INTERNATIONAL LAW AND RENEWABLE ENERGY: FACILITATING SUSTAINABLE ENERGY FOR ALL?

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Eradicating energy poverty and averting dangerous climate change will require a global 'energy revolution' in favour of low-carbon energy sources. To assist in this transition, the United Nations has established the Sustainable Energy for All ('SE4ALL') initiative. This article critiques the role, character and capacity of international law — 'soft' law instruments, binding obligations and international legal actors — to facilitate the initiative's goal of doubling the renewable energy share in the global energy mix by 2030. It argues that permanent sovereignty over natural resources and energy security policy are false barriers to action. In recent history international renewable energy policy has proliferated, becoming an important normative force to guide energy law, policy and project development. Conspicuously absent from the international plane are meaningful binding instruments and obligations, such as generation targets in the United Nations Framework Convention on Climate Change *('*UNFCCC*'), the* Kyoto Protocol to the United Nations Framework Convention on Climate Change *and the* Energy Charter Treaty *('*ECT*'). The impact of the new International Renewable Energy Agency, which is mandated to facilitate renewable energy knowledge and technology transfer, remains to be seen. Ultimately, the progress of SE4ALL will depend on unprecedented international cooperation and coordination. This article proposes four legal options to significantly reduce greenhouse gas emissions and advance meaningful implementation of SE4ALL: (1) an international energy convention; (2) an energy protocol to the* UNFCCC*; (3) reform of and a new protocol to the* ECT*; and (4) an international declaration on renewable energy principles. It is contended that whatever legal format might be politically feasible, the age of sustainable energy has arrived. The dynamism and influence of international energy law is crucial to a global energy transition.*

CONTENTS

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> 'Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive'.
>
> — Ban Ki-moon[1]

> 'There are few signs that the urgently needed change in direction in global energy trends is underway'.
>
> — International Energy Agency[2]

I INTRODUCTION

Energy use is indispensable to human life. Yet 'warming of the climate system is unequivocal'.[3] Most of the increase in global average temperatures over the past 50 years is 'very likely' due to increases in anthropogenic greenhouse gas ('GHG') concentrations.[4] The primary driver is fossil fuel consumption, which accounts for 80 per cent of global energy consumption.[5] Conservative scientific consensus indicates that in order to maintain a 50 per cent chance of averting catastrophic climate change, the global temperature must not

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1 Secretary-General of the United Nations, 'Sustainable Energy for All: A Framework for Action — Secretary-General's High-Level Group on Sustainable Energy for All' (Framework Report, United Nations, January 2012) 4 ('*SE4ALL Framework*').

2 International Energy Agency, *World Energy Outlook 2011* (OECD Publishing, 2011) 39.

3 Abdelkader Allali et al (eds), *Climate Change 2007: Synthesis Report* (Cambridge University Press, 2007) 30.

4 Ibid 38–9, 72.

5 Ibid 37. See also International Energy Agency, 'Redrawing the Energy-Climate Map: Executive Summary' (World Energy Outlook Special Report, Organisation for Economic Co-Operation and Development/International Energy Agency, 10 June 2013) 9; Intergovernmental Panel on Climate Change, 'Summary for Policymakers' in Bert Metz et al (eds), *Climate Change 2007: Mitigation — Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2007) 1, 2–3; Ralph E H Sims et al, 'Energy Supply' in Bert Metz et al (eds), *Climate Change 2007: Mitigation — Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2007) 251.

increase by more than 2°C by 2050.[6] To achieve this in the most cost-effective manner, GHG emissions must peak between 2017–20 and then rapidly decline.[7] But currently the world is 'nowhere near' a 'realistic path' to globally de-carbonise all energy generation by 2050.[8] So significant are these challenges that an urgent 'energy revolution'[9] is required, 'before the door to 2°C is closed'.[10]

In an attempt to mobilise international cooperation on clean energy reform and uptake, the United Nations General Assembly ('UNGA') declared 2012 as the International Year of Sustainable Energy for All.[11] Empowered by this resolution, United Nations Secretary-General ('UNSG') Ban Ki-moon set out the global Sustainable Energy for All ('SE4ALL') challenge for 2030:

(i) universal access to energy services;
(ii) doubling the rate of energy efficiency improvement; and

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6 This is equivalent to an atmospheric concentration of carbon dioxide equivalent ('CO_2-e') (greenhouse gas concentration) of 450 parts per million: see Kevin Watkins et al, 'Human Development Report 2007/2008 — Fighting Climate Change: Human Solidarity in a Divided World' (Report, United Nations Development Programme, 2007) 7, 111. Combustion of fossil fuels has been a major factor in the 39 per cent increase in CO_2-e levels since the Industrial Revolution to over 390 parts per million: see Ottmar Edenhofer et al, 'Summary for Policymakers' in Ottmar Edenhofer et al (eds), *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2012) 3, 7; Dan Arvizu et al, 'Technical Summary' in Ottmar Edenhofer et al (eds), *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2012) 27, 33; William Moomaw et al, 'Renewable Energy and Climate Change' in Ottmar Edenhofer et al (eds), *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2012) 161, 167–8.

7 International Energy Agency, *World Energy Outlook 2011*, above n 2, 73. Greenhouse gas ('GHG') emissions reached an historic annual record of 31.6 gigatonnes in 2011: see International Energy Agency, *Global Carbon-Dioxide Emissions Increase by 1.0 Gt in 2011 to Record High* (24 May 2012) <www.iea.org/newsroomandevents/news/2012/may/name,27216,en.html>.

8 *Implementation of* Agenda 21*, the Programme for the Further Implementation of* Agenda 21 *and the Outcomes of the World Summit on Sustainable Development: Report of the Secretary-General*, UN GAOR, 66th sess, Agenda Item 19(a), UN Doc A/66/287 (9 August 2011) 5 [17] ('*UNSG Report 2011*'). It is troubling that from 2009–35 global primary energy demand is predicted to increase from 12 132 to 14 185–18 302 million tonnes of oil equivalent: see International Energy Agency, *World Energy Outlook 2011*, above n 2, 70–1. The total remaining global carbon budget to 2050 is 565 gigatonnes of carbon dioxide ('CO_2'), or one fifth of the known fossil fuel deposits scheduled for combustion: James Leaton, 'Unburnable Carbon: Are the World's Financial Markets Carrying a Carbon Bubble?' (Report, Carbon Tracker Initiative, 2012) 2. See also Jose Goldemberg, 'Development and Energy' in Adrian J Bradbrook et al (eds), *The Law of Energy for Sustainable Development* (Cambridge University Press, 2005) 37.

9 Watkins et al, above n 6, 111.

10 International Energy Agency, *World Energy Outlook 2011*, above n 2, 40, 205.

11 *International Year of Sustainable Energy for All*, GA Res 65/151, UN GAOR, 65th sess, 69th plen mtg, Agenda Item 20, Supp No 49, UN Doc A/RES/65/151 (16 February 2011) 2 para 1. While not binding under international law, this initiative seeks to shape international energy policy.

(iii) doubling renewable energy in the global energy mix from 15 to 30 per cent.[12]

This article focuses on the international legal means available to assist in the achievement of the third limb of this challenge.

Although not a panacea, renewable energy is poised to become a dominant 'soft energy path'.[13] It will provide increasingly decentralised and de-carbonised electricity to the 1.3 billion people currently without electricity and will become a viable substitute for the pollutive biomass energy relied upon by 2.7 billion people.[14] The Intergovernmental Panel on Climate Change endorses the expansion of renewable energy generation, which by 2035 is forecast to reduce GHG emissions by 21 per cent and supply up to 45 per cent of global electricity,[15] and by 2050 to supply up to 77 per cent of global electricity.[16] Renewable energy will therefore be a fundamental component of the low-carbon future we need, not merely *The Future We Want*.[17]

Against this backdrop, the purpose of this article is to provide a conceptual critique of the role and character of international energy law and its capacity to assist the transition of energy generation towards the SE4ALL outcome. It argues that current international law is underdeveloped and that new international renewable energy obligations of result, such as generation targets, would be a useful co-ordinating mechanism as part of the solution to pressing issues of energy security, sustainable development and climate change.[18] An uphill battle

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12 'Sustainable Energy for All: A Vision Statement by Ban Ki-moon, Secretary-General of the United Nations' (United Nations, November 2011) 4. The United Nations General Assembly ('UNGA') has emphasised the importance of long-term global energy issues for sustainable development and for the elaboration of the post-2015 development agenda by unanimously declaring 2014–24 as the United Nations Decade of Sustainable Energy for All: see United Nations Department of Public Information, 'United Nations General Assembly Declares 2014–24 Decade of Sustainable Energy for All' (Press Release, GA/11333 EN/274, 21 December 2012).

