest convention?’ in JJ Kirton and MJ Trebilcock, Hard choices, Soft Law: Voluntary standards in global trade, environment and social governance (Abingdon: Routledge, 2004) 33–63; Errol Meidinger, ‘Forest certification and democracy’ (2011) 130 European Journal of Forest Research, 407–19; Matthew Potoski and Aseem Prakash, ‘Do voluntary programs reduce pollution? Examining ISO 14001’s effectiveness across countries’ (2013) 41 Policy Studies Journal, 273–94.

\(^{31}\) H Osofsky, ‘Local Approaches to Transnational Corporate Responsibility: Mapping the Role of Subnational Climate Change Litigation’ (2007) 20 Pacific McGeorge Global Business and Development Law Journal, 143–59.

\(^{32}\) P Pattberg and J Stripple, ‘Beyond the Public and Private Divide: Remapping Transnational Climate Governance in the 21st Century’ (2008) 8 International Environmental Agreements: Politics, Law and Economics, 367–88.

\(^{33}\) E Ostrom, ‘A Polycentric Approach for Coping with Climate Change’ Policy Research Working Paper 5095 (2009), Washington, DC: World Bank.

\(^{34}\) C Carlarne, ‘Good Climate Governance: Only a Fragmented System of International Law Away?’ (2008) 30 Law & Policy, 450–80; W Boyd, ‘Climate Change, Fragmentation, and the Challenges of Global Environmental Law: Elements of as Post-Copenhagen Assemblage’ (2010) 32 University of Pennsylvania Journal of International Law, 457–550.

\(^{35}\) Idealism placed hope in international law and institutions such as the United Nations.

\(^{36}\) Realism views international institutions as having no impact on nation state behaviour, since all international politics could be understood in terms of national interests.
values, on the one hand, and behaviour and outcome, on the other. The article also benefits from the concepts of transnational legal order, institutional theory, regime complexes, and systems theory. Given the large choice of renewable energy institutions, legal instruments and processes, we have limited ourselves to some of the most emblematic and representative governance structures of renewable energy.

After this introduction, Section II analyses renewable energy governance in the context of the UN Framework Convention on Climate Change (UNFCCC), while Section III looks at the various international energy bodies that deal with the governance of renewables. To help us understand the scope of renewables governance, Sections IV–VII deal with renewables in specific sectors of international/supranational law and policy, namely the sustainable development goals and multilateral development banks in the context of economic development, the G7 and the G20, international trade and, lastly, the EU’s renewables legislation and policies, as examples of the most committed region in the world to renewable energy. Section VIII concludes with a number of questions for further legal research resulting from the broad array of activity concerning renewables in EU law, international law, and international organizations.

The governance of renewable energy is diffused. It is the product of a diverse constellation of international and supranational organizations, partnerships and bodies of public international law and EU law. Moreover, the evidence is that both EU institutions (such as the European Commission) and EU law (such as the Emissions Trading System) have played important roles in influencing the development of public international law regarding renewable energy. This is consistent with the requirement of the Treaty on European Union (TEU) that, in its international relations, the ‘Union shall uphold and promote its values and interests and ‘contribute to . . . the sustainable development of the Earth’ and ‘the development of international law’.43

37 S Krasner (ed.), International Regimes (Ithaca, NY: Cornell University Press, 1983).
38 T Halliday and G Shaffer (eds), Transnational Legal Orders (Cambridge: Cambridge University Press, 2015).
39 J Jupille, W Mattli, and D Snidal, Institutional Choice and Global Commerce (Cambridge: Cambridge University Press, 2013); L Martin and B Simmons, ‘Theories and Empirical Studies of International Institutions’ (1998) 52 International Organization, 397–419; S Krasner (ed.), International Regimes (Ithaca, NY: Cornell University Press, 1983); C Kingston and G Caballero, ‘Comparing Theories of Institutional Change’ (2008) available at <https://www3.amherst.edu/~cgkingston/Comparing.pdf>.
40 K Raustiala and D Victor, ‘The Regime Complex for Plant Genetic Resources’ (2004) 58 International Organization, 277–309; R Keshane and D Victor, ‘The Regime Complex for Climate Change’ (2011) 9 Perspectives on Politics, 7–23; K Abbott, ‘Strengthening the Transnational Regime Complex for Climate Change’ (2014) 3 Transnational Environmental Law, 57.
41 L Von Bertalanffy, General System Theory: Foundations, Development, Applications (New York: George Braziller, 1968).
42 United Nations Framework Convention on Climate Change, 1992, 1771 UNTS 107.
43 Treaty on European Union, Art. 3(5).
II. Renewable energy and the UN Framework Convention on Climate Change

A. The Climate Change Convention

There have been strong linkages and feedbacks between the public international law of climate change and EU climate change and renewable energy law. These relationships have been most clearly manifest in the Kyoto Protocol’s imposition of binding greenhouse gas (GHG) emissions restrictions on EU Member States and subsequent EU-wide and Member State regulation of GHG emissions. In addition, the provision for market mechanisms in the Kyoto Protocol informed the subsequent development of the EU Emissions Trading Systems (ETS).44 In turn, the significance of the EU ETS as a source of demand for carbon credits has in term meant that EU ETS regulations affect the functioning of the Kyoto Protocol market mechanisms. The Paris Agreement on Climate Change under the UNFCCC, with its requirement that parties submit Nationally Determined Contributions (NDCs),45 may have the effect of further embedding EU climate and renewables regulation in the UNFCCC. Each of these feedbacks is discussed below. These feedbacks between UNFCCC law and EU law can be seen in the context of the broadly acknowledged political influence that the EU has had on the development of UNFCCC decisions and structures.46

With energy-sector GHG emissions accounting for around two-thirds of anthropogenic emissions,47 the question of energy sources is inseparable from the problem of climate change. This is so because the economy relies on fossil fuels, which produce CO₂, the major greenhouse gas. The international climate change regime, centred on the UNFCCC, has played an important role in spurring the development of renewable energy. For example, the UNFCCC regime has had the effect of promoting renewable energy as an important method for mitigating GHG emissions. In this way, the UNFCCC has both an indirect and a direct relationship with renewable energy: indirectly, emissions reduction objectives under the Convention have created incentives for the installation of renewable capacity; and directly, UNFCCC provisions and programmes have supported the development and proliferation of renewable energy, alongside other climate technologies.48

44 Arts 2.1.a(v) and 17 of the Kyoto Protocol.
45 Arts 3 and 4.2 of the Paris Agreement on Climate Change.
46 See, eg, Miranda A Schreurs and Yves Tiberghien, ‘Multi-Level Reinforcement: Explaining European Union Leadership in Climate Change Mitigation’ (2007) 7 Global Environmental Politics, 19–46; Sebastian Oberthur and Claire Roche Kelly, ‘EU Leadership in International Climate Policy: Achievements and Challenges’ (2008) 43 International Spectator, 35–50; John R Schmidt, ‘Why Europe Leads on Climate Change’, (2008) 50 Survival, 83–96.
47 International Energy Agency, Energy and Climate Change: World Energy Outlook Special Report (Paris: International Energy Agency, 2015) 20.
48 On technology transfer, see United Nations Framework Convention on Climate Change (adopted 9 May 1992, entered into force 21 March 1994) 1771 UNTS 107; UN Doc FCC/
Adopted in 1992 and in force since 1994, the UNFCCC builds on the ‘comprehensive normative development’\(^\text{49}\) embodied in the 1992 Rio Declaration on Environment and Development.\(^\text{50}\) Article 2 of the UNFCCC commits nations to ‘stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system’.\(^\text{51}\) The Convention enunciated a set of principles, including differentiated commitments for developed and developing countries and established an institutional architecture, with the Conference of Parties (COP) as the governing body. In the years since 1994, negotiations under the UNFCCC have grappled with the difficult task of bringing the Convention’s ultimate objective stipulated in Article 2 within reach.

The Convention includes the principle that parties have ‘common but differentiated responsibilities and respective capabilities’ (CBDRC).\(^\text{52}\) In assigning obligations to parties, the Convention divides countries between developed countries and countries ‘undergoing the process of transition to a market economy’, listed in Annex I, and non-Annex I countries. Pursuant to the CBDRRC principle, all parties to the Convention must maintain GHG emission inventories, introduce mitigation and adaptation programmes and cooperate on mitigation and adaptation, among other obligations,\(^\text{53}\) only Annex I countries must adopt national mitigation policies and must assist non-Annex I parties with finance and technology transfer, among other obligations.\(^\text{54}\) In addition, developed countries must ‘take the lead in combating climate change’.\(^\text{55}\)

B. The Kyoto Protocol

The Kyoto Protocol to the UNFCCC introduced specific climate mitigation commitments for Annex I parties. Agreed in 1997 and coming into force in 2005, Kyoto charged Annex I parties with reducing their emissions by an average of 5 per cent below 1990 levels during the commitment period in

\(^ {49} \) Jorge E. Víñuales, *Foreign Investment and the Environment in International Law* (Cambridge: Cambridge University Press, 2012) 11.

\(^ {50} \) Rio Declaration on Environment and Development (Rio de Janeiro, 3–14 June 1992) UN Doc A/CONF.151/26 (Vol. I), reprinted in (1992) 31 *International Legal Materials* 874. For example, Rio Principle 7 on the ‘common but differentiated responsibilities’ of developed and developing countries is replicated in the climate convention and remains a key point of contention. in the UN climate negotiations.

\(^ {51} \) UNFCCC, Art 2.

\(^ {52} \) UNFCCC, Art. 3(1).

\(^ {53} \) UNFCCC, Art. 4(1).

\(^ {54} \) UNFCCC, Art. 4(2)–(5).

\(^ {55} \) UNFCCC, Art. 3(1).
2008–12.\textsuperscript{56} The EU was required to reduce its collective emissions by 8 per cent during the first commitment period.\textsuperscript{57} The EU responded to this requirement by adopting regulations to reduce emissions by 20 per cent by 2020, significantly exceeding the Kyoto Protocol target, and increase the share of energy generated by renewables to 20 per cent by 2020.\textsuperscript{58} As the first commitment period expired prior to the agreement of a comprehensive global climate deal, the Kyoto Protocol was extended with a second commitment period lasting from 2013 to 2020.\textsuperscript{59} Notably, the United States never ratified the Kyoto Protocol and Canada withdrew from it.

Three ‘flexibility mechanisms’ were created to assist parties with Kyoto obligations to meet their targets: emissions trading,\textsuperscript{60} the Clean Development Mechanism (CDM),\textsuperscript{61} and Joint Implementation (JI).\textsuperscript{62} The COP provided detailed guidance on implementation of the Kyoto Protocol, including these three market-based mechanisms, in the 2001 Marrakesh Accords.\textsuperscript{63} The Clean Development Mechanism (CDM) enables Annex I parties to count Certified Emission Reduction units (CERs) resulting from emissions-reducing activities in non-Annex I countries toward their own emission reduction obligations.\textsuperscript{64} The CDM provides ‘top-up, supplemental financing that makes low-emitting projects competitive against cheaper but higher-emitting alternatives’.\textsuperscript{65} Following the agreement of the Marrakesh Accords at the 2001 UNFCCC
COP, the EU introduced Directive 2003/87/EC, establishing the EU ETS ‘to contribute to fulfilling the commitments of the European Community and its Member States more effectively, through an efficient European market in greenhouse gas emission allowances, with the least possible diminution of economic development and employment’. The following year, the EU introduced Directive 2004/101/EC, allowing CDM and JI carbon credits to be used by EU ETS participants to fulfil a proportion of their obligations under the EU ETS.

By 2015, over 7,900 CDM projects and programmes had been registered in 107 countries, resulting in over 1.6 billion CERs. Seventy-one per cent of CDM projects have been renewable projects, including wind (31 per cent), hydro (26 per cent), biomass (9 per cent) and solar (5 per cent). In addition, Joint Implementation projects had resulted in the issuing of over 870,000 emission reductions units (ERUs). The central significance of the EU to these international mechanisms is indicated by the fact that, by 30 April 2015, 1,445 million international credits had been used or exchanged within the EU ETS.

Under the EU ETS, market participants have been allowed to use CDM and JI credits to meet only a given percentage of their obligations under the system. For the third and current EU ETS trading period, which runs from 2013 to 2020, additional restrictions on the use of international credits were introduced, including the requirement that projects be hosted in least-developing countries. The restrictions on use of CERs in the EU ETS has had a major impact on operations under the CDM. The 2015 CDM annual report

66 Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC.
67 Directive 2004/101/EC amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of the Kyoto Protocol’s project mechanisms.
68 Annual report of the Executive Board of the clean development mechanism to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, FCCC/KP/CMP/2015/5, 12 November 2015, para. 14.
69 UNEP DTU Partnership, ‘CDM Projects by Type’ (last updated 1 January 2016) available at <http://www.cdmpipeline.org/cdm-projects-type.htm>. However, the renewables projects have accounted for only 34 per cent of CERs produced under the CDM. UNEP DTU Partnership, ‘CDM/JI Pipeline Overview Page’ (last updated 1 January 2016) available at <http://www.cdmpipeline.org/overview.htm>. For more information on CDM renewables projects, see UNFCCC, Benefits of the Clean Development Mechanism 2012 (2012) also available at <https://cdm.unfccc.int/about/devben/index.html>.
70 By 2015, activity under JI had ‘virtually ceased’. Annual report of the Joint Implementation Supervisory Committee to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, 16 October 2015, FCCC/KP/CMP/2015/4, paras 8, 31.
71 Climate action progress report, including the report on the functioning of the European carbon market and the report on the review of Directive 2009/31/EC on the geological storage of carbon dioxide, Annex I: Report on the functioning of the European carbon market, Brussels, 18 November 2015, COM(2015) 576 final, 4.1.3.
72 EU ETS Handbook, <http://ec.europa.eu/clima/publications/docs/ets_handbook_en.pdf>.
highlighted the 'low CER price (due to lack of demand)' and, correspondingly, '[m]any CDM projects face difficulties in continuing implementation or operation'. The report noted that '[w]ith respect to new demand, installations covered by the European Union Emissions Trading System, historically the largest users of CERs, are limited under that system in the volume of Kyoto Protocol credits that they can use and they are approaching their limits'. The experience of the Kyoto Protocol, therefore, shows EU law to be both reactive to, and a significant influence on, the development of market mechanisms under the UNFCCC.

C. Support for renewables through UNFCCC mechanisms and programmes

Within the overall framework for climate change mitigation provided by the UNFCCC, particular programmes under the Convention seek to support renewable energy projects. Such support includes assistance to parties concerning climate technology provided through the Technology Mechanism and funding for climate mitigation provided through the Financial Mechanism. An example is the support provided by the Climate Technology Centre and Network (CTCN), a component of the Technology Mechanism. The CTCN ‘facilitate[s] a network of national, regional, sectoral and international technology networks, organizations and initiatives’ in order to, *inter alia*, provide technical assistance to developing countries, facilitate access to knowledge on climate technologies and facilitate cooperation among public and private stakeholders for the innovation and diffusion of climate technology. Thus far, the majority of requests for technical assistance with climate mitigation have concerned energy. The Green Climate Fund (GCF), established at the 2010 Cancun COP, has a mandate to provide finance for climate mitigation and for ‘capacity-building and technology development and transfer’ in developing countries. Most of the Green Climate Fund’s initial investments concern

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73 Annual report of the Executive Board of the clean development mechanism to the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, FCCC/KP/CMP/2015/5, 12 November 2015, para. 8.
74 Ibid para. 11.
75 UNFCCC, ‘Technology Mechanism’ <http://unfccc.int/ttclear/templates/render.cms_page?TEM_home>.
76 UNFCCC, ‘Climate Finance’ <http://unfccc.int/cooperation_and_support/financial_mechanism/items/2807.php>.
77 Climate Technology Centre and Network <http://www.ctc-n.org>.
78 The Cancun Agreements, para. 123.
79 CTCN, ‘Progress Report: January 2014–August 2015’ (2015) available at <https://www.ctc-n.org/sites/www.ctc-n.org/files/ctcn_progressreport_final.pdf>, 26.
80 UNFCCC Decision 3/CP.17, ‘Launching the Green Climate Fund, Annex: Governing instrument for the Green Climate Fund’ (15 March 2012) UN Doc FCCC/CP/2011/9/Add.1, paras 37–38.
climate projects which are not focused on renewable energy.\textsuperscript{81} However, as the GCF’s Board’s ‘strategic vision’ includes ‘financing innovative projects and programmes, inter alia supporting the application and dissemination of cutting-edge climate technologies’,\textsuperscript{82} there is scope for the GCF to play a significant role in the governance of renewables.

D. Climate governance following the entry into force of the Paris Agreement

In 2011, nations agreed to adopt by 2015, ‘a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties’, to come into effect from 2020.\textsuperscript{83} The resulting Paris Agreement was adopted in December 2015 at COP 21. Significantly, the Paris Agreement departs from a differentiation of countries on the basis of the Convention’s annexes in favour of a differentiation between ‘developed’ and ‘developing’ countries ‘in the light of different national circumstances’.\textsuperscript{84} The Agreement will enter into force following ratification by ‘at least 55 Parties to the Convention accounting in total for at least an estimated 55 percent of the total global greenhouse gas emissions’.\textsuperscript{85} This happened in November 2016.

The adoption of the Paris Agreement is a major development in the global governance of renewable energy. Meeting the Agreement’s long-term goal of restricting the global average temperature increase to ‘well below 2°C above pre-industrial levels’, while ‘pursu[ing] efforts to limit the temperature increase to 1.5°C’,\textsuperscript{86} and ‘achiev[ing] a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century’,\textsuperscript{87} will require significant increases in renewable energy generation.

Nationally determined contributions (NDCs) are central to the post-2020 climate change mitigation architecture. NDCs are targets and action plans for climate mitigation and adaptation defined by individual countries.\textsuperscript{88} Under the Paris Agreement, developed countries should undertake ‘economy-wide absolute emission reduction targets’, while developing countries should ‘continue enhancing their mitigation efforts, and are encouraged to move over time towards...
economy-wide emission reduction or limitation targets in the light of different national circumstances'. The Paris Agreement requires each country to communicate an NDC every five years, and should be more ambitious than the previous one. Parties’ obligations to communicate and account for their NDCs are set out in Article 4 of the Agreement. A ‘global stocktake’ held every five years, beginning in 2023, will assess progress in implementing the Agreement and ‘shall inform Parties in updating and enhancing’ their national actions and international cooperation.

Most countries submitted the first iteration of their climate plans to the UNFCCC Secretariat in the course of 2015, in the form of Intended Nationally Determined Contributions (INDCs). These plans highlight the pledge-and-review model’s indirect but significant impact on the regulation of renewables at the national level. The UNFCCC Secretariat’s report, analysing 119 INDCs, found that ‘[r]enewable energy was highlighted in many INDCs’, which nominated actions including feed-in tariffs and investment in renewable generation and grid infrastructure. For example, China has pledged to increase the share of non-fossil fuels in primary energy production to around 20 per cent. India has set a target of about 40 per cent of accumulated electric power installed capacity to be drawn from non-fossil fuel based energy sources. ‘A few’ parties included ‘quantified renewable energy targets’ in their INDCs, the most ambitious of which aim for 100 per cent renewable electricity generation. According to the report, the necessity to communicate INDCs changed national policy processes, or example, resulting in the ‘establishment of new institutional arrangements and consultation processes’. The report concludes:

National political and institutional processes have been partly influenced by the invitation for Parties to communicate their INDCs. While INDCs may have served as a catalyst for the consolidation and enhancement of climate-related policies in a few

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89 Paris Agreement, Art. 4(4).
90 Paris Agreement, Art. 4(9).
91 Paris Agreement, Art. 4(3).
92 Paris Agreement, Art. 14.
93 Such INDCs satisfy the obligation for countries to communicate a first NDC. Paris Agreement, para. 22.
94 Sander Chan and others, ‘Reinvigorating International Climate Policy: A Comprehensive Framework for Effective Nonstate Action’ (2015) 6 Global Policy, 466.
95 UNFCCC, ‘Synthesis Report on the Aggregate Effect of the Intended Nationally Determined Contributions: Note by the Secretariat (30 October 2015) UN Doc FCCC/CP/2015/7, para. 154.
96 Enhanced Actions on Climate Change: China’s Intended Nationally Determined Contributions, (Unofficial Translation), available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/China/1/China's%20INDC%20-%20on%2030%20June%202015.pdf>, 5.
97 India’s Intended Nationally Determined Contribution: Working Towards Climate Justice, <http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf>, 29.
98 Synthesis report on the aggregate effect of the intended nationally determined contributions: Note by the secretariat, para. 154.
99 Ibid. para. 162.
countries, in many it has represented an incentive to initiate them. In general, it can be argued that the realities of policy development and of social acceptance related to the preparation of the INDCs provide the grounds for increased action in the future.\footnote{Ibid para. 227.}

The EU’s INDC commits to a ‘binding target of an at least 40 per cent domestic reduction in greenhouse gas emissions by 2030 compared to 1990’.\footnote{Submission by Latvia and the European Commission on behalf of the European Union and its Member States, 6 March 2015, para. 3, available at <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Latvia/1/LV-03–06-EU%20INDC.pdf>.} The EU has announced that, in order to facilitate this outcome, ‘the ETS is to be reformed and strengthened’.\footnote{2030 climate & energy framework, <http://ec.europa.eu/clima/policies/strategies/2030/index_en.htm>.}

In addition to the mitigation regime built around NDCs, the Paris Agreement provides for increased international cooperation relevant to renewable energy. The Agreement commits nations to ‘strengthen cooperative action on technology development and transfer’, including through the establishment of a ‘technology framework’ to guide the work of the Technology Mechanism.\footnote{Paris Agreement, Art. 10(2)–(4).} The Agreement calls for both the Technology Mechanism and the Financial Mechanism of the UNFCCC to support ‘[a]ccelerating, encouraging and enabling innovation’ of technology,\footnote{Paris Agreement, Art. 10(5).} and the associated COP decision resolves to strengthen the Technology Mechanism and provides a mandate for a variety of related activities.\footnote{Adoption of the Paris Agreement, paras 66–71.} Article 6 of the Agreement provides for a market mechanism for countries to cooperate on emissions reductions, which may be expected to build on the experience of the Clean Development Mechanism.\footnote{‘The use of internationally transferred mitigation outcomes to achieve nationally determined contributions under this Agreement shall be voluntary and authorized by participating Parties’. Paris Agreement, Art. 6(3).} By embedding national climate policies in five-yearly processes of international stocktakes and NDC submissions, the Paris Agreement sets up an iterative interaction between the public international law framework of the UNFCCC and national (and EU) policy making. This is likely to strengthen the influence of the UNFCCC on the development of EU regulation, while the peer-review process may encourage regulatory learnings between the EU and other parties to the UNFCCC.

### III. International energy organizations and multi-stakeholder partnerships in the governance of renewables

As significant as the UNFCCC has proven to be in spurring the development of renewables in order to mitigate climate change, a broad array of other
international organizations and multi-stakeholder partnerships have also contributed to the governance of renewables. Many of these instruments take the form of ‘soft law’. Indeed, the prominence of non-binding transnational renewable energy initiatives recalls the major role played by ‘soft law’ in the elaboration of international environmental law. The nature of the renewable initiatives of this institutional landscape prompts a number of questions for legal research discussed in greater detail at the end of this article, including investigations into the relationship between transnational (voluntary) initiatives and policy making and regulatory change in participating countries.