13 See generally Amory B Lovins, *Soft Energy Paths: Toward a Durable Peace* (Ballinger, 1977).

14 International Energy Agency, *World Energy Outlook 2011*, above n 2, 39, 45.

15 International Energy Agency, 'World Energy Outlook 2010' (2010) 282, 394; Ottmar Edenhofer et al, 'Technical Summary' in Ottmar Edenhofer et al (eds), *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2012) 27, 105.

16 Manfred Fischedick et al, 'Mitigation Potential and Costs' in Ottmar Edenhofer et al (eds), *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2012) 791, 803.

17 See *The Future We Want*, GA Res 66/288, UN GAOR, 66th sess, 123rd plen mtg, Agenda Item 19, Supp No 49, UN Doc A/RES/66/288 (11 September 2012) 47 ('*The Future We Want*'). It contains approximately 300 hortatory paragraphs, some reaffirming the need to increase global renewable energy share: at 24–5 paras 125–129.

18 Unless specified, energy relates to supply-side stationary primary energy, including all 'types' of renewable energy, with emphasis on under-exploited high-potential 'new' renewable energy technologies including wind and especially solar power. The technical potential of the latter substantially exceeds total current global electricity demand: see Ottmar Edenhofer et al, 'Summaries for Policymakers' in Ottmar Edenhofer et al (eds), *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2012) 3, 10, 12; Moomaw et al, above n 6, 206–7.

to garner political will remains,[19] but regulation is a natural step in the evolutionary process of international law in the domain of renewable energy,[20] which is currently in 'flux',[21] if not infancy.[22]

Part II examines the putative challenges for international renewable energy regulation,[23] particularly those posed by permanent sovereignty over natural resources and energy security. Understood in a contemporary context, these challenges may actually promote global cooperation to increase renewable energy uptake. Part III critiques the abundant renewable energy policies and 'soft' law at the international level, highlighting the absence of any meaningful binding international instruments that regulate renewable energy. It endorses the increasing, if sub-optimal, role of international legal actors in shaping the renewable energy landscape. Part IV suggests four possible legal vehicles for advancing international renewable energy law. Rather than threatening state sovereignty, international regulation offers a pragmatic approach to both human betterment and the avoidance of a collective action tragedy.[24]

II CHALLENGES FOR INTERNATIONAL ENERGY LAW

International law confronts several challenges if it is to facilitate SE4ALL through international regulation of renewable energy at the international level. In particular, states' anxieties about sovereignty over natural resources and energy security policies inhibit the political will required to agree and implement international regulation. States largely remain wedded to maintaining the supply of traditional sources of energy. For example, in 2010 domestic fossil fuel subsidies reached a staggering US$400 billion globally. In contrast, renewable energy subsidies totalled US$66 billion.[25] The following discussion argues two

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19 Catherine Redgwell, 'International Regulation of Energy Activities' in Martha Roggenkamp et al (eds), *Energy Law in Europe: National, EU and International Law and Institutions* (Oxford University Press, 2nd ed, 2007) 13, 143.

20 See generally Rosalyn Higgins, *Problems & Process: International Law and How We Use It* (Oxford University Press, 1995).

21 Arghyrios A Fatouros, 'An International Legal Framework for Energy' (2007) 332 *Recueil des Cours* 355, 365.

22 See Redgwell, 'International Regulation of Energy Activities', above n 19, 142.

23 'Law' and 'regulation' are used as broad descriptors to include rules, principles, concepts, 'soft' law, policies and institutional actor influence: see generally Barry Barton, 'The Theoretical Context of Regulation' in Barry Barton et al (eds), *Regulating Energy and Natural Resources* (Oxford University Press, 2006) 11. 'Regulation' may helpfully be conceived of as 'the intentional, goal-directed, problem-solving attempts at ordering undertaken by both state and non-state actors': Julia Black, 'Regulatory Conversations' (2002) 29 *Journal of Law and Society* 163, 170.

24 Martti Koskenniemi, 'The Fate of Public International Law: Between Technique and Politics' (2007) 70 *Modern Law Review* 1, 2–3, 30; Garrett Hardin, 'The Tragedy of the Commons' (1968) 162 *Science* 1243, 1244–5. Literature on reimagining traditional international law is considerable: see, eg, Garrett Wallace Brown and David Held (eds), *The Cosmopolitanism Reader* (Polity Press, 2010); Philip Allott, *The Health of Nations: Society and Law beyond the State* (Cambridge University Press, 2002). An exhaustive feasibility analysis of all aspects of renewable energy (including market reform, tariffs, price signals, financial assistance, social and technological challenges) is beyond the scope of this article.

25 International Energy Agency, *World Energy Outlook 2011*, above n 2, 39. The point made here is less about the merits of the relative quantum to industry size ratio, but that staggering subsidies are misplaced: the world is consciously subsidising environmentally unsustainable and perhaps increasingly uneconomic pollution.

points. First, that permanent sovereignty and energy security need not be obstacles to realising SE4ALL; and secondly, that international renewable energy generation targets could help improve energy security for import-dependent states without threatening state sovereignty.[26]

A *Permanent Sovereignty: A Sustainable Challenge to Energy Cooperation?*

State sovereignty is a foundational tenet of international law.[27] States have jurisdiction to regulate the conduct and consequences of activities within their territory, including energy activities, unless prohibited by international law.[28] This contributes to tension between three matters:

(i) the internationalisation of essentially domestic matters;
(ii) permanent sovereignty over natural resources; and
(iii) principles of international environmental law, such as the 'no harm' rule.

This section examines the conceptual interrelationship between these matters, to reveal that sovereignty and jurisdiction are not absolutes. It argues that sovereignty over natural resources is not entirely unfettered, but is gradually becoming infused with environmental obligations that directly or indirectly impact energy generation.[29] It is therefore a natural evolution for international law to regulate the energy supply mix, especially if SE4ALL is to be achieved.

States regularly enter into binding international arrangements regarding matters that normally reside within domestic jurisdiction. In practice, such voluntary actions fetter state conduct without diminishing actual legal sovereignty.[30] Today, very few matters remain 'essentially' domestic concerns.[31] If renewable energy obligations were to be established on the international plane, states would be obliged under substantive international law to achieve them — or else risk being held internationally responsible — but would nonetheless retain jurisdiction over domestic energy activities, including related policy and technology choices.

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26 See generally Thilo Marauhn, 'Changing Role of the State' in Daniel Bodansky, Jutta Brunnée and Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007) 727, 729–32.

27 See generally James Crawford, *Brownlie's Principles of Public International Law* (Oxford University Press, 8th ed, 2012) chs 8–10; James Crawford, 'Sovereignty as a Legal Value' in James Crawford and Martti Koskenniemi (eds), *The Cambridge Companion to International Law* (Cambridge University Press, 2012) 117.

28 Jurisdiction is a 'relative question': see *Nationality Decrees Issued in Tunis and Morocco (French Zone) (Advisory Opinion)* [1923] PCIJ (ser B) No 4, 24; *SS Lotus (France v Turkey) (Judgment)* [1927] PCIJ (ser A) No 10, 19. See also F A Mann, 'The Doctrine of Jurisdiction in International Law' (1964) 111 *Recueil des Cours* 1.

29 Nico Schrijver, *Sovereignty over Natural Resources: Balancing Rights and Duties* (Cambridge University Press, 1997) 168. See also David Held, 'The Changing Structure of International Law: Sovereignty Transformed?' in David Held and Anthony McGrew (eds), *The Global Transformations Reader: An Introduction to the Globalization Debate* (Polity, 2003) 162.

30 See, eg, *SS Wimbledon (Britain v Germany) (Judgment)* [1923] PCIJ (ser A) No 1, 25; *L F H Neer and Pauline Neer (United States of America v United Mexican States) (Concurring Opinion)* (1926) 4 RIAA 60, 64; *Barcelona Traction, Light and Power Company, Limited (Belgium v Spain) (Judgment)* [1970] ICJ Rep 3, 32 [33]–[34]; *Charter of the United Nations* art 2(1); Schrijver, above n 29, 377–90.

31 *Charter of the United Nations* art 2(7).