A. The International Energy Agency

The International Energy Agency (IEA) was formed in 1974 to coordinate the response of oil importers to major disruptions in the supply of oil. With membership requirements including membership of the Organization for Economic Cooperation and Development (OECD) and a ninety-day reserve of crude oil or product equivalent, the twenty-nine-member organization has traditionally focused on fossil fuels. In recent years, the IEA has expanded its work on lower-emission energy sources. In 2015, the IEA’s Executive Director declared that ‘[t]he biggest story [in the World Energy Outlook] is in the case of renewables. It is no longer a niche. Renewable energy has become a mainstream fuel, as of now’. The IEA regularly produces publications on renewable energy, energy efficiency, and climate change and has developed a set of ‘technology roadmaps’ for low-carbon energy, among other initiatives. The IEA also enables cooperation among IEA members and non-members on renewable energy research, development and deployment through the IEA Technology Collaboration Programmes. Thus far, a major IEA contribution concerning renewables has been as an influential thought-leader. For instance, the IEA’s World Energy Outlook 2016 will include a special report on renewable...

107 For an overview of ‘soft law’ in international law, see Dinah Shelton, ‘Soft Law’ in David Armstrong (ed.), Routledge Handbook of International Law (Abingdon: Routledge, 2009) 68–80; T Meyer, ‘Shifting Sands: Power, Uncertainty and the Form of International Legal Cooperation’ (2016) 27 European Journal of International Law, 161–85.

108 Sumudu Atapattu, ‘International Environmental Law and Soft Law: A New Direction or a Contradiction?’ in Cecilia M Bailliet (ed.), Non-State Actors, Soft Law and Protective Regimes: From the Margins (Cambridge: Cambridge University Press, 2012) 200.

109 Damian Carrington, ‘Renewable energy made up half of world’s new power plants in 2014: IEA’ The Guardian (10 November 2015) available at <http://www.theguardian.com/environment/2015/nov/10/renewable-energy-made-up-half-of-worlds-new-power-plants-in-2014-iea>.

110 See International Energy Agency, ‘Renewables’ <http://www.iea.org/topics/renewables/>.

111 Ibid, Renewable Energies and Hydrogen, IEA Technology Collaboration Programmes.

112 For further details on renewables and the IEA, see <http://www.iea.org/topics/renewables/>.

113 ‘The annual World Energy Outlook (WEO) is now the world’s most authoritative source of energy market analysis and projections, providing critical analytical insights into trends in energy demand and supply and what they mean for energy security, environmental protection and economic development.’ See <http://www.worldenergyoutlook.org/aboutweo/>.
energy, stemming from recommendations of the IEA Renewable Energy Working Party. The new prominence of renewables in the IEA’s work can be expected to inform IEA influence over the development of energy law and regulation in its (mostly European) member states.

B. The International Renewable Energy Agency

IRENA was established in 2011, following agreement in 2009, to ‘promote the widespread and increased adoption and the sustainable use of all forms of renewable energy’. As of October 2016, and after five years of existence, IRENA had 149 members with an additional 27 states in the process of accession, with activities taking place in 90 countries around the world. IRENA supports member states in their adoption of renewables, including through the provision of data and publications, collaborations with member states and groups of countries on policy and market development and a concessional finance programme. As a young institution, IRENA has increased its impact through collaboration with other intergovernmental processes.

IRENA is an intergovernmental organization which purports to support countries in their transition to a sustainable energy future. The organization serves as the main platform for international cooperation as well as being a centre of policy, technology, resources, and financial knowledge on renewable energy. IRENA’s main goal is to foster the widespread adoption and sustainable use of renewable energy (such as bioenergy, geothermal, hydropower, ocean, solar, or wind energy) in the quest towards sustainable development, energy access, energy security, and low-carbon economic growth and prosperity.
The main global energy challenge for IRENA is to promote the global use of renewable energy. According to the latest available data issued by the IEA, fossil fuels accounted for 81.7 per cent of the world’s total energy mix, whilst renewable energy sources accounted for a meagre 13.5 per cent of the global energy mix in 2012. Along with climate change mitigation, promoting sustainable development is a vital global energy challenge. In that sense, ‘the only way forward is to increase access to energy for all—but energy that is clean, efficient, and renewable. Continuing in the current vein is not an option’. 

The future of renewable energy will largely depend on a wide variety of factors, including elevated prices of fossil fuels, price reduction of many renewable technologies, and the enhancement of these technologies in order to make them more efficient. IRENA is carving out a role for itself as the major advocate of this longed-for transition towards a cleaner energy mix. It is doing so, inter alia, by facilitating a wealth of information, which enables investors to determine where different types of renewable energy projects are most feasible, as well as by drafting initiatives and contributing financially to these projects.

In spite of the large consensus on the need to urgently tackle climate change by shifting from highly polluting fossil fuels to renewable energy, the heavy economic strain of such a conversion prevents global leaders from taking decisive steps in that direction. The need to make renewable energy economically profitable has been recognized by IRENA Director-General, Adnan Amin, who observed that

The way we are positioning the whole renewable energy case is not only about climate change. That’s not going to sell renewable energy. What’s going to sell renewable energy is if there’s a business case for it. If there is a case for investment, if investors are going to make money on renewables, if countries are going to benefit economically and if it’s going to generate employment.

Thus, regrettably enough, it would appear that the recognition of climate change as the greatest environmental threat to humankind is not a sufficient
incentive on its own to spur renewable energy usage worldwide. Moving forward, the promotion of renewables will therefore have to be reconciled with economic objectives.

In June 2014, IRENA developed a global renewable energy roadmap, which pursues the ambitious objective of doubling the share of renewables in the global energy mix by 2030.130 Even though the roadmap concedes that only a few countries have explicit policies to promote renewables in the manufacturing sector, the overall tone of the document remains optimistic as it suggests that existing and future renewable energy expansion projects will increase the share of renewables by 21 per cent by 2030.131 Moreover, linking economic as well as social benefits with the promotion of renewables, IRENA estimated that, in 2013, up to 6.5 million jobs stemmed from the renewable energy sector with a promising trend expected for the following years and with solar and wind energy leading the way as the most dynamic renewable energy technologies.132 The main employers were China, Brazil, the USA, India, Germany, Spain, and Bangladesh.133

The focus of IRENA’s current projects is mainly on developing countries, especially emerging markets in Asia and Africa, as these appear to be the most fertile environments to promote the use of renewables.134 This is because these countries are at a relatively early stage in terms of infrastructure and, in some cases, have an urgent need to tackle pollution.135 Thus, rapidly developing countries, such as Nigeria, are confronted with the dilemma of adopting a myopic mindset by further investing in fossil fuels, with the detrimental consequences this entails for the environment, versus taking effective steps towards the transition to a more sustainable energy mix.

In January 2015, IRENA and the Abu Dhabi Fund for Development announced that they would provide USD57 million under the Project Facility to finance renewable energy projects scattered all over the world.136 This is the second loan cycle of seven, which together will commit USD350 million over seven years to the deployment of renewable energy in developing countries. In particular, the loans of the second cycle will go to projects in a geographically diverse set of countries, including Argentina, Cuba, Iran, Mauritania, and St Vincent and the Grenadines. The projects to be financed in this cycle have a combined total capacity of 35 megawatts, bringing reliable and sustainable

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130 IRENA, “Renewable Energy in Manufacturing: A technology roadmap for REmap 2030” p. 3, 2014, available at <http://irena.org/remap/REmap%202030%20Renewable-Energy-in-Manufacturing.pdf>.
131 Ibid.
132 IRENA, ‘Renewable Energy and Jobs: Annual Review 2014’ p. 2, available at <http://www.irena.org/publications/rejobs-annual-review-2014.pdf>.
133 Ibid.
134 Fitch (n 126).
135 Ibid.
136 IRENA, ‘IRENA and ADFD Bring Renewable Power to 280,000 in Many Rural Communities’ (18 January 2015) <http://www.irena.org/News/Description.aspx?NType=A&mnu=cat&PriMenuID=16&CatID=84&News_ID=388>.
power to more than 280,000 people in rural communities that lack access to modern energy services. Projects approved for funding in the previous cycle have sponsored solar, hydropower, biomass, wind energy, and hybrid projects in Ecuador, the Maldives, Mali, Mauritania, Samoa, and Sierra Leone.138

Over the past few years, subsidies directed at promoting renewable energy have notably increased. According to the IEA, increasing renewable subsidies to USD250 billion could result in a range of positive outcomes; for instance, wind energy could become competitive by 2020 in the EU and by 2030 in China, and up to 3.4 gigatons of energy-related CO₂ could be contained.142

Arguably, any measure which promotes renewables would be beneficial for EU energy security. It is encouraging to observe that the EU captures 60 per cent of the global market share in wind energy. If the EU manages to keep investing in renewables to maintain its privileged position in this particular energy sector, this could empower it to invest in technologies such as up-to-date energy grids and enable the export of cutting-edge technologies by means of trade and bilateral cooperation agreements. In other words, the global increase in renewable energy in the total world energy mix is to be welcomed as this is a very dynamic and promising sector in which the EU already enjoys an advantaged position.

Were the global markets for renewable energy to experience such a surge, and the EU to effectively accomplish its ambitious goals in this field, it is safe to say that the EU’s influence in the international energy arena would grow. The EU enjoys technologically world-class companies that could greatly benefit from exporting vanguard renewable technologies, which are increasingly in vogue in countries that are major greenhouse gas emitters such as

137 Ibid.
138 See IRENA, ‘Round Three of US$350 Million IRENA-ADFD Renewable Energy Funding Cycle Opens’ (7 December 2014), <http://www.irena.org/News/Description.aspx?NType=A&mnu=cat&PriMenuID=16&CafId=84&News_ID=382>.
139 See for instance R Leal-Arcas and A Filis, ‘Certain Legal Aspects of the Multilateral Trade System and the Promotion of Renewable Energy’ (2014) Queen Mary University of London School of Law Legal Studies Research Paper No. 166/2014, 9.
140 International Energy Agency, World Energy Outlook 2011 Factsheet (at 6), available at <http://www.worldenergyoutlook.org/media/weoweb/factsheets/factsheets.pdf>.
141 Ibid.
142 Ibid.
143 European Commission, ‘Communication from the Commission to the European Council and the European Parliament: An energy policy for Europe’ SEC (2007) 12, COM(2007) 1 final, 4, available at <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=URISERV:127067&lang=EN>.
144 R Leal-Arcas and J Schmitz, ‘Unconventional Energy Sources and EU Energy Security: A Legal, Economic and Political Analysis’ (2014) 12 Oil, Gas & Energy Law Journal, 1–37 at 3–4.
145 More concretely, the EU’s commitment to increase the share of renewables in the EU’s final energy consumption to 27 per cent by 2030. See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, ‘A policy framework for climate and energy in the period from 2020 to 2030’ COM (2014) 15 final, 5. For an analysis, see D Buchan and M Keay, ‘The EU’s new energy and climate goals for 2030: under-ambitious and over-bearing?’ The Oxford Institute for Energy Studies, 2014, available at <http://www.oxfordenergy.org/wpcms/wp-content/uploads/2014/01/The-EUs-new-energy-and-climate-goals-for-2030.pdf>.
China. In short, while IRENA can directly shape neither public international nor EU law, its programmes and advocacy work to improve the conditions for pro-renewable regulation in both domains.

C. Multi-stakeholder partnerships (MSPs)

Alongside international organizations, transnational cooperation on renewable energy is also taking place through multi-stakeholder partnerships, both within and beyond the UN system. Multi-stakeholder partnerships emerged as a tool of governance at the 2002 World Summit on Sustainable Development (WSSD). Defined as ‘collaborations between national or sub-national governments, private sector actors and civil society actors, who form voluntary transnational agreements in order to meet specific sustainable development goals’, multi-stakeholder partnerships were introduced in the WSSD to complement rather than supplant intergovernmental agreements.

One such MSP is the Renewable Energy Policy Network for the 21st Century (REN21), a self-described ‘coalition of the willing’ with the aim of facilitating a global transition to renewable energy. REN21 is based within UNEP and its members include industry associations (e.g., the Clean Energy Council), international organizations (e.g., the International Energy Agency), NGOs (e.g., Greenpeace), science and academia, and national governments. REN21 produces reports and organizes forums and conferences on renewable energy.

Other multi-stakeholder partnerships relevant to renewables include the Sustainable Energy for All (SE4All) Initiative, launched by the UN Secretary-General in 2011. Its aims include doubling renewables’ share of the global energy mix by 2030, and the Technology Facilitation Mechanism introduced as part of the Post-2015 Development Agenda. Further
partnerships were announced at the 2015 Paris climate change conference. One such, Mission Innovation, launched by twenty countries and the Breakthrough Energy Coalition of major investors, aims for each participating country to ‘double its governmental and/or state-directed clean energy research and development investment over five years’. These twenty countries aim to reinvigorate and accelerate clean energy innovation throughout the world to make clean energy affordable for all. The Breakthrough Energy Coalition partners commit to investing ‘patient capital at unprecedented levels into early-stage technology development into participating countries’. Multi-stakeholder partnerships have become established as a means of cooperation among United Nations System organizations and other entities on various elements of sustainable development, including low-emissions energy—rather serving as alternatives to ‘traditional’ international organizations. Research has identified significant limitations to the output of many multi-stakeholder partnerships, alongside proposals to improve partnership governance.

The processes of EU regulatory development and implementation—typically requiring input from multiple actors—create institutional competences that are transferable to work through MSPs. EU institutions have been active participants in relevant MSPs (e.g. the European Commission is a member of REN21 and is in the process of joining Mission Innovation). Indeed, MSPs can be seen as an example of the broader adoption of forms of multi-level governance innovated in the EU.

IV. Renewable energy: The Sustainable Development Goals and multilateral development banks

Renewables governance is not confined to international organizations and initiatives concerned primarily with climate change or energy. As energy is

stakeholders and will be composed of a United Nations inter-agency task team on science, technology and innovation for the sustainable development goals, a collaborative multi-stakeholder forum on science, technology and innovation for the sustainable development goals and an online platform’. UNGA, ‘Draft resolution submitted by the President of the General Assembly: Addis Ababa Action Agenda of the Third International Conference on Financing for Development’ (23 July 2015) UN Doc A/69/L.82, Annex, para. 123.

154 <http://mission-innovation.net/countries/>.
155 The Breakthrough Energy Coalition is a new initiative of visionary billionaires determined to provide energy that is reliable, affordable, and carbon-less. See Breakthrough Energy Coalition <http://www.breakthroughenergycoalition.com/en/index.html>.
156 Mission Innovation: Accelerating the Clean Energy Revolution, ‘Joint Launch Statement’ p 1 <http://www.mission-innovation.net/wp-content/uploads/2015/11/Mission-Innovation-Joint-Launch-Statement.pdf>.
157 Ibid 2.
158 Philipp Pattberg and Oscar Widerberg, ‘Transnational Multistakeholder Partnerships for Sustainable Development: Conditions for Success’ (2016) 45 Ambio, 42.
The SDGs were adopted by the UN General Assembly in 2015 as the centerpiece of the 2030 Agenda for Sustainable Development. 160 Like their predecessors, the Millennium Development Goals (MDGs), the SDGs are a broad set of targets for the international community to meet over a fifteen-year period. The SDGs cannot compel states to act but can be expected to strongly influence policy and planning in many states, as well as guiding the activities of the UN development system and other organizations engaged in development work. While energy was not featured in the MDGs, 161 the SDGs include goals on both energy and climate change. SDG 7 is to ‘[e]nsure access to affordable, reliable, sustainable and modern energy for all’. Target 7.2 encourages states to, ‘[b]y 2030, increase substantially the share of renewable energy in the global energy mix’. Target 7.a calls on states to ‘enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy . . . and promote investment in energy infrastructure and clean energy technology’. Unlike the MDGs, the SDGs apply universally, both to developed as well as developing countries. 162 Achieving the SDGs will therefore require domestic action, regional cooperation within the EU, in addition to development assistance from the EU to developing states.

Support for renewables has also been integrated into development governance through the financing and other programmes of multilateral development banks. The World Bank Group has provided $21 billion for energy efficiency and renewable energy projects since 2010, out of a total of $49 billion in World Bank

159 Global Green Growth Institute, ‘Overview’ <http://gggi.org/about-gggi/background/organizational-overview/>

160 UNGA, ‘Resolution adopted by the General Assembly on 25 September 2015: 70/1 Transforming our world: the 2030 Agenda for Sustainable Development’ (21 October 2015) UN Doc A/RES/70/1.

161 For an overview of the limited engagement with renewable energy in the development of the Rio Principles and subsequently the MDGs, see Marco Citelli, Marco Barassi, and Ksenia Belykh, ‘Renewable Energy in the International Arena: Legal Aspects and Cooperation’ (2014) 2 Groningen Journal of International Law, 1, 1ff.

162 Resolution adopted by the General Assembly on 25 September 2015, 70/1. Transforming our world: the 2030 Agenda for Sustainable Development, A/RES/70/1, 21 October 2015, para. 5.
Group energy financing. Financing for renewable energy projects is also provided by regional development banks to their member states. As with other international organizations, development banks have been prominent players in multi-stakeholder partnerships and other networks concerned with renewable energy. For example, the World Bank co-leads the SE4All Initiative.

Further support for renewables may be provided by the two development banks recently established by major emerging economies. In March 2013, the five ‘BRICS’ nations (Brazil, Russia, India, China, and South Africa) agreed to establish a ‘New Development Bank for mobilizing resources for infrastructure and sustainable development projects in BRICS and other emerging economies and developing countries’. In late 2015, India’s Prime Minister reportedly stated that the New Development Bank would soon finance its first renewable energy project, ‘preferably, in the territory of the BRICS’. Moreover, the Asian Infrastructure Investment Bank was established in 2014, as an initiative of the Chinese government and with fifty-seven ‘Prospective Founding Members’. The Bank’s draft Environmental and Social Framework, released for consultation in 2015, states that the Bank ‘aims to build upon existing green economic growth initiatives in Asia, and to provide support for new ones at the national and subnational level and within the private sector . . . [and] encourages renewable energy’. These initiatives are indicative of the mainstreaming of climate change imperatives, including expanding the use of low-emissions energy sources, in development governance.

As renewable energy is one of the 17 SDGs, the role of multilateral development banks in helping achieve this goal is crucial.

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163 The World Bank, ‘Energy: Projects & Programs’ <http://www.worldbank.org/en/topic/energy/projects>.
164 The Asian Development Bank investment $2.4 billion in clean energy projects in 2014. The Bank has issued clean energy bonds, raising over $820 million since 2010. Asian Development Bank, ‘ADB Clean Energy Bonds 2015’ (November 2015) <http://www.adb.org/publications/adb-clean-energy-bonds-brochure>.
165 The World Bank, ‘Energy: Overview’ <http://www.worldbank.org/en/topic/energy/overview>.
166 The World Bank, ‘Fifth BRICS Summit Declaration and Action Plan’ (BRICS 2013, 27 March 2013) <http://www.brics5.co.za/fifth-brics-summit-declaration-and-action-plan/>.
167 The World Bank, ‘BRICS New Development Bank to finance its first renewable energy project — Indian PM’ TASS (15 November 2015) <http://tass.ru/en/economy/836623>.
168 The World Bank, ‘50 Countries Sign the Articles of Agreement for the Asian Infrastructure Investment Bank’ (Asian Infrastructure Investment Bank, 29 June 2015) <http://www.aiib.org/html/2015/NEWS_0629/11.html>.
169 Asian Infrastructure Investment Bank (AIIB), ‘Consultation Draft: Environmental and Social Framework’ (3 August 2015) <http://www.aiib.org/uploadfile/2015/0907/20150907061253489.pdf>, para. 17.
V. High-level political steering on renewable energy: The G7 and G20

As climate change has become one of the highest-profile international challenges, renewable energy has been included on the agendas of multilateral leaders’ meetings.\textsuperscript{170} Arguably two of the most prominent such meetings are the Group of seven major industrialized economies (G7) and the Group of twenty major economies (G20). At their 2015 summit, G7 leaders called for ‘decarbonisation of the global economy over the course of this century’ and committed to ‘developing and deploying innovative technologies striving for a transformation of the energy sectors by 2050’, as well as to ‘accelerat[ing] access to renewable energy in Africa and developing countries in other regions’.\textsuperscript{171} The G20, which was upgraded to a heads of state and government meeting during the 2007–08 financial crisis, has also developed voluntary principles and programmes which promote renewables.\textsuperscript{172} Ultimately, the common positions reached by the world’s largest economies can influence subsequent negotiations between much larger groups of states. For example, the G7’s June 2015 call for decarbonization during this century was followed by the 196-party UNFCCC COP’s articulation of its aim ‘to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century’.\textsuperscript{173}

Political leadership (be it in the context of the G7 or G20) will be necessary for renewable energy to gradually become a more prominent source of energy.

VI. International trade law and renewable energy

The trading system can help enhance sustainable energy and, therefore, decarbonize the economy.\textsuperscript{174} Since time immemorial, trade has played a role in

\textsuperscript{170} See eg, G8 Gleneagles 2005, ‘Gleneagles Plan of Action: Climate Change, Clean Energy and Sustainable Development’ <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48584/gleneagles-planofaction.pdf>.
\textsuperscript{171} G7 Germany, ‘Leaders’ Declaration, G7 Summit, 7–8 June 2015’ <https://www.g7germany.de/Content/EN/_Anlagen/G7/2015–06–08-g7-abschluss-eng_en.html>.
\textsuperscript{172} G20 Australia 2014, ‘G20 Principles on Energy Collaboration’ (16 November 2014) <http://www.g20australia.org/sites/default/files/g20_resources/library/g20_principles_energy_collaboration.pdf>; G20 Turkey 2015, ‘G20 Toolkit of Voluntary Options for Renewable Energy Deployment’ (2015) <http://www.mofa.go.jp/files/000111176.pdf>; G20 Turkey 2015, ‘G20 Energy Access Action Plan: Voluntary Collaboration on Energy Access’ (2015) <http://www.mofa.go.jp/files/000111173.pdf>.
\textsuperscript{173} Paris Agreement, Art. 4(1).
\textsuperscript{174} For policy suggestions, see D Esty, ‘A proposed G20 initiative for the international trade and investment regimes on sustainable development and climate change’ E15 Initiative, Geneva: International Trade and Sustainable Development and the World Economic Forum, 2016; R
foreign relations and societal advancement. In spite of being a controversial figure, trade has had many positive impacts on the sustainability agenda, as mandated by the preamble to the WTO Agreement. In fact, trade law has been a very powerful instrument for change. Let me give you three examples.

1. poverty reduction;
2. access to medicines; and
3. the protection of human rights.

So why not use trade law as a novel tool to mitigate climate change?

Today, around 80% of the global energy supply comes from fossil fuels. Fossil fuels contribute to climate change and are finite, which leads to energy insecurity. Renewable energy can help here in that it is cleaner than fossil fuels. It also helps towards energy independence and therefore enhances energy security. Trade law could be used as a vehicle to achieve this goal.

We stand to achieve considerable gains when trade law becomes a tool for change. Our hypothesis is that trade law can be a tool to help mitigate climate change and enhance energy security. And it is well known that, thanks to trade, countries grow economically. Hence, the triple benefit of trade (see Figure 1). What is needed is to fill the theoretical and empirical gap for how trade law can help mitigate climate change. As a result of this knowledge gap, we have missed crucial opportunities for cooperation between trade and climate change. Let me give you an example.