In the context of energy, international law has had a growing impact on domestic activities, either directly or indirectly.[32] For example, states have voluntarily entered into over 500 multilateral environmental agreements,[33] partly due to the need for collective efforts to resolve the trans-boundary impacts of domestic activities — the 'cornerstone of international environmental law'.[34] These agreements effectively pierce the sovereign veil, mandating compliance with consensual obligations.[35] States have also accepted economic and trade agreements that affect domestic choice,[36] including international regulation of activities related to fossil fuel and nuclear power.[37] This represents a gradual but significant advance towards responsible natural resource management.

One counter-argument against developing international regulation is the principle of a state's permanent sovereignty over its natural resources. This is a customary rule[38] established during decolonisation that recognises states' 'inalienable right to dispose of their natural wealth and resources in accordance with their national … interests'.[39] This principle brought international law into the domain of domestic energy activities and challenged the legal relationship between international conservation efforts, resources ownership and domestic exploitation for economic gain.[40]

Sovereignty over natural resources — permanent or otherwise — is balanced by, among other things, principles of international environmental law, specifically the customary international law obligation not to cause significant

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32 See Redgwell, 'International Regulation of Energy Activities', above n 19, 110–26.

33 See Ivar Baste et al, 'Global Responses', *Global Environment Outlook 5: Environment for the Future We Want* (United Nations Environment Programme, 2012) 457, 464.

34 Günther Handl, 'Transboundary Impacts' in Daniel Bodansky, Jutta Brunnée and Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007) 531, 548. See also Baste et al, above n 33, 461; below n 38 and all references therein.

35 Regarding 'external sovereignty', see *Customs Regime between Germany and Austria (Germany v Austria) (Advisory Opinion)* [1931] PCIJ (ser A/B) No 41, 57 (Judge Anzilotti). On the analogy of states to corporations see Hans Kelsen, *Principles of International Law* (Rinehart & Company, 1952) 100.

36 See, eg, *General Agreement on Tariffs and Trade*, opened for signature 30 October 1947, 55 UNTS 194 (entered into force 29 July 1948); *North American Free Trade Agreement*, opened for signature 17 December 1992, 32 ILM 289, 605 (entered into force 1 January 1994) ('*NAFTA*'). This treaty restricts sovereign enactment of energy laws inconsistent with freedom of trade in energy: at art 102.

37 See, eg, *International Convention on Oil Pollution Preparedness, Response and Cooperation*, opened for signature 30 November 1990, 1891 UNTS 77 (entered into force 13 May 1995); *Convention on Nuclear Safety*, opened for signature 20 September 1994, 1963 UNTS 293 (entered into force 24 October 1996).

38 See, eg, *Armed Activities on the Territory of the Congo (Democratic Republic of the Congo v Uganda) (Judgment)* [2005] ICJ Rep 168, 251 [244]. See also *Texaco Overseas Petroleum Company and California Asiatic Oil Company v Government of the Libyan Arab Republic (Award on the Merits)* [19 January 1977] 53 ILR 389, 491–2 [87]–[88] ('*Texaco Libya*').

39 *Permanent Sovereignty over Natural Resources*, GA Res 1803 (XVII), UN GAOR, 17th sess, 1194th plen mtg, Agenda Item 39, UN Doc A/5217 (14 December 1962). See also Schrijver, above n 29, 82–119.

40 See generally Thomas W Waelde, 'A Requiem for the "New International Economic Order": The Rise and Fall of Paradigms in International Economic Law and a Post-Mortem with Timeless Significance' in Gerhard Hafner et al (eds), *Liber Amicorum: Professor Ignaz Seidl-Hohenveldern in Honour of His 80th Birthday* (Kluwer Law International, 1998) 771.

trans-boundary harm to other states.[41] Whether the consequences of fossil fuel energy generation activities — high levels of GHG emissions and depletion of finite natural resources — fall within the scope of environmental harm sufficient to trigger international responsibility remains an open question. If so, it could provide an incentive to adopt low-carbon alternatives, but in terms of *lex lata* the principle is insufficiently developed to benefit renewable energy.[42] In contrast, it is uncontentious that contemporary international law requires permanent sovereignty over natural resources to be exercised responsibly.[43] Just as sovereignty may require cooperation for the global good,[44] its use as an argument to delay international energy regulation that can advance SE4ALL is unsustainable. Rather, as Nico Schrijver contends, permanent sovereignty over natural resources could be a 'cornerstone' of modern sustainable development.[45]

B *Energy Security: Supplying Future Demand*

There is no unanimous definition of energy security: rather, it is a broad policy consideration that entails a myriad of energy matters, regulated by sector under international law.[46] Energy security first became a global issue during the 1973 oil shock,[47] which catalysed the formation of the International Energy Agency, which established oil-based energy supply security obligations for its members.[48] This section examines ways in which energy supply security may be

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41 *Trail Smelter Case (United States of America v Canada) (Awards)* (1938/1941) 3 RIAA 1905; *Report of the United Nations Conference on the Human Environment*, UN Doc A/CONF.48/14/Rev.1 (1 January 1973) ch I [21] ('*Declaration of the United Nations Conference on the Human Environment*') ('*Stockholm Declaration*'); *Legality of the Threat or Use of Nuclear Weapons (Advisory Opinion)* [1996] ICJ Rep 226, 241–2 [29] ('*Nuclear Weapons Opinion*'); *Report of the United Nations Conference on Environment and Development*, UN Doc A/CONF.151/26 (Vol. I) (12 August 1992) annex I [2] ('*Rio Declaration on Environment and Development*') ('*Rio Declaration*'); *Gabčíkovo-Nagymaros Project (Hungary v Slovakia) (Judgment)* [1997] ICJ Rep 7, 41 [53] ('*Gabčíkovo*'). See also Sundhya Pahuja, 'Conserving the World's Resources?' in James Crawford and Martti Koskenniemi (eds), *The Cambridge Companion to International Law* (Cambridge University Press, 2012) 398.

42 Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* (Oxford University Press, 3rd ed, 2009) 137–89. See also Adrian Bradbrook, 'The Development of Renewable Energy Technologies and Energy Efficiency Measures through Public International Law' in Donald N Zillman et al (eds), *Beyond the Carbon Economy: Energy Law in Transition* (Oxford University Press, 2008) 109, 114–15; Fatouros, above n 21, 365.

43 Schrijver, above n 29, 395. See also Philippe Sands et al, *Principles of International Environmental Law* (Cambridge University Press, 3rd ed, 2012) 210–26.

44 Günther Handl, 'Environmental Security and Global Change: The Challenge of International Law' (1990) 1 *Yearbook of International Environmental Law* 3, 32.

45 Schrijver, above n 29, 3925.

46 Energy security can be broadly understood as 'robustness against [sudden] disruptions of energy supply': Moomaw et al, above n 6, 191. See also Catherine Redgwell, 'International Energy Security' in Barry Barton et al (eds), *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (Oxford University Press, 2004) 17, 45–6.

47 Daniel Yergin, 'Ensuring Energy Security' (2006) 85(2) *Foreign Affairs* 69, 75; Richard Scott, 'The International Energy Agency: Beyond the First 20 Years' (1995) 13 *Journal of Energy and Natural Resources Law* 239, 239.

48 *Agreement on an International Energy Program*, opened for signature 18 November 1974, 1040 UNTS 271 (entered into force 19 January 1976) chs I, II, IX. See also Richard Scott, *The History of the International Energy Agency, 1974–1994: IEA, the First 20 Years* (OECD/IEA, 1994–95) vols 1–2.

advanced by international renewable energy obligations, thereby facilitating SE4ALL.

Adrian Bradbrook contends that energy supply security entails three issues: first, reducing reliance on imported oil; secondly, price stability; and thirdly, supply reliability.[49] All three elements will be negatively affected as import dependency (especially for non-Organisation for Economic Co-Operation and Development ('OECD') countries), natural disasters and political instability in oil-exporting states increase over time.[50] The potential impact of these risks, among others,[51] has already precipitated requests from private enterprise to divest fossil fuel investments.[52] In contrast, renewable energy is a technology that can mitigate energy supply security risks and is gaining favour.[53] For example, in 2011 almost half of the global power capacity added was from renewable energy, constituting US$257 billion in investments and a 74 per cent increase in global photovoltaic capacity.[54] Similarly, in 2012 United States dependence on foreign oil was 15 per cent less than in 2006, a consequence of a deliberate government strategy that included the expansion of renewable energy among its measures.[55]

The multifarious benefits of renewable energy were recognised at the international political level in 2005. At its 31st summit, the Group of Eight ('G8') invited the International Energy Agency to broaden its mandate to include 'alternative energy scenarios and strategies'.[56] Since then, the G8 has repeatedly emphasised the need for global energy security cooperation, diversification of the energy mix, substitution of fossil fuels and reduction of GHG emissions,

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49 Bradbrook, 'The Development of Renewable Energy Technologies', above n 42, 111.