In the 1990s, two major agreements were concluded (one on climate change—the United Nations Framework Convention on Climate Change—and one on international trade—the World Trade Organization (WTO) Agreement). The WTO Agreement only briefly mentions in its preamble the importance of sustainable development in the context of international trade. I argue this was a missed opportunity for trade law to play a bigger role in mitigating climate change.

In 2015, a new global climate agreement came into existence—the Paris Agreement on Climate Change—which does not even mention the term ‘trade.’ These are examples of missed opportunities to cooperate between the trade and climate regimes.

Howse, ‘World Trade Law and Renewable Energy: The Case of Non-tariff Measures’ (2006) 3 Journal for European Environmental Planning Law, 500–18.

175 World Energy Council, “World Energy Council report confirms global abundance of energy resources and exposes myth of peak oil,” available at https://www.worldenergy.org/news-and-media/press-releases/world-energy-council-report-confirms-global-abundance-of-energy-resources-and-exposes-myth-of-peak-oil/.

176 Leal-Arcas, R. “How governing international trade in energy can enhance EU energy security,” Renewable Energy Law and Policy Review, Vol. 6(3), pp. 202–219, 2015.
Our vision is that we can use trade law as a vehicle not only for climate action and energy security, but for many of the sustainable development goals. Currently, the governance of trade and renewable energy is fragmented, with many institutions and legal instruments. There is insufficient research on how the trade and renewable energy regimes can cooperate.

Our hypothesis is that greater cooperation will lead to climate change mitigation and energy security. In this sense, identifying the gaps and opportunities for cooperation between these two regimes is crucial to have the basis for a new normative framework on how the trading system can help mitigate climate change and enhance energy security.

How can the trading system help? There are very few trade agreements with sustainable development chapters. Moreover, there is a lack of scholarship that can inform practice. Our hypothesis is that trade agreements can be a vehicle to address common concerns.

The concept of using the trading system to mitigate climate change and enhance energy security will transform our understanding of trade in the context of environmental protection. It will shift the current paradigm from trade as a major cause of environmental harm to trade as a tool for environmental protection.

The sections above concern bodies of international law, and international processes, which explicitly or implicitly promote renewable energy. It is also important to remember that renewables are subject to, and may be constrained by, other bodies of international law, such as trade law. At least 18 per cent of...

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177 See for instance R Leal-Arcas and A Filis, ‘Renewable energy disputes in the World Trade Organization’ (2015) 13 Oil, Gas and Energy Law Journal, 1–51; R Leal-Arcas, C Grasso, and J...
trade between WTO members involves energy goods. While there is no multilateral trade agreement specific to renewable energy, renewables are subject to the general principles of non-discrimination in trade, which are binding on the 164 members of the WTO. WTO law requires states to abide by the non-discrimination principles of most-favoured nation and national treatment. A number of exceptions to the non-discrimination principles are provided in the General Agreement on Tariffs and Trade (GATT) and other WTO Agreements. Recent years have seen a number of WTO disputes in which states have alleged that WTO members have breached their WTO obligations by favouring domestic renewable energy firms. As states continue to increase policy and financial support for renewables, often with the support of organizations and programmes discussed above, WTO and related trade disciplines have the potential to emerge as a key tension between international environmental and economic law.

Unlike the WTO regime, there are elements of regional and ‘mega-regional’ trade agreements that specifically address renewable energy. An example is the Trans-Pacific Partnership (TPP), which was agreed in 2015 and covers twelve Pacific Rim states, which collectively account for almost 40 per cent of the global economy. The environment chapter of the TPP calls for parties to

Alemany Rios, ‘Multilateral, regional and bilateral energy trade governance’ (2015) 6 Renewable Energy Law and Policy Review, 38–87; R Leal-Arcas and A Filis, ‘Legal Aspects of the Promotion of Renewable Energy within the EU and in Relation to the EU’s Obligations in the WTO’ (2014) 5 Renewable Energy Law and Policy Review, 3–25; R Leal-Arcas and A Filis, ‘Certain legal aspects of the multilateral trade system and the promotion of renewable energy’ in CL Lim, and B Mercurio, (eds), International Economic Law after the Global Crisis: A Tale of Fragmented Disciplines (Cambridge: Cambridge University Press, 2015) 482–518.

Rafael Leal-Arcas, Andrew Filis, and Ehab Abu Gosh, International Energy Governance: Selected Legal Issues (Cheltenham: Edward Elgar, 2014) 36. On subsidies for renewables in the WTO context, see Tr Meyer, ‘Energy subsidies and the World Trade Organization’ (2013) 17 ASIL Insights.

For the WTO membership as of July 2016, see WTO, ‘Members and Observers’ <https://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm>.

WTO, ‘Principles of the Trading System’ <https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm>.

See eg, Articles XX and XXI of the General Agreement on Tariffs and Trade (GATT) and Article XIV of the General Agreement on Trade in Services. For a discussion of GATT disciplines as they relate to energy, see Francis N Botchway, ‘International Trade Regime and Energy Trade’ (2001) 28 Syracuse Journal of International Law and Commerce, 1. WTO law does provide for the differential treatment of developing countries in certain circumstances. For an overview, see Ellen Hey, ‘Common but Differentiated Responsibilities’ in Max Planck Encyclopedia of Public International Law (Oxford: Oxford University Press, 2011).

Canada—Certain Measures Affecting the Renewable Energy Generation Sector—Report of the Appellate Body (6 May 2013) WT/DS412/AB/R; Canada—Measures Relating to the Feed-in Tariff Program—Report of the Appellate Body (6 May 2013) WT/DS426/AB/R; China—Measures Concerning Wind Power Equipment—Request for Consultations (6 January 2011) WT/DS419/1; US—Countervailing Duty Measures on Certain Products from China—Report of the Appellate Body (18 December 2014) WT/DS437.

Office of the United States Trade Representative, ‘Overview of the Trans Pacific Partnership’ <https://ustr.gov/tpp/overview-of-the-TPP>.
cooperate on the ‘development of cost-effective, low-emissions technologies and alternative, clean and renewable energy sources’.

VII. Renewable energy and the EU: The quest for clean and secure energy

The EU’s commitment to renewable energy is currently the most ambitious in any region of the world. The EU’s approach to renewables and decarbonization is relevant to international renewable governance in that it serves as a pilot project and may lead the way in renewables. By doing so, renewables help enhance energy security and clean energy in the EU and beyond. It is for this reason that we have chosen to include a section on the role that the EU plays regionally in clean and secure energy via renewable energy.

The term renewable energy sources has been legally defined within the EU context. Its content is defined in the following EU Directives:

- Directive 2001/77/EC on the Promotion of Electricity Produced from Renewable Energy Sources in the Internal Electricity Market offers the following definition: “renewable energy sources” shall mean renewable non-fossil energy sources (wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases);186
- Directive 2003/30/EC on the Promotion of the Use of Biofuels or other Renewable Fuels for Transport, while affirming the definition of renewable energy sources as appears in Directive 2001/77/EC, further elaborates on the types of fuels encompassed by the terms ‘biofuels’;187
- Directive 2003/54/EC Concerning Common Rules for the Internal Market in Electricity contains the following definition: “renewable energy sources” means renewable non-fossil energy sources (wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases);188 thus affirming the definition in Directive 2001; and
- Directive 2009/28/EC on the Promotion of the Use of Energy from Renewable Sources (and Amending and Subsequently Repealing Directives 2001/77/EC and 2003/30/EC) (hereinafter ‘the 2009 Directive

184 Trans-Pacific Partnership (TPP), ‘Chapter 20: Environment, Article 20.15: Transition to a Low Emissions and Resilient Economy’. For an analysis, see Rafael Leal-Arcas, ‘Mega-regional and sustainable development: The Transatlantic Trade and Investment Partnership and the Trans-Pacific Partnership’ (2015) 6 Renewable Energy Law and Policy Review, 248–64.
185 Samantha Olz, Ralph Sims, and Nicolai Kirchner, ‘Contribution of Renewables to Energy Security’ (Paris: International Energy Agency, 2007).
186 OJ L 283, 27 October 2001, 33.
187 OJ L 123, 17 May 2003, 42.
188 OJ L 176, 15 July 2003, 37, Art. 2§30.
on Renewable Energy’) affirms at Article 2 the definition in Directive 2003/54/EC: ‘“energy from renewable sources” means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases’. 189

The 2009 Directive on Renewable Energy repealed Directives 2001/77/EC and 2003/30/EC. Therefore, the definitions in it and in the Directive 2003/54/EC become dispositive over questions of what are deemed renewable energy sources within the EU context.

The EU is the first region in the world to set up the ambitious target of decarbonizing its economy by 2050. It currently relies on energy-rich countries for its energy needs and urgently needs to diversify its energy supply, as illustrated by these two facts:

1. The EU imports 53 per cent of its energy; 190 and
2. Six EU countries depend 100 per cent on Russia for their gas. 191

The path towards decarbonization has already been chronologically delineated by the European Commission, through the 2020 Package, 192 the 2030

| Indicator/ Period       | 2020 Package         | 2030 Framework       | 2050 Roadmap         |
|-------------------------|-----------------------|-----------------------|----------------------|
| GHG emissions reduction| 20% below 1990 levels | 40% below 1990 levels | 80–95% below 1990 levels |
| Energy efficiency       | 20% improvement       | 27% improvement       | 27% improvement      |
|                         | compared with a       | compared with a       | compared with a      |
|                         | business-as-usual     | business-as-usual     | business-as-usual    |
|                         | scenario              | scenario              | scenario              |
| Renewable energy        | 20% renewable share   | 27% renewable share   | 27% renewable share  |
|                         | of overall energy     | of overall energy     | of overall energy    |
|                         | consumption           | consumption           | consumption           |

a The European Council endorsed an indicative target of 27 per cent improvement in energy efficiency to be reviewed in 2020, having in mind a 30 per cent target. See European Commission, ‘2030 framework for climate and energy policies’ <http://ec.europa.eu/clima/policies/2030/index_en.htm>.

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189 OJ L 140, 5 June 2009, 27.
190 See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, ‘A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy’ at 2, COM(2015) 80 final (25 February 2015), available at <http://ec.europa.eu/priorities/energy-union/docs/energyunion_en.pdf>.
191 Ibid.
192 The 2020 climate and energy package aims to (1) reduce GHG emissions by 20 per cent from the 1990 levels, with binding national targets; (2) increase the share of EU energy consumption produced from renewable sources to 20 per cent, with binding national targets; and (3) increase
Framework,193 and the 2050 Roadmap. The objectives charted by the 2020 Package have so far been a success story in that not only have they prompted the EU to significantly curb GHG emissions, enhance energy efficiency, and foster the use of renewables, but they have also sustained the employment of more than 4.2 million people in various eco-industries194 and constituted a key driver behind the 45 per cent growth of the European economy in real terms since 1990.195 The Union is well on track, not only to hit its 2020 emissions and renewable targets, but to surpass them fairly easily, whilst it should come close to its efficiency goal.196 But the great expectations arising from this triumphant climate and energy package have been strongly tempered by the growing uncertainties spawned by the new 2030 Framework for climate and energy policies.

Table 1 compares the three decarbonization deadlines (2020, 2030, and 2050) against the three indicators (GHG emissions reduction, energy efficiency, and renewable energy).