50 International Energy Agency, *World Energy Outlook 2011*, above n 2, 41, 69; International Energy Agency, *IEA Makes 60 Million Barrels of Oil Available to Market to Offset Libyan Disruption* (23 June 2011) <http://www.iea.org/newsroomandevents/pressreleases/2011/june/name,20309,en.html>.

51 On other supply disruption risks see Redgwell, 'International Energy Security', above n 46, 18–28.

52 See Leaton, above n 8. See also Nick Robins et al, 'Sizing the Climate Economy' (Research Report, HSBC, September 2010) 4 (estimating that the solar and wind renewable energy generation market will be worth US$400 billion by 2020).

53 Renewable energy does however present technical challenges such as storage and intermittency: Sarah Ladislaw et al, 'A Roadmap for a Secure, Low-Carbon Economy: Balancing Energy Security and Climate Change' (Report, World Resources Institute and Centre for Strategic and International Studies, January 2009) 23–4.

54 Janet L Sawin et al, 'Renewables 2012: Global Status Report' (Report, Renewable Energy Policy Network for the 21st Century, 2012) 13, 15–16, 23, 47, 63. This remarkable increase is from a historically very low baseline for photovoltaic capacity, but indicates the potential of renewable energy as a clean technology.

55 Megan Slack, 'Our Dependence on Foreign Oil Is Declining' on *The White House Blog* (1 March 2012) <http://www.whitehouse.gov/blog/2012/03/01/our-dependence-foreign-oil-declining>. See also *American Recovery and Reinvestment Act of 2009*, Pub L No 111-5, § 123 Stat 115, 138 (2009); White House, 'Blueprint for a Secure Energy Future' (30 March 2011) <http://www.whitehouse.gov/sites/default/files/blueprint_secure_energy_future.pdf>.

56 Group of Eight, 'The Gleneagles Communiqué: Climate Change, Energy and Sustainable Development' (Joint communiqué presented at the G8 Gleneagles Summit, Scotland, 6–8 July 2005) 3 [11(a)] <http://www.unglobalcompact.org/docs/about_the_gc/government_support/PostG8_Gleneagles_Communique.pdf>.

noting that all are assisted by renewable energy.[57] The World Bank, another international actor, invested US$4.9 billion in 2010–11 — and US$3.6 billion in 2012 — to advance renewable energy.[58] Large-scale renewable energy investment has also been recommended by the International Energy Agency.[59] The policies and activities of these actors, though perhaps not enforceable under international law, demonstrate growing encouragement for states to address energy supply security challenges through renewable energy.

As succinctly opined by Susan Noé and George Pring, '[i]n the long-term, we cannot drill, dam and dynamite our way to energy security'.[60] Improving global energy supply security through clean technology will require unprecedented international cooperation and considerable financial investment. International law can facilitate this process. However, as argued in the following Part, the current international legal architecture is insufficient to achieve these goals.

III CURRENT INTERNATIONAL LAW AND RENEWABLE ENERGY

If the road to global environmental cooperation is long, the road to global energy cooperation is even longer. Encouragingly, the intensity of international energy collaboration has increased in recent decades, especially since the World Summit on Sustainable Development ('WSSD') in 2002,[61] raising possible challenges to traditionally accepted modes of international norm creation. This Part examines the architecture of international law related to renewable energy as it currently stands and questions the extent to which it can facilitate the

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57 Ibid [11], [16]. The Group of Eight has reaffirmed this position many times since: see Group of Eight, 'St Petersburg Plan of Action: Global Energy Security' (Joint Communiqué presented at the G8 St Petersburg Summit, Russia, 15–17 July 2006) [23], [33]–[36]; Group of Eight, 'G8 Leaders Declaration: Responsible Leadership for a Sustainable Future' (Joint Communiqué presented at the G8 L'Aquila Summit, Italy, 8–10 July 2009) [88], [93]; Group of Twenty Finance Ministers and Central Bank Governors, 'Cannes Summit Final Declaration: Building Our Common Future — Renewed Collective Action for the Benefit of All' (Declaration, Group of 20 Cannes Summit, 2011) [59]–[60] <http://www.g20.org/documents/>; Office of the Press Secretary, White House, 'Fact Sheet: G-8 Action on Energy and Climate Change' (Press Release, 19 May 2012) <http://www.g8.utoronto.ca/summit/2012campdavid/g8-energy-factsheet.html>.

58 World Bank, *Renewables Almost a Quarter of World Bank's Energy Lending* (7 November 2011) <http://www.worldbank.org>; World Bank, *World Bank Financing for Renewable Energy Hits Record High* (16 October 2012) <http://www.worldbank.org>.

59 Antonia Gawel et al, 'G-20 Clean Energy, and Energy Efficiency Deployment and Policy Progress' (Information Paper, IEA/OECD, 2011) 17–20.

60 Susan Y Noé and George (Rock) Pring, 'The "Fear Factor": Why We Should Not Allow Energy Security Rhetoric to Trump Sustainable Development' in Barry Barton et al (eds), *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (Oxford University Press, 2004) 431, 456.

61 Rosemary Lyster and Adrian Bradbrook, *Energy Law and the Environment* (Cambridge University Press, 2006) 68–9. For selected milestones and new actors see Parts III(A)(3), (4) and III(D) below. In light of the then newfound and burgeoning focus on clean energy, in 2001 the World Council for Renewable Energy was established with a mission to 'be a global voice for Renewable Energy': World Council for Renewable Energy, 'Foundation Document of the World Council for Renewable Energy WCRE' (Foundation Document, 2001) 1 <http://www.wcre.de/en/images/stories/pdf/wcre_foundation_document.pdf>. The Clean Energy Ministerial global forum, the purpose of which is to 'promote policies and programs that advance clean energy technology, to share lessons learned and best practices and to encourage the transition to a global clean energy economy' has been operative since 2010: Clean Energy Ministerial, *About the Clean Energy Ministerial* (2013) <http://www.cleanenergyministerial.org/About.aspx>.

achievement of SE4ALL. This question will be addressed with respect to four different aspects of international law:

(a) 'soft' international law and policy;
(b) relevant 'hard' international law;
(c) regional regulation; and
(d) activities of international actors and institutions.

It is argued that while soft energy law abounds and has arguably shaped the parameters of a 'sustainable energy law framework',[62] including the possibility of renewable energy targets,[63] the absence of hard regulation for energy generation, especially in the climate change regime, is both striking and unsustainable. It is further argued that regional frameworks, while progressive, also fail to establish meaningful renewable energy commitments, let alone targets. Notably, the treaty congestion within international environmental law is not mirrored in the regulation of energy.[64] The increasingly prominent activities of non-state institutional actors such as the International Renewable Energy Agency ('IRENA') illuminate, albeit in a fragmentary fashion, possible pathways toward achieving renewable energy cooperation and ultimately, it is hoped, SE4ALL.

A *Global Energy Policy Development: Soft Law Normativity*

The international community increasingly relies upon 'soft' international law to address global issues that are not easily attended to by the traditional international legal order, such as through legally binding instruments.[65] Soft international law generally refers to non-legally binding obligations or norms and includes principles, policies and conference resolutions adopted by non-state

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62 Lyster and Bradbrook, *Energy Law and the Environment*, above n 61, 34. Cf Duncan French, *International Law and Policy of Sustainable Development* (Juris and Manchester University Press, 2005) 37.

63 United Nations Secretary-General's High-Level Panel on Global Sustainability, 'Resilient People, Resilient Planet: A Future Worth Choosing' (Report, 2012) 62 [196].

64 Certain treaties regulate environmental consequences of energy activities: see, eg, *Convention for the Protection of the World Cultural and Natural Heritage*, opened for signature 16 November 1972, 1037 UNTS 151 (entered into force 17 December 1975). For a tangible example: see World Heritage Committee, United Nations Educational, Scientific and Cultural Organization, *Convention Concerning the Protection of the World Cultural and Natural Heritage*, 3rd ext sess, Doc WHC-99/CONF.205/INF.4 (10 July 1999) <http://whc.unesco.org/archive/1999/whc-99-conf205-inf4e.pdf>.