Therefore, regarding the reduction of GHG emissions, the 2030 Framework is more ambitious than the 2020 Package. The energy efficiency target under the 2030 Framework is more daring (27 per cent) in comparison with the 20 per cent advocated under the 2020 Package. Nonetheless, it is arguably more flexible in that, not only do national objectives continue to be non-binding, but even the EU target has become ‘indicative’, whereas, under the 2020 Package, it was binding at the EU level. As for the renewable energy target, it is more assertive under the 2030 Framework (27 per cent) in comparison with the 20 per cent advocated under the 2020 Package. That said, it is looser in that, although the EU target remains binding, the national objectives have regressed to become merely voluntary, whereas, under the 2020 Package, they were binding.

Renewable energy has over the years become an increasingly vital requisite when countries, especially in the EU context, consider their energy securities. The reason for this are the traditionally high oil and gas prices as well as political instability in some energy-rich and energy-transit countries, as witnessed, for

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193 The 2030 Framework for climate and energy policies sets (1) a binding EU target of at least 40 per cent cut in GHG emissions below the 1990 level, with binding national objectives; (2) a binding EU target of at least 27 per cent in renewable energy, but non-binding national objectives; and (3) an indicative energy efficiency target of at least 27 per cent, with non-binding national objectives, all by 2030. See <http://ec.europa.eu/clima/policies/2030/index_en.htm> and the Conclusions of the European Council of 24 October 2014 (at 4–5), available at <http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/145397.pdf>.

194 Eurostat, ‘Environmental goods and services sector’ <http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Environmental_goods_and_services_sector>.

195 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: a policy framework for climate and energy in the period from 2020 to 2030, p. 2, COM(2014) 15 final (22 January 2014).

196 Ibid.
example, in the 2006, 2009, and, more recently, 2014 natural gas disputes between Russia and Ukraine. These disagreements have had a negative impact on the EU, as the Russian pipelines that deliver natural gas to the EU run through Ukraine. As a result, when Russia stops the natural gas flow to the Ukraine, it in effect stops it being distributed to the EU. This situation would be a motive to consider other methods to enhance EU energy security.

There are many prospective benefits, motives and aims that can be achieved through the use of renewable energy. Reasons why renewables ought to be encouraged include ‘a reduction in greenhouse gas emissions, the diversification of energy supplies and a reduced dependency on fossil fuel markets (in particular, oil and gas)’. In addition, the progression of such sources could possibly stimulate employment in the EU, through the creation of jobs in new green technologies. Regarding renewable energy in the EU, it is worth evaluating it as an additional (and gradually alternative) mechanism to fossil fuels to enhance energy security and the 2009 Renewables Directive.

A. Promotion of renewable energy

Beyond the creation of oil and gas pipelines, an additional way to enhance EU energy security would be through renewable energy, which is currently an expensive option. The resources certainly exist: Southern Europe is blessed with sunlight, whilst much wind could be utilized in Northern Europe. Therefore, the challenge is to render renewables more enticing. The EU should explore renewables as a long-term mechanism to achieve energy security and subsidies should go to this industry to make it cost-effective.

In January 2014, the European Commission delivered a communication laying out its proposed energy and climate objectives for 2030, including the promotion of renewable energy. The new policy framework sets the target of a 27 per cent rise in the share of renewables in the EU’s final energy consumption by 2030. Indeed, by solely persisting with the current policies, the share of

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197 The European Council endorsed an indicative target of 27 per cent improvement in energy efficiency to be reviewed in 2020, having in mind a 30 per cent target. See European Commission, ‘2030 framework for climate and energy policies’ <http://ec.europa.eu/clima/policies/2030/index_en.htm>.
198 For an analysis of energy-transit issues, see Leal-Arcas, R. ‘Energy Transit Activities: Collection of Intergovernmental Agreements on Oil and Gas Transit Pipelines and Commentary’ (Energy Charter Secretariat, 29 September 2015) <http://www.energycharter.org/what-we-do/trade-and-transit/trade-and-transit-thematic-reports/energy-transit-activities-a-collection-of-intergovernmental-agreements-of-oil-and-gas-transit-pipelines-and-commentary-2015/>.
199 Eurostat, ‘Renewable Energy Statistics’ <http://ec.europa.eu/eurostat/statistics-explained/index.php/Renewable_energy_statistics>.
200 Ibid.
201 European Commission, ‘Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Policy Framework for Climate and Energy in the Period from 2020 to 2030’ (22 January 2014) COM(2014) 15 Final.
renewables is expected to account for 24 per cent of the total energy consumption by 2030.\textsuperscript{202}

As far as the promotion of renewables is concerned, this positive trend is particularly remarkable, with a further and steady rise expected in the coming years. These conspicuous efforts illustrate the EU’s yearning to carve for itself a role as a distinct leader in the field of renewables in an attempt to blaze the path and to spur other sizeable energy actors, such as the USA or China,\textsuperscript{203} to follow suit to reduce GHG emissions worldwide.\textsuperscript{204}

Taking into account the far-reaching advancements that have taken place in Europe in the promotion of renewable energy over the last few years, together with the scientific community’s clamour to swiftly tackle climate change, one may wonder why the European Commission would establish such a relatively moderate target for a, seemingly, decisive juncture. This decision is all the more regrettable inasmuch as it reflects the EU Member States’ lack of eagerness to embark in a more daring enterprise and in that it undermines investors’ confidence in the EU’s engagement in its energy and climate goals.\textsuperscript{205} However, the unbounded intensification of the use of renewables could entail unexpected and adverse repercussions on the energy market, thereby explaining the European Commission’s cautious approach to the matter.

The new 2030 regime will, in the European Commission’s mind, display some revolutionary features and call for a novel structure of European energy governance.\textsuperscript{206} More concretely, the advocated system will be binding exclusively at the EU level (in contrast with the current regime, where national targets are binding) through the collective involvement of EU Member States, thus bestowing on them a greater resilience to meet their energy commitments in accordance with their individual circumstances, energy mixes, and capacity to produce renewable energy.\textsuperscript{207} Regarding the necessary guidance for this advocated model of energy governance to come to fruition, the European Commission envisaged itself as the ultimate monitor, with the necessary powers to appraise and, where necessary, suggest amendments to EU Member States’ national policies on emissions reduction, energy efficiency as well as

\textsuperscript{202} Ibid, at page 2.
\textsuperscript{203} Remarkably, signs that some sort of commitment by the US and China to mitigate climate change already happened at the end of 2014. See Rafael Leal-Arcas and Luigi Carafa, ‘Road to Paris COP21: Towards Soft Global Governance for Climate Change?’ (2014) 5 Renewable Energy Law and Policy Review, 130.
\textsuperscript{204} See generally Rafael Leal-Arcas, Climate Change and International Trade (Cheltenham: Edward Elgar Publishing, 2013) 249–84.
\textsuperscript{205} Buchan, D. and Keay, M. ‘The EU’s New Energy and Climate Goals for 2030: Under-ambitious and Over-bearing?’[2014] The Oxford Institute for Energy Studies 3.
\textsuperscript{206} European Commission, ‘Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Policy Framework for Climate and Energy in the Period from 2020 to 2030’ (22 January 2014) COM(2014) 15 Final. 12–13.
\textsuperscript{207} Ibid 6.
renewable energy. Unsurprisingly, the suggestion was, to say the least, received with mild enthusiasm by EU Member States, which merely went as far as to concede that ‘a reliable and transparent governance system without any unnecessary administrative burden will be developed to help ensure that the EU meets its energy policy goals, with the necessary flexibility for member states and fully respecting their freedom to determine their energy mix’.  

In 2014, up to 23.5 per cent of the electricity produced in the EU and 14 per cent of final energy consumption over all sectors emanated from renewable energies. As renewables break through into the energy mixes of EU member states, new challenges arise: the volatility and unpredictability inherently tied with, for instance, solar and wind energy renders the task of stabilizing the grid all the more burdensome. This has incited EU Member States to employ national subsidies as a means to warrant conventional, fossil-fuel generators in order to provide back-ups, should the winds drop or the sky cloud over. Consequentially, the fraction of non-subsidized electricity in the market is dwindling as renewables make their way, to such an extent that competitive markets are becoming a minor part of the total market.  

The European Commission is seeking to foster the use of renewable energy whilst attempting to encourage a more harmonized European approach to these clean sources of energy, as well as to capacity mechanisms, as a means to provide a level playing field for competition. Thus, the challenge that lies ahead on this front is not so much the maximization of the share of renewables per se (which should be fairly easily achieved), but rather the task of making sure to reduce as much as possible the trade and investment distortions that the prospected surge in the use of renewables could entail. To adequately tackle this divergence, the EU

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208 Buchan, D., Keay, M. and Robinson, D. ‘Energy and Climate Targets for 2030: Europe Takes Its Foot Off the Pedal’ [2014] The Oxford Institute for Energy Studies 5.
209 European Council, ‘Conclusions of the European Council of 23 October 2014’ (24 October 2014) EUCO 169/14 available at <http://www.consilium.europa.eu/uedocs/cms_data/docs/press-data/en/ec/145397.pdf>.
210 European Commission, ‘Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Progress Towards Completing the Internal Energy Market’ (13 October 2014) COM(2014) 634 final, 4.
211 David Buchan, ‘Why Europe’s energy and climate policies are coming apart’ (The Oxford Institute for Energy Studies, 1 July 2013) available at <http://www.oxfordenergy.org/2013/07/why-europes-energy-and-climate-policies-are-coming-apart/>, 9.
212 Ibid.
213 Ibid.
214 Etienne Durand and Malcolm Keay, ‘National Support for Renewable Electricity and The Single Market in Europe: The Ålands Vindkraft Case’ (The Oxford Institute for Energy Studies, 11 August 2014) available at <http://www.oxfordenergy.org/2014/08/national-support-for-renewable-electricity-and-the-single-market-in-europe-the-aldans-vindkraft-case/>, 6.
will have to press for the waning of the differences between the twenty-eight national schemes and the effective fusion of energy markets throughout the EU.

In that sense, the European Commission suggested guidelines for the design of national support schemes for renewable energy in late 2013. This guidance addresses three main issues. First, there is a need to keep the costs low by swiftly and transparently revising tariffs on a regular basis to equate them with falling technology costs. This will thwart retroactive cutbacks in subsidies that undermine the confidence of investors in the renewable sector. Secondly, market integration is vital. Renewable energy producers need to be more exposed to market prices in order to allow competition, which should become the ultimate drive leading to the most adequate and cost-effective energy production and investment decisions. Finally, and in accordance with the prescriptions laid down by the renewables directive, the Europeanization of support for renewables is a prime concern. In that sense, EU Member States will be urged to boost intra-EU trade and cooperation in the renewable energy field and, where possible, to blend their supporting schemes on a regional basis, very much in the same way advocated for energy markets in general.

In sum, the promotion of renewables per se has a clear path ahead. Harnessing the market and investment disruptions, resulting from their rampant hike, through the convergence of national supporting schemes seems to be the real challenge. Orchestrating complementary State interventions across Europe will assuredly be a formidable enterprise. That said, one may be optimistic in that the guidelines and directives enacted for that purpose provide a solid framework to solve these distortions, thereby empowering the unbridled promotion of renewable energy in the coming years.

215 European Commission, ‘European Commission Guidance for the Design of Renewables Support Scheme: Accompanying the Document, Communication from the Commission: Delivering the Internal Market in Electricity and Making the Most of Public Intervention’ (5 November 2013) SWD(2013) 493 final, <https://ec.europa.eu/energy/sites/ener/files/documents/com_2013_public_intervention_swd04_en.pdf>.
216 Ibid 17.
217 Buchan, D. ‘Why Europe’s Energy and Climate Policies Are Coming Apart’ [2013] The Oxford Institute for Energy Studies 16.
218 European Commission, ‘European Commission guidance for the design of renewables support scheme’, accompanying the document Communication from the Commission: Delivering the internal market in electricity and making the most of public intervention, SWD(2013) 493 final, 5 (5 November 2013), available at https://ec.europa.eu/energy/sites/ener/files/documents/com_2013_public_intervention_swd04_en.pdf.
219 Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Text with EEA relevance) [2009] OJ L140/16.
220 European Commission, ‘European Commission guidance for the design of renewables support scheme’, accompanying the document Communication from the Commission: Delivering the internal market in electricity and making the most of public intervention, SWD(2013) 493 final, 2223 (5 November 2013), available at http://ec.europa.eu/energy/sites/ener/files/documents/com_2013_public_intervention_swd04_en.pdf.
B. The Renewables Directive

This section analyzes how the 2009 Renewable Energy Directive (RED)\footnote{Directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Renewables Directive) [2009] OJ L140/16 (hereinafter RED).} could be an effective tool to move towards greater energy independence and create a well-functioning and competitive market capable of promoting a growing use of renewable energy. Furthermore, without its effective implementation, private investors might lose confidence, which would hinder the future development of the renewables market.

(i) Potential for energy independence

The RED establishes a common framework aimed at promoting renewable energy across Europe and envisages, \textit{inter alia}, the following provisions:

1. Mandatory national targets to be achieved in 2020 by each EU Member State, both for the share of energy from renewable sources in gross final consumption so as to enable the EU to get 20 per cent of its overall energy consumption from renewable energy by 2020,\footnote{As the share of RE in EU gross final energy consumption has increased from 8.3 per cent in 2004 to 14.1 per cent in 2012, the EU seems to be on track to meet its 20 per cent target by the end of 2020. See Eurostat, Share of renewable energy in gross final energy consumption, available at <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcod=t2020_31&plugin=1>.} and for the share of energy from renewable sources in all forms of transport (ie at least 10 per cent of the final consumption of energy in transport in each EU Member State).\footnote{RED, Art. 3 and Annex I.}

2. Support schemes to help EU Member States reach their targets—eg any instrument applied by an EU Member State or a group of EU Member States that encourages the use of renewable energy by reducing the cost of that energy, raising the price at which it can be sold, or intensifying the volume of the energy purchased, including investment aid, tax exemptions or reductions, tax refunds, feed-in tariffs, and premium payments.\footnote{RED, Arts 2(k) and 3(3)(a).}

3. Information on support schemes to be made available to all relevant actors—eg ‘consumers, builders, installers, architects, and suppliers of heating, cooling and electricity equipment and systems and of vehicles’ compatible with the use of renewable energy.\footnote{RED, Art. 14(1).}

4. Three cost-effective and cooperative mechanisms, resembling the flexible mechanisms provided in the Kyoto Protocol, that can be used by EU
Member States\textsuperscript{226}, where the prescribed requirements are met, to achieve their renewable energy objectives more easily and profitably:

(a) statistical transfers between EU Member States, under which Member States may transfer a certain amount of RE from one Member State to another;\textsuperscript{227}

(b) joint projects between Member States and between Member States and third countries in order to cooperate, also by providing access to private operators,\textsuperscript{228} on all types of joint projects relating to the production of electricity, heating, or cooling from renewable energy;\textsuperscript{229} and

(c) joint support schemes, by which two or more EU Member States may decide to join or partly coordinate their national support schemes.\textsuperscript{230}

5. National renewable energy action plans to be adopted by each EU Member State in order to specify their renewable energy national targets and the appropriate measures to be taken to achieve such binding objectives and to fully implement the RED (eg planned statistical transfers, joint projects, and national support schemes).\textsuperscript{231}

6. Any national rules concerning the authorization, certification, and licensing procedures that are applied to renewable energy plants and related transmission and distribution networks have to be objective, non-discriminatory, proportionate, necessary, and transparent, and must provide for clearly coordinated, defined, streamlined, and expedited procedures, with transparent timetables for determining planning and building operations.\textsuperscript{232}

7. Adequate action has to be taken by EU Member States to develop ‘transmission and distribution grid infrastructure, intelligent networks, storage facilities and the electricity system’,\textsuperscript{233} along with interconnections between both Member States and Member States and third countries, to guarantee the secure operation of the system and its proper adaptation to the increasing employment of electricity from renewable energy.

8. Obligations for transmission system operators and distribution system operators, including:

(a) ensuring ‘either priority access or guaranteed access to the grid-system of electricity’ produced from renewable energy.\textsuperscript{234}

\textsuperscript{226} Five EU Member States have forecast that they would need transfers of RE from other Member States or third countries through the use of the cooperation mechanisms so as to reach their binding targets. See Summary of the Member States Forecast Documents <http://ec.europa.eu/energy/renewables/transparency_platform/doc/dir_2009_0028_article_4_3_forecast_by_ms_summary.pdf>.

\textsuperscript{227} RED, Art. 6.

\textsuperscript{228} RED, Art 7(1) and 9(1).

\textsuperscript{229} RED, Arts 7 and 9.

\textsuperscript{230} RED, Art. 11.

\textsuperscript{231} RED, Art. 4.

\textsuperscript{232} RED, Art. 13(1).

\textsuperscript{233} RED, Art. 16(1).

\textsuperscript{234} RED, Art. 16(2)(b).
(b) setting up and making public their standard rules regarding the ‘bearing and sharing of costs of technical adaptations, such as grid connections and reinforcements,’ which are necessary to integrate new renewable energy producers in the grid;235

c) bearing, in full or in part, the costs of technical adaptations, whether EU Member States require them to do so;236

d) providing any renewable energy producer wishing to have access to the system with the relevant information required;237 and

e) charging transmission and distribution tariffs, which will reflect realizable cost benefits resulting from the renewable energy plant’s connection to the grid and will not discriminate against gas from renewable energy.238

By setting up a common legal framework for renewable and providing for, *inter alia*, the above-mentioned provisions, the EU should be able to both promote an increasing use of renewable energy across Europe and move towards greater energy independence. First, promoting renewable energy in the EU means that the following outcomes should be reached in Europe, but also beyond its borders:

- reducing GHG emissions by mitigating the impact of EU energy needs on the climate;
- growth of renewable energy-related demand, market, and investments through all the aforesaid measures (eg binding targets, support schemes, and the legal stability and certainty provided by National Renewable Energy Action Plans (NREAPs)), which represent the basic requirements to increase the competitiveness of the market and the confidence of economic operators in the system; and
- making renewable energy increasingly economically viable, thanks to the growth of renewable energy-related demand, market, and investments, which should stimulate research, development, and innovation regarding more efficient, cost-effective, and competitive renewable energy technologies.

Second, the RED is fostering greater energy independence in Europe, as it especially encourages the achievement of two of the eight European Energy Security Strategy (EESS) fundamental objectives: diversifying external supplies and related infrastructures; and increasing EU energy production.239

235 RED, Art. 16(3).
236 RED, Art. 16(4).
237 RED, Art. 16(5).
238 RED, Art. 16(7)–(8).
239 The eight pillars of the EESS are: immediate actions aimed at increasing the EU’s capacity to overcome a major disruption during the winter 2014/2015; strengthening emergency/solidarity mechanisms including coordination of risk assessments and contingency plans; and protecting...
Whereas the Directive facilitates the diversification of energy supplies from abroad and their transmission systems, principally through the provisions on joint projects between EU Member States and third countries and on the appropriate actions to be taken by Member States to develop transmission infrastructures between Member States and third countries, it also supports the growth of energy production in the EU by introducing national mandatory targets. Interestingly, EU primary production of renewable energy has indeed increased by almost 29 per cent between 2008 and 2012, compared with a lesser increase of approximately 24 per cent in the period 2004–08 (ie before the adoption of the binding targets), while overall EU energy production (renewable energy production included) has declined by almost 15 per cent in the period 2000–12. Taking into consideration that the overall EU-28 energy production shrank from 810.5 million tons of oil equivalent in 2012 to 804.2 million tons of oil equivalent in 2013, this appears to be a constant negative trend.

However, the European Commission has pointed out various reasons for concern about the effective enforcement of the RED and, thus, on its future progress and achievements, some of which undermine private investors’ confidence and the proper functioning of the renewable energy market. Among these problems are: the slow implementation of the Directive, which hinders the promotion of renewable energy and the move towards greater energy independence and has forced the Commission to start infringement procedures against strategic infrastructure; moderating energy demand; building a well-functioning and fully integrated internal market; increasing energy production in the EU; further developing energy technologies; diversifying external supplies and related infrastructure; and improving coordination of national energy policies and speaking with one voice in external energy policy. See European Energy Security Strategy, p. 3.

National targets refer to gross final consumption, and not to domestic production, for two main reasons: to help Member States reach their targets more easily, by making improvements in energy efficiency and thus lowering their energy consumption; and to allow Member States to use cooperation mechanisms so as to achieve their targets in a more cost-effective way, by counting within their targets an amount of RE produced in other Member States or third countries. But, even though national targets refer to final consumption, since both energy savings with regard to final energy consumption have declined by approximately 6 per cent in the period 2008–12, and almost no cooperation mechanisms have occurred, Member States are primarily fostering a growth of national production of renewable energy. See, respectively, Eurostat, Energy saving—annual data; Commission Staff Working Document—Guidance on the use of renewable energy cooperation mechanism [2013] SWD(2013) 440 final, p. 3.

Eurostat, Primary production of renewable energy by type; European Commission, EU Energy in Figures, p. 35; European Commission, Renewable Energy Progress Report COM(2013) 175 final [2013] pp. 12–14.
different EU Member States; \textsuperscript{246} Member States’ deviations from their own NREAPs and changes to their national support schemes, which reduce the legal clarity and stability needed by private investors and increase their exposure to regulatory risks; administrative burdens and delays that still cause barriers and problems to the uptake of renewable energy, raising risks for renewable energy projects and investments; slow infrastructure and transmission developments, delays in connection, and grid operational rules that disadvantage renewable energy producers and lessen the encouragement of true and fair competition.

Moreover, the main purpose of a framework that includes renewable energy mandatory targets is to provide the business community with the long-term stability and legal predictability it needs to make confident and rational investments in the renewable energy sector, which will, in turn, boost the use of renewable energy and its related market, make renewable energy more economically viable, mitigate climate change, reduce energy dependence, and encourage an ongoing development of renewable energy technologies. Therefore, the EU institutions should act as soon as possible to complete the necessary legislative procedure to make the proposed renewable energy objective for the period up to 2030 (ie 27 per cent of RE share in the EU’s gross final consumption) a binding target \textsuperscript{247} now that the European Council has finally agreed on it. \textsuperscript{248} This view is shared by a group of sixty-one EU companies and associations that, in September 2013, issued a letter to the EU institutions calling for renewable energy binding targets for the period 2020–30. The letter states:

Given the long investment cycles in the energy sector and the fact that investment decisions in the EU’s liberalised energy markets strongly depend on reliability, certainty about the regulatory framework of the next 17 years is needed. Such a framework bears the opportunity to reduce the current costs of uncertainty, mobilise the needed funding, help to protect the environment, decrease the costs of decarbonisation, facilitate the creation of new jobs and enhance the EU’s technology leadership. \textsuperscript{249}

Therefore, only once all EU Member States have rigorously and comprehensively implemented the RED, its provisions being enforced with no deviations that can frustrate the market, and the proposed targets up to 2030 have become

\textsuperscript{246} Cases are open and Reasoned Opinions have been sent to Austria, Bulgaria, Cyprus, Czech Republic, Finland, Hungary, Ireland, Latvia, Luxembourg, the Netherlands, Poland, and Slovenia. See Renewable Energy Progress Report, 13.

\textsuperscript{247} Policy Framework for Climate and Energy in the Period from 2020 to 2030, para. 2.2.

\textsuperscript{248} European Council Conclusions (23 and 24 October 2014) EUCO 169/14, para. I(3). See also European Commission, ‘2030 Framework for Climate and Energy—Outcome of the October 2014 European Council’ p. 16 <http://data.consilium.europa.eu/doc/document/ST-169-2014-INIT/en/pdf>, highlighting that the next step for the European Commission for the post-2020 period is to adopt a legislative proposal.