65 Edith Brown Weiss, 'Conclusions: Understanding Compliance with Soft Law' in Dinah Shelton (ed), *Commitment and Compliance: The Role of Non-Binding Norms in the International Legal System* (Oxford University Press, 2003) 535; Catherine Redgwell, 'International Soft Law and Globalization' in Barry Barton et al (eds), *Regulating Energy and Natural Resources* (Oxford University Press, 2006) 89, 98–9.

actors.[66] Soft law norms, the content of which may be contested, play an important role of integration and influence at the intersection of international environmental and energy law, not least because of their flexibility and evolutionary capacity. The growth in the quantity, scope and importance of soft law has challenged the 'neat typology' of traditional 'formal' sources of law as articulated in arts 38(1)(a)–(c) of the *Statute of the International Court of Justice*,[67] which soft law ostensibly sits beyond. Soft law is not without its critics.[68] Of particular relevance to SE4ALL is that many soft law instruments — and the extensive soft law commentary — 'engender [a] normative response'[69] by state and non-state actors: that is, they assume 'a regulatory role for soft law'[70] and 'provide [a] powerful [justification] for action'.[71]

The following section examines the evolution of international policy and soft law related to renewable energy across four broad epochs:

(i) general principles (1972–91);
(ii) sustainable development (1992–2001);
(iii) energy for sustainable development (2002–10); and
(iv) sustainable energy for all (2011–30).

Cumulatively, the rules, principles and policies that have emerged from each epoch have, despite their generality, had considerable influence on natural resource management and the level of energy transformation achieved to date. Arguably, more specific international soft law will be required to assist in the attainment of SE4ALL.

1 *General Principles: Indirectly Influential*

A well-established undercurrent of international environmental law principles, while often indeterminate and not directly applicable to energy generation, has nonetheless indirectly influenced energy policy.[72] Through widespread state

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66 An unequivocal definition of soft law is elusive. For discussion: see especially Redgwell, 'International Soft Law and Globalization', above n 65, 91–3. See also C M Chinkin, 'The Challenge of Soft Law: Development and Change in International Law' (1989) 38 *International and Comparative Law Quarterly* 850, 851–2; Alan Boyle, 'Soft Law in International Law Making' in Malcolm D Evans (ed), *International Law* (Oxford University Press, 3rd ed, 2010) 141, 161–9; Dinah Shelton, 'International Law and "Relative Normality"' in Malcolm D Evans (ed), *International Law* (Oxford University Press, 3rd ed, 2010) 122; Ulrich Beyerlin, 'Different Types of Norms in International Environmental Law: Policies, Principles, and Rules' in Daniel Bodansky, Jutta Brunnée and Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007) 425.

67 Hilary Charlesworth, 'Law-Making and Sources' in James Crawford and Martti Koskenniemi (eds), *The Cambridge Companion to International Law* (Cambridge University Press, 2012) 187, 197–9.

68 See generally Jan Klabbers, 'The Redundancy of Soft Law' (1996) 65 *Nordic Journal of International Law* 167; Anthony D'Amato, 'Softness in International Law: A Self-Serving Quest for New Legal Materials — A Reply to Jean d'Aspremont' (2009) 20 *European Journal of International Law* 897.

69 Redgwell, 'International Soft Law and Globalization', above n 65, 103.

70 Ibid 102. Consider the broad definition of regulation: see generally Black, above n 23.

71 Charlesworth, above n 67, 198.

72 See generally *Stockholm Declaration*, UN Doc A/CONF.48/14/Rev.1, ch I.

practice, accompanied by *opinio juris sive necessitatis* over many decades,[73] certain principles such as the 'no harm rule' have crystallised into customary international law.[74] However, the legal status of most principles relevant to energy activities, including precaution and polluter pays, remains contested.[75]

In 1981, renewable energy was directly addressed, for the first time, through intergovernmental policy by the UN, who was then newly 'convinced' of its social and economic importance.[76] While of modest initial impact, this policy planted the seed for the eventual establishment of the Committee on the Development and Utilization of New and Renewable Sources of Energy.[77] Of greater guidance to alternative energy policy was the period of sustainable development that followed the World Commission on Environment and Development. Known as the Brundtland Commission Report, it emphasised the necessity of '[d]evelopment which meets the needs of present generations without compromising the ability of future generations to meet their needs'.[78]

2 *Sustainable Development: Reclaiming the Environment*

The *Stockholm Declaration* and *Rio Declaration* collectively form the contours of sustainable development. Neither declaration defines sustainable development or expressly references energy.[79] Rather, energy policy is informed through, among other things, the notion of 'unsustainable patterns of production and consumption'.[80] The non-binding *Agenda 21*, a product of the same conference, made an early energy policy request of governments: to

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73 *North Sea Continental Shelf (Federal Republic of Germany v Denmark (Judgment)* [1969] ICJ Rep 3, 41–2 [71]–[73] ('*North Sea Continental Shelf*').

74 See above Part II(A).

75 *Rio Declaration*, UN Doc A/CONF.151/26/Rev.1(Vol. I), annex I [15]–[16]. See also Sands et al, above n 43, 217–33.

76 *United Nations Conference on New and Renewable Sources of Energy*, GA Res 36/193, UN GAOR, 36th sess, 103rd plen mtg, Agenda Item 69(o), Supp No 49, UN Doc A/RES/36/193 (17 December 1981). See also United Nations Conference on New and Renewable Sources of Energy, *Report of the United Nations Conference on New and Renewable Sources of Energy* (United Nations, 21 August 1981) ch 1 ('*Nairobi Programme of Action*').

77 This committee was eventually subsumed into the Commission on Sustainable Development ('CSD'), which was tasked with progressing intergovernmental policy negotiation in this area. The CSD was established by: *Institutional Arrangements to Follow Up the United Nations Conference on Environment and Development*, GA Res 47/191, UN GAOR, 47th sess, 93rd plen mtg, Agenda Item 79, Supp No 49, UN Doc A/RES/47/191 (29 January 1993) 2 para 2. The CSD's mandate broadened over time to include energy: see *Report of the World Summit on Sustainable Development*, UN Doc A/CONF.199/20 (2002) ch I pt 2 annex ('*Johannesburg Declaration on Sustainable Development*') ('*Johannesburg Plan*'). Note that the CSD will be subsumed into a new political body once the outcomes of the 2012 United Nations Conference on Sustainable Development are implemented.

78 *Report of the World Commission on Environment and Development: Note by the Secretary-General*, UN GAOR, 42nd sess, Agenda Item 83(e), UN Doc A/42/427 (4 August 1987) annex ('*Report of the World Commission on Environment and Development: Our Common Future*') 54 [1].

79 The *Stockholm Declaration* contains more specific provisions about natural resource management than the *Rio Declaration*: see Schrijver, above n 29, 139–40.

80 *Rio Declaration*, UN Doc A/CONF.151/26/Rev.1(Vol. I), annex I [8].

promote renewable energy research and technology transfer, including a review of the energy supply mix.[81]

Due to a lack of international consensus, debate continues over the content, legal status, threshold, process and role of sustainable development.[82] Nonetheless, however it is characterised, sustainable development as a concept[83] has influenced the evolution of energy policy. Philippe Sands deconstructs sustainable development as encompassing at least four elements of law: intergenerational equity, intra-generational equity, sustainable use and integration.[84] Renewable energy can be utilised to advance each element in a practical sense. For example, the United Nations Development Programme recommends renewable energy as a technology option to equitably balance economic development without prejudicing options and quality of resources and environment for future generations.[85]

Though sustainable development was originally framed in relation to environmental concerns, energy policy is 'central' to achieving its goals.[86] Since 1994, non-binding decisions of intergovernmental bodies have promulgated policy recommendations at the international level to change energy production patterns through renewable energy.[87] In 1997, the UN galvanised the international community's legitimate expectations for increased global

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81 All references are open-textured, allowing flexibility in adoption and implementation: *Report of the United Nations Conference on Environment and Development*, UN Doc A/CONF.151/26/Rev.1 (Vol. II) (1993) annex II [9.12(a)], [9.12(d)], [9.12(f)] ('*Agenda 21*').

82 Alan Boyle and David Freestone, 'Introduction' in Alan Boyle and David Freestone (eds), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press, 1999) 1, 3; Vaughan Lowe, 'Sustainable Development and Unsustainable Arguments' in Alan Boyle and David Freestone (eds), *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press, 1999) 19, 25, 31; French, above n 62, 35; Beyerlin, above n 66, 444–5.