\textsuperscript{249} RENews, ‘Industry call for 2030 EU Target’ 19 September 2013, <http://renews.biz/49975/industry-calls-for-2030-eu-target/>.
binding, can the EU ‘expect the renewable energy industry to be a thriving, mature and globally competitive one in the lead up to 2020 and beyond’. Moreover, only then will the EU finally be able to effectively promote renewable energy across Europe and outside its borders and to move towards greater energy security.

(ii) Encouraging trade in renewable energy goods and services

It has been the goal of the European Commission for many years now to encourage the use of renewable energy within the EU. However, what seems to be the case is that this is being done in an internal way (between EU Member States), rather than reaching out to conclude renewable energy-related agreements with other countries and regions. Some examples of EU legal instruments related to renewable energy include:

1. the repealed Directive 2001/77/EC, which promotes electricity produced from renewable energy sources and sets an indicative target of 22 per cent for 2010 in the EU internal electricity market, as indicated in Article 3(4) of the Directive;
2. Directive 98/70/EC, which relates to the quality of petrol and diesel fuels and sets a mandatory target of 6 per cent reduction in GHG emissions and intensity of fuels used in road transport and non-road mobile machinery, as set out in recital 9 of the Directive; and
3. Directive 2009/28/EC, which promotes the use of energy from renewable energy sources.

This Renewable Energy Directive 2009/28/EC enforced an objective for the quantity of renewable energy to be used in the EU. The goal amount was to be 20 per cent of final energy consumption and it was agreed that this target would be met by 2020. This was done for several reasons: to boost confidence in the industry; for there to be focus on a set policy objective; and to reduce any risks associated with long-term investments. Individual targets are allocated to each EU Member State and are calculated by reference to their GDP as well as their 2005 proportion of renewable energy, as this is the latest year for which there are reliable data on national shares of renewables. Sweden had the

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250 Renewable Energy Progress Report, 14.
251 V Oschmann, ‘Introduction to European Law on Renewable Energy Sources’ in From Debate to Design: Issues in Clean Energy and Climate Change Law and Policy (Yale School of Forestry and Environmental Studies, 2007–08) at 24, 26 and 27.
252 Directive 2001/77/EC (the ‘Electricity Production from Renewable Energy Resources Directive’) OJ L 283/33 2001.
253 Directive 98/70/EC (the ‘Fuel Quality Directive’) OJ L 350 28 December 1998.
254 Directive 2009/28/EC (RED) OJ L 140/16 5 June 2009.
255 Directive 2009/28/EC, Recitals 8, 9, 13, 15, 17, and 96; Article 3(1).
256 Directive 2009/28/EC, Recital 14 and Art. 3.
257 Directive 2009/28/EC, Recitals 15 and 21.
highest target of 49 per cent, up from 39.8 per cent in 2005, and Malta had the lowest, at 10 per cent up from zero in 2005. If EU Member States do not fulfil their assigned objective, they are subject to enforcement action by the European Commission for failure to comply.

There are downsides, however, to such long-term targets. The shortcomings are that they postpone official judgement and compliance to the target date, in the case of Directive 2009/28/EC and the 20–20–20 by 2020 policy it sets out. Until now, however, EU Member States do not have free reign and are scrutinized for any decisions that may ‘seriously compromise the attainment of the result set out in the 2009/28/EC directive’. In order for Member States to show progress, they are required to submit a National Renewable Energy Action Plan that must set out that the state has or is going to take ‘adequate measures’ to achieve its national goal.

Some commentators argue what is essential for the transition to a green economy is continuous debate and scrutiny of the topic. One such influence is the Rio+20 conference, which provides for specific networks to support future discussions on trade as well as the green economy by producing more knowledge, experience sharing, and informed discussions between countries and regional bodies. In particular, it sets out the fact that it is essential that the apprehensions of developing countries are addressed in these processes. One proposal is to establish an international knowledge-sharing platform that all countries can access to facilitate green policy formation and implementation. Finally, there is a suggested Sustainable Energy Trade Agreement initiative that could contribute by speeding up the ‘development and adoption of renewable energy and clean technology globally’.

The effort by the EU to promote renewable sources through Directives is a positive step in the right direction. This is further heightened by the fact that trade in renewable energy goods and services can transpire between both EU

258 Directive 2009/28/EC, Annex I, at 46.
259 Ibid.
260 M Lee, EU Environmental Law, Governance and Decision-Making (2nd edn, Oxford and Portland, OR: Hart Publishing, 2014), at 147.
261 See Case C-129/96 Inter-Environment Wallonie v Région Wallone [1997] ECR I-7411.
262 Lee (n 258), 148.
263 Ibid. See also Directive 2009/28/EC, Art. 4; and <ec.europa.eu/energy/renewables/action_plan_en.htm>.
264 Manuel AJ Teehankee, Ingrid Jegou, and Rafael Jacques Rodrigues, ‘Multilateral Negotiations at the Intersection of Trade and Climate Change: An overview of Developing Countries’ Priorities in UNCSD, UNFCCC and WTO Processes,’ ICTSD Program on Global Economic Policy and Institutions, May 2012, at 2.
265 ‘Rio+20’ is the short name for the United Nations Conference on Sustainable Development which took place in Rio de Janeiro, Brazil in June 2012—twenty years after the landmark 1992 Earth Summit in Rio.’ See <http://www.un.org/en/sustainablefuture/about.shtml>.
266 Teehankee, Jegou, and Rodrigues (n 262), 2.
267 Ibid.
268 Ibid.
Member States as well as with third parties. This is set out in Article 1 of the 2009/28/EC Directive, which states that the Directive ‘lays down rules relating to statistical transfers between Member States, joint projects between Member States and with third countries . . .’. By looking beyond the EU, better alternatives and opportunities for both economic and political growth and harmony may be found.

(iii) Trading with third parties

Trading with third parties will potentially allow the EU economy to develop at a greater pace and perhaps move towards becoming a green economy. The consent, however, of the EU entering into an agreement with a third country does have its limitations, as doing so is surrounded by measures that have to be complied with. These measures require positive action to be taken by both parties. One such example is Article 18(4) of the 2009/28/EC Directive, by which EU Member States ought to consider whether the third country they wish to enter into an agreement with is suitable. Article 18(4) sets out that, in order for any initial agreement to be made between the parties, the third country will have to have a set of criteria with regard to sustainable energy that complies with those of Directive 2009/28/EC. This ensures that the third State has the same obligations to comply with and safeguards all EU Member States from any damage that could otherwise emerge from the agreement.

Obligations on the EU Member State are set out throughout the other recitals, for example in 38, 39, and 74 of the 2009/28/EC Directive. These three points have requirements that need to be satisfied in order for the Member State to be able to engage with any third country and proceed with a trade agreement. Some of the restrictions include that EU Member States can only undertake projects with third countries where there are ‘newly constructed installations or . . . installations with newly increased capacity’\textsuperscript{269} for the production of renewable energies.

Another matter is the production of biofuels and bio liquids, where the concern is that third countries might have different standards when manufacturing them.\textsuperscript{270} This could result in minimum environmental as well as social requirements not being met by the third country. This would create a problem because, by not meeting the minimum standards, the use and production of renewables may be reduced. Fundamentally, these restrictions are in place so that the EU is protected, making the most out of possible agreements, benefiting the EU and its economy, rather than taking away from possible work and sources that can be provided from within the EU. The third countries’ interests are also taken into consideration. Recital 38 of the 2009/28/EC Directive setting out that these requirements to engage only when there are newly constructed

\textsuperscript{269} Directive 2009/28/EC, Recital 38.
\textsuperscript{270} Directive 2009/28/EC, at 24.
installations is done in order to ‘help ensure that the proportion of energy from renewable sources in the third country’s total energy consumption is not reduced due to the importation of energy from renewable sources into the Community’.271

Ultimately, there exists significant scope for EU regulation concerning trade in renewables to directly influence the development of international law, through the conclusion of trade and investment agreements between the EU (and its Member States), on the European side, and third parties.

VIII. Conclusion

The governance of renewables is diffused, which means that there is a lack of coordination (both normative and institutional) in renewables. International and European renewable energy governance is the product of a diverse constellation of international and supranational organizations, partnerships, and bodies of public international law and EU law. It is a mix of national and supranational hard law and international soft law measures. In addition to the UNFCCC and the constraining disciplines of WTO law, renewables governance draws on a ‘plethora’ of soft law instruments relating to renewables specifically or international environmental law generally.272 As Bruce has observed, ‘[o]ne reason for the widespread adoption of soft law is its lack of enforcement machinery. Repeated application of norms over time can engender a de facto regulatory status or probationary testing before incorporation into treaty law’.273

The combined outcomes of efforts to expand renewable energy’s role in the global economy should be put into perspective. According to the IEA, renewables accounted for over 45 per cent of newly added world power generation capacity in 2014.274 In 2014, global energy-related CO₂ emissions remained unchanged at around 32.2 Gt, despite the world economy growing by some 3 per cent, figures that indicate ‘a decoupling between energy-related emissions and economic growth in some parts of the world’.275 Across OECD members, emissions actually fell by 1.8 per cent, while economies expanded by an average

271 Directive 2009/28/EC, at 20.
272 Adrian J Bradbrook, ‘Creating Law for Next Generation Energy Technologies’ (2011) 2 Journal of Energy & Environmental Law 17, 23.
273 Stuart Bruce, ‘International Energy Law’ in Max Planck Encyclopedia of Public International Law (Oxford: Oxford University Press, 2014).
274 Of the estimated 128 GW increase in renewable power generation capacity in 2014, 37 per cent was accounted for by wind power, almost one-third by solar and over a quarter by hydropower. International Energy Agency, Energy and Climate Change: World Energy Outlook’ Special Report (OECD/IEA, 2015), 21.
275 Ibid 30.
of 1.8 per cent. However, fossil fuels continue to meet over 80 per cent of total primary energy demand.

The broad array of activity concerning renewables in European and international law and international organizations, surveyed above, prompts a number of questions for further legal research. An area that deserves further investigation is the extent of the reception of international normative and regulatory innovations in domestic law, either through direct programmatic intervention or otherwise. Another relationship to be explored is the nature of feedbacks between public international law/EU law and international organizations concerned with renewable energy and the development of a private international law of renewables, for example concerning project finance or technology transfer. At the international level, the determining factors behind, on the one side, fragmentation of international legal initiatives concerning renewables and, on the other, networking between different action streams are of pressing concern to policy makers, as is the potential for broader networks of public, private, and hybrid actors to act as force multipliers of the UNFCCC and other bodies of public international law concerned with renewable energy. Furthermore, the coalescing of any customary law concerning renewables may also merit consideration. Finally, as renewable energy engages multiple areas of European and international law, tensions with international biodiversity and human rights law open other avenues for legal research, as the international community continues to explore legal and regulatory innovation concerning renewables in grappling with pressing climate change and energy challenges.

Ultimately, the diverse international institutions and treaties which bear on the governance of renewable energy present multiple opportunities for the EU to influence the development of public international law, both through the example and functioning of EU law and through broader EU diplomacy. Innovations such as the role of Nationally Determined Contributions under the Paris Agreement on Climate Change hold out the prospect of deepening the interplay between EU and international law. As both an established normative leader on climate change and a vast market for, and innovator in, energy, the EU is well placed to exert a beneficial influence on the development of international renewable energy governance.

276 Ibid 29.
277 Ibid 25.
278 Consider, for instance, threats to migratory species posed by wind power structures (CMS Resolution 7.5, ‘Wind Turbines and Migratory Species’) and the forced displacement of indigenous peoples due to hydropower projects (Saramaka People v Suriname (Judgment) (28 November 2007) Inter-American Court of Human Rights Series C No 172).