83 *Gabčíkovo* [1997] ICJ Rep 7, 78 [140]. Cf at 88 (Separate Opinion of Vice-President Weeramantry). See also Michael Jacobs, 'Sustainable Development as a Contested Concept' in Andrew Dobson (ed), *Fairness and Futurity: Essays on Environmental Sustainability and Social Justice* (Oxford University Press, 1999) 21.

84 Philippe Sands, 'International Law in the Field of Sustainable Development' (1994) 65 *British Yearbook of International Law* 303, 338–41.

85 Jeni Klugman et al, 'Human Development Report 2011 — Sustainability and Equity: A Better Future for All' (Report, United Nations Development Programme, 2011) 20–1. See also Edenhofer et al, 'Summaries for Policymakers', above n 18, 18; Jayant Sathaye et al, 'Renewable Energy in the Context of Sustainable Development' in Ottmar Edenhofer et al (eds), *Renewable Energy Sources and Climate Change Mitigation: Special Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press, 2012) 715–16, 721–4. See also Edith Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Transnational, 1989).

86 Economic and Social Council, *Commission on Sustainable Development Report on the Ninth Session*, UN ESCOR, 9th sess, 13th mtg, Supp No 9, UN Doc E/2001/29 and E/CN.17/2001/19 (27 April 2001) ch I div B(A) [1] ('*Decision 9/1 Energy for Sustainable Development*') ('*CSD 9th Decision 9/1*'). See also *Pulp Mills on the River Uruguay (Argentina v Uruguay) (Judgment)* [2010] ICJ Rep 4, 74–5 [177].

87 See Economic and Social Council, *Report of the Commission on Sustainable Development on Its Second Session*, UN ESCOR, 2nd sess, Supp No 15, UN Doc E/1994/33 and E/CN.17/1994/20 (12 July 1994) 13–14 [43]–[57]; *CSD 9th Decision 9/1*, UN Doc E/2001/29 and E/CN.17/2001/19, ch I div C(3) [17(a)]. Further references to renewable energy are made at ch I div B(C.6) [23(f)], [23(i)], [23(j)], ch I div B(D.1) [26], ch I div B(E) [34(a)(ii)]–[34(a)(iii)], [34(b)], [34(f)], ch I div B(F) [36(3)].

renewable energy power generation, leading to a call for national targets to advance energy for sustainable development.[88]

3 *Energy for Sustainable Development: Catalysing Change*

In 2002, energy was linked, for the first time, to energy security, climate change and sustainable development by intergovernmental policy,[89] driving international action on renewable energy. Spurred by an express renewable energy political agenda,[90] over 118 countries went on to implement domestic renewable energy laws and policies to varying degrees.[91] Of lasting impact to international renewable energy law and policy is the first major non-binding international instrument to emerge from this movement, the *Johannesburg Plan of Implementation* ('*Johannesburg Plan*').[92] While arguably lacking specificity, it provides clear goals for states to

> (c) Develop and disseminate alternative energy technologies with the aim of giving a greater share of the energy mix to renewable energies …
>
> …
>
> (e) … With a sense of urgency, substantially increase the global share of renewable energy sources with the objective of increasing its contribution to total energy supply.[93]

With renewable energy mentioned 12 times, the *Johannesburg Plan* remains the most extensive soft law instrument supporting renewable energy development, implementation, technology transfer and commercialisation.[94] Despite its lack of specific targets or binding principles, as discussed by Adrian

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88 *Programme for the Further Implementation of* Agenda 21, GA Res S/19-2, UN GAOR, 19th spec sess, 11th plen mtg, Agenda Item 8, Supp No 49, UN Doc A/RES/S-19/2 (19 September 1997) annex paras 45, 46(a)–(e), 52; *CSD 9th Decision 9/1*, UN Doc E/2001/29 and E/CN.17/2001/19, ch I div B(C.3) [17].

89 See, eg, *Johannesburg Plan*, UN Doc A/CONF.199/20, ch I pt 2 annex [9(a)], [9(g)], [38(f)]. Such a connection has been scientifically confirmed: see Arvizu et al, above n 6, 118–25.

90 WEHAB Working Group, 'A Framework for Action on Energy' (World Summit on Sustainable Development, August 2002) 18–19. See also Renewable Energy and International Law, *An International Policy and Finance Network for Climate Change and Clean Energy* (2010) <http://www.reilproject.org>.

91 Sawin et al, above n 54, 7. For discussion on the particularly successful transformation to renewable energy in Germany, see Staffan Jacobsson and Volkmar Lauber, 'The Politics and Policy of Energy System Transformation — Explaining the German Diffusion of Renewable Energy Technology' (2006) 34 *Energy Policy* 256.

92 *Johannesburg Plan*, UN Doc A/CONF.199/20, ch I pt 2 annex.

93 Ibid [20(c)], [20(e)]. Of significance is that not all states were hostile to renewable energy targets. An initial draft of para 20(e) (then 19(e)) contained a bracketed provision for a time-bound target to increase the global share of renewable energy: see World Summit on Sustainable Development, *Draft Plan of Implementation of the World Summit of Sustainable Development*, UN Doc A/CONF.199/L.1 (26 June 2002) 2 [2]. The European Union, Iceland, New Zealand, Norway, Poland (speaking on behalf of Eastern Europe), Switzerland and Tuvalu supported this draft provision: see International Institute for Sustainable Development, 'Summary of the World Summit on Sustainable Development: 26 August – 4 September 2002' (2002) 22(51) *Earth Negotiations Bulletin* 1, 7.

94 *Johannesburg Plan*, UN Doc A/CONF.199/20, ch I pt 2 annex [9(a)], [9(c)], [20(c)], [20(d)], [20(e)], [20(g)], [20(j)], [20(k)], [20(n)], [20(t)], [59(b)], [62(j)(ii)].

Bradbrook and Ralph Wahnshafft,[95] the *Johannesburg Plan* embedded in the international consciousness the need to '[delink] economic growth and environmental degradation'.[96] Arguably, the *Johannesburg Plan* sought to elevate some aspects of domestic energy activity to a level of international concern.

During its 14th and 15th sessions, the Commission on Sustainable Development increased its influence over international energy law, particularly through encouraging the use of renewable energy to combat climate change.[97] Of particular significance was its call for 'time-bound targets for renewable energy',[98] which was ultimately unsuccessful due to disagreements over the proposed text. David Hodas condemns that outcome as demonstrating an absence of global commitment to an energy-based response to climate change.[99] Whether this is the case or not, the global attitude towards renewable energy has improved since the influential World Solar Programme of 1996–2005,[100] and the UNSG, UNGA and UN Economic and Social Council continue to stress the urgent need to increase the share of renewable energy in the global energy supply mix,[101] most notably through SE4ALL.

4 *Sustainable Energy for All: The Modern Imperative*

Although in form the UNGA can only make recommendations,[102] by virtue of its role and state membership it can provide significant normative weight to an issue. Its most significant contribution in the recent history of renewable energy policy was to declare 2012 the Year of International Sustainable Energy for All.[103] By UNGA request, the UNSG followed up with the global challenge of SE4ALL, calling for a global energy 'transformation', a global energy strategy and 'specific but meaningful targets' for renewable primary energy

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95 Adrian J Bradbrook and Ralph D Wahnshafft, 'International Law and Global Sustainable Energy Production and Consumption' in Adrian J Bradbrook et al (eds), *The Law of Energy for Sustainable Development* (Cambridge University Press, 2005) 181, 195. Many countries politically supported renewable energy obligations and formed the Johannesburg Renewable Energy Coalition: see *Letter Dated 16 October 2003 from the Permanent Representative of Italy to the United Nations Addressed to the Secretary-General*, UN Doc A/C.2/58/10 (24 October 2003).

96 *Johannesburg Plan*, UN Doc A/CONF.199/20, ch I pt 2 annex [15]; affirmed in *The Future We Want*, UN Doc A/66/L.56, 3 [16].

97 Commission on Sustainable Development, *Report on the Fourteenth Session*, UN ESCOR, Supp No 9, UN Doc E/2006/29(SUPP) and E/CN.17/2006/15(SUPP) (2006); Commission on Sustainable Development, *Report on the Fifteenth Session*, UN ESCOR, Supp No 9, UN Doc E/2007/29 and E/CN.17/2007/15 (2007) ('*ESC Sustainable Development Report 2007*').

98 *ESC Sustainable Development Report 2007*, UN Doc E/2007/29 and E/CN.17/2007/15, 2–3 [2], 4–5 [9]–[11].

99 David Hodas, 'International Law and Sustainable Energy: A Portrait of Failure' in Jamie Benidickson, Ben Boer, Antonio Herman Benjamin and Karen Morrow, *Environmental Law and Sustainability after Rio* (Edward Elgar, 2011) 257, 271.

100 *Promotion of New and Renewable Sources of Energy, Including the Implementation of the World Solar Programme 1996–2005,* GA Res 60/199, UN GAOR, 60th sess, 68th plen mtg, Agenda Item 52(f), UN Doc A/RES/60/199 (13 March 2006) 1.

101 *Promotion of New and Renewable Sources of Energy: Report of the Secretary General*, UN GAOR, 64th sess, Agenda Item 55(i), UN Doc A/64/277 (11 August 2009) 1, 19 [37] ('*UNSG Report 2009*').

102 *Charter of the United Nations* art 10.

103 *International Year of Sustainable Energy for All*, UN Doc A/RES/65/151, 2 para 1.

production.[104] This challenge, which envisages bottom-up domestic action to achieve top-down overarching international goals,[105] is not legally binding on states but is poised to advance international dialogue and inspire action. Depending on the outcome of the intergovernmental panel's consideration of possible global sustainable development goals,[106] SE4ALL could yet find itself cloaked in some form of binding international law.

The above section has emphasised the increasingly prevalent role of international soft law and policy, supplemented by UN activity, in guiding the normative development of renewable energy policies. While most instruments and decisions are not legally binding, their influence has propelled renewable energy onto the international political agenda and has achieved considerable international backing for SE4ALL. The following section will examine the degree to which binding international law furthers the renewable energy transformation.

B *Climate Change Regime: Hard Law, Missed Opportunity*

The international climate change regime is an example of multilateral standard-setting developed in response to international collective action issues.[107] It establishes legally binding international obligations through treaties — 'hard' international law[108] — that relate to domestic activities, namely the use and consequences of energy generation, which have an impact on the earth's atmosphere and natural processes. This section evaluates the extent to which the regime imposes legal obligations upon states' domestic primary energy production, specifically regarding renewable energy, as a mechanism to address climate change. It argues that the constitutive convention, regulatory protocol and subsequent international negotiations give insufficient attention to the direct regulation of renewable energy.[109] Rather, the present regime presents

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104 *Promotion of New and Renewable Sources of Energy*: *Report of the Secretary General*, UN GAOR, 66th sess, Agenda Item 19(j), UN Doc A/66/306 (15 August 2011) 17 [56], 18 [57]–[60], 22 [82]. See also United Nations Department of Public Information, above n 12.

105 See especially *SE4ALL Framework*, above n 1, 6, 19–20. See also Baste et al, above n 33, 461. While national action is necessary to transform domestic energy systems, this article focuses on the contribution that international law can provide in accelerating the decarbonisation process. The terms 'top-down' and 'bottom-up' are particularly well known in climate change law commentary and are pertinent to current international negotiations on the legal form of the 2015 Ad Hoc Working Group on the Durban Platform for Enhanced Action ('*ADP*') agreement: see Part IV(B) below. See also Daniel Bodansky and Elliot Diringer, 'Towards an Integrated Multi-Track Climate Framework' (Report, Pew Centre on Global Climate Change, 2007) 1–2; William Hare et al, 'The Architecture of the Global Climate Regime: A Top-Down Perspective' (2010) 10 *Climate Policy* 600; Steve Rayner 'How to Eat an Elephant: A Bottom-up Approach to Climate Policy' (2010) 10 *Climate Policy* 615.

106 *The Future We Want*, UN Doc A/RES/66/288, 46 [248], 16 [84]–[86].

107 Crawford, *Brownlie's Principles of Public International Law*, above n 27, 352, 360, 362–3. See also Birnie, Boyle and Redgwell, *International Law and the Environment*, above n 42, ch 6; Sands et al, above n 43, 274–98.

108 See, eg, Crawford, *Brownlie's Principles of Public International Law*, above n 27, 30–2, 367–71; Hugh Thirlway, 'The Sources of International Law' in Malcolm D Evans (ed), *International Law* (Oxford University Press, 3rd ed, 2010) 95, 99–101.

109 In practice, renewable energy production is advanced through the regime's market mechanisms: see Nicholas Stern, *The Economics of Climate Change: The Stern Review* (Cambridge University Press, 2007) ch 23.

a missed opportunity for real and effective climate action and could even be an obstacle to achieving SE4ALL.

1 Framework Convention on Climate Change*: Lacking Energy*

In 1988, the UNGA acknowledged that climate change is a 'common concern of mankind',[110] precipitating the 1992 *United Nations Framework Convention on Climate Change* ('*UNFCCC*').[111] This moment marked an international acknowledgement that fossil fuel-based energy production and consumption, among other things, is both a source of climate change and part of its 'solution[s] for adaptation and mitigation'.[112] Yet the *UNFCCC*'s direct regulatory role in minimising damage to the atmosphere and natural processes is limited. To date there is no overarching legal framework on the 'law of the atmosphere' akin to the law of the sea,[113] despite the International Court of Justice holding that the atmosphere is not an 'abstraction'[114] and the UN Security Council considering the link between climate change and international peace and security.[115]

As a framework convention, the *UNFCCC* mandates few detailed obligations for states parties, and even fewer specifically related to energy.[116] The primary obligation under the *UNFCCC* is to establish an inventory of GHG emissions and to develop national or regional measures to mitigate climate change.[117] In doing so, states parties are 'guided' by principles of international environmental law including intergenerational equity, precaution and sustainable development, according to their common but differentiated responsibilities.[118] While such

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110 *Protection of the Global Climate for Present and Future Generations of Mankind*, GA Res 43/53, UN GAOR, 43rd sess, 70th plen mtg, Agenda Item 48, Supp No 49, UN Doc A/RES/43/53 (6 December 1988) 1.

111 *United Nations Framework Convention on Climate Change*, opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 21 March 1994) arts 2, 4 ('*UNFCCC*'). Note that the *UNFCCC* and Intergovernmental Panel on Climate Change definitions of climate change differ.

112 Redgwell, 'International Regulation of Energy Activities', above n 19, 120. Acid rain, trans-boundary pollution and ozone preservation treaties also reference renewable energy, but do not directly regulate primary energy production: see, eg, *Convention on Long-Range Transboundary Air Pollution*, opened for signature 13 November 1979, 1302 UNTS 217 (entered into force 16 March 1983); *Vienna Convention for the Protection of the Ozone Layer*, opened for signature 22 March 1985, 1513 UNTS 293 (entered into force 22 September 1988).

113 *United Nations Convention on the Law of the Sea*, opened for signature 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994).

114 *Nuclear Weapons Opinion* (1996) ICJ Rep 226, 241 [29].

115 See UN SCOR, 62nd sess, 5663rd mtg, UN Doc S/PV.5663 (17 April 2007). See also *Statement by the President of the Security Council*, UN SCOR, 66th sess, 6587th mtg, UN Doc S/PRST/2011/15 (20 July 2011).

116 The *UNFCCC* Preamble recognises energy as being important to the economic growth of developing countries and art 8(h) requires special consideration for states with specific needs, including fossil fuel exporting countries: see generally Farhana Yamin and Joanna Depledge, *The International Climate Change Regime: A Guide to Rules, Institutions and Procedures* (Cambridge University Press, 2004). The *UNFCCC* Executive Secretary is increasingly adamant that 'sustainable development without sustainable, renewable energy is impossible': Christiana Figueres, 'Statement by Christiana Figueres, Executive Secretary: *United Nations Framework Convention on Climate Change*' (Speech delivered at the World Future Energy Summit, Abu Dhabi, 19 January 2012).

117 *UNFCCC* arts 4(1)(a)–(b).

118 Birnie, Boyle and Redgwell, *International Law and the Environment*, above n 42, 358; *UNFCCC* arts 3(1), (3)–(4), 4(1).

principles may encourage domestic renewable energy uptake, they are not legally binding per se. Rather, such principles are relevant to the interpretation and good faith implementation of the *UNFCCC* treaty.[119]

In fact, the purpose of the *UNFCCC* is to allow states parties the freedom to choose domestic measures that advance the 'ultimate objective' of reducing and stabilising atmospheric GHG emission levels so as to prevent dangerous anthropogenic climate change.[120] Renewable energy is not expressly mentioned in the *UNFCCC*.[121] The closest approximation is a vaguely worded obligation to 'promote and cooperate in the development, application and diffusion' of technologies that 'control, prevent or reduce' emissions in sectors including the energy sector.[122] This text was agreed on during *UNFCCC* negotiations because '[o]il-producing states such as Saudi Arabia and Kuwait objected to the regulation of sources' of emission[123] and the US strongly resisted emissions timetables and targets that could potentially impact domestic fossil fuel use.[124]

2 Kyoto Protocol *and Beyond: Hot Air on Energy Generation*

While the *UNFCCC* provides structure and guidance for domestic action, the *Kyoto Protocol to the United Nations Framework Convention on Climate Change* ('*Kyoto Protocol*') prescribes legally binding quantified emission limitation or reduction commitments for states parties listed in annex B.[125] States parties were required to individually or jointly reduce GHG emissions by at least five per cent below 1990 levels during the first commitment period of 2008–12.[126] To achieve this target, annex B states parties are legally obliged ('shall') to implement domestic policies, but have discretion ('such as') over policy choice. For example, the *Kyoto Protocol*'s sole reference to renewable energy is in art 2(1)(a) — a non-exhaustive list of eight non-binding policy options — which suggests that states parties research, develop, promote and increase the use of new and renewable forms of energy.[127] Despite the lack of

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119 Birnie, Boyle and Redgwell, *International Law and the Environment*, above n 42, 359; *UNFCCC* art 3.

120 *UNFCCC* art 2.

121 Similarly, energy efficiency is mentioned once in the Preamble, but not in the operative provisions of the *UNFCCC*.

122 *UNFCCC* art 4(1)(c).

123 Daniel Bodansky, 'The *United Nations Framework Convention on Climate Change*: A Commentary' (1993) 18 *Yale Journal of International Law* 451, 509.

124 Philippe Sands, 'The "Greening" of International Law: Emerging Principles and Rules' (1994) 1 *Indiana Journal of Global Legal Studies* 293, 321.

125 *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 16 March 1998, 2303 UNTS 148 (entered into force 16 February 2005) arts 2(1), 3(1), annex B ('*Kyoto Protocol*'). Annex B lists states parties that are developed and undergoing the process of transition to a market economy. GHGs include those not controlled by the *Montreal Protocol*: *Montreal Protocol on Substances that Deplete the Ozone Layer*, adopted 16 September 1987, 1522 UNTS 3 (entered into force 1 January 1989).

126 *Kyoto Protocol* art 3(1). A second commitment period from 2013–20, which will have fewer states parties than the first commitment period, was agreed at the 2012 *UNFCCC* Conference of the Parties serving as the Meeting of the Parties to the *Kyoto Protocol* held in Doha, Qatar. See also *Doha Amendment to the* Kyoto Protocol, opened for signature 8 December 2012 (not yet in force) <http://unfccc.int/files/kyoto_protocol/application/pdf/kp_doha_amendment_english.pdf>.

127 *Kyoto Protocol* art 2(1)(a)(iv).

binding obligations to use renewable energy (and energy efficiency), in practice, 45 million tonnes of carbon dioxide ('CO_2') equivalent have been abated using these clean technologies, by projects established through the *Kyoto Protocol*'s flexibility mechanisms, in particular the clean development mechanism.[128] In addition, funds have been established to increase the number and value of public–private partnerships on renewable energy.[129]

The global climate change regime has evolved considerably since the *UNFCCC* and *Kyoto Protocol* were established. It has spawned, among other things, the *Copenhagen Accord*, which pledged to keep global temperature increases below 2°C and established tracks to negotiate long-term cooperative action for 'deep cuts' in GHG emissions.[130] Regrettably, despite creating nationally appropriate mitigation actions and pledged targets,[131] binding renewable energy obligations in more recent formal documents are sparse. This position persists notwithstanding the 'emission gap', or more accurately the chasm, of 9–12 gigatonnes of CO_2 between the GHG emission reduction pledges made since Copenhagen and Cancun and those scientifically required to stay below 2°C.[132] This gap was noted with 'grave concern' in 2011, when states parties agreed to establish a new global platform with 'legal force' to enhance ambition and action on GHG emissions reductions: the Ad Hoc Working Group on the Durban Platform for Enhanced Action ('ADP').[133]

The present international legal architecture on climate change addresses the consequences of energy activities. In effect, the international community is seeking a cure for climate change while allowing states to choose their own

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128 Ibid art 12. See also Prime Ministerial Task Group on Emissions Trading, 'Report of the Task Group on Emissions Trading' (Report, Commonwealth of Australia, 2007) 66. Other mechanisms include joint implementation and emissions trading: *Kyoto Protocol* arts 6, 17.

129 One example is the Global Energy Efficiency and Renewable Energy Fund.

130 Conference of the Parties, United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties on Its Fifteenth Session, Held in Copenhagen from 7 to 19 December 2009 — Addendum — Part 2: Action Taken by the Conference of the Parties at Its Fifteenth Session,* UN Doc FCCC/CP/2009/11/Add.1 (30 March 2010) Decision 2/CP.15 [1]–[2] ('*Copenhagen Accord*'). See also Conference of the Parties, United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties on Its Thirteenth Session, Held in Bali from 3 to 15 December 2007 — Addendum — Part 2: Action Taken by the Conference of the Parties at Its Thirteenth Session*, UN Doc FCCC/CP/2007/6/Add.1 (14 March 2008) Decision 1/CP.13 ('*Bali Action Plan*').

131 *Bali Action Plan*, UN Doc FCCC/CP/2007/6/Add.1, arts 1(b)(i)–(ii), (v); Conference of the Parties, United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the* Kyoto Protocol *on Its Sixth Session, Held in Cancun from 29 November to 10 December 2010 — Addendum — Part 2: Action Taken by the Conference of the Parties Serving as the Meeting of the Parties to the* Kyoto Protocol *at Its Sixth Session*, UN Doc FCCC/KP/CMP/2010/12/Add.1 (15 March 2011) Decision 1/CMP.6 ('*Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the* Kyoto Protocol *at Its Fifteenth Session*').

132 Kornelis Blok et al, 'Bridging the Emissions Gap: A UNEP Synthesis Report' (Report, United Nations Environment Programme, November 2011) 8.

133 Conference of the Parties, United Nations Framework Convention on Climate Change, *Report of the Conference of the Parties on Its Seventeenth Session, Held in Durban from 28 November to 11 December 2011 — Addendum — Part 2: Action Taken by the Conference of the Parties at Its Seventeenth Session*, UN Doc FCCC/CP/2011/9/Add.1 (15 March 2012) Decision 1/CP.17 ('*Establishment of an Ad Hoc Working Group on the Durban Platform for Enhanced Action*') ('*ADP Decision*').

remedy. This approach willingly and knowingly allows the global situation to worsen. A doctor who treats his or her patient in this way would likely be negligent and culpable for malpractice.[134] The new imperative is to take preventative action to avert catastrophic climate change and attain SE4ALL. This could include establishing international renewable energy obligations and generation targets that, hopefully, facilitate a global approach to solving these problems.

As Steven Ferrey argues, renewable energy has largely been ignored in climate change law, to the disadvantage of developing states.[135] Both the *UNFCCC* and *Kyoto Protocol* promote sustainable development goals, but neither mandate renewable energy obligations.[136] A general commitment to the development of renewable energy sources was proposed at the beginning of negotiations for the *UNFCCC*, but was eventually ruled out.[137] In light of modern climate science and the above discussion (especially Part IIIA) and the burgeoning renewable energy soft law since 2002 (including SE4ALL), it is perhaps increasingly possible to argue for employing art 31(3)(c) of the *Vienna Convention on the Law of Treaties*[138] to interpret climate change obligations. Informed by an evolutionary (rather than isolationist) perspective that takes into account the wider context and developments in international law,[139] such an approach might imply a positive obligation under *UNFCCC* arts 4(1)(b)–(c) and

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134 There is a growing literature on domestic and international climate change liability and litigation: see, eg, Richard Lord et al (eds), *Climate Change Liability: Transnational Law and Practice* (Cambridge University Press, 2012).

135 See generally Steven Ferrey, 'The Failure of International Global Warming Regulation to Promote Needed Renewable Energy' (2010) 37 *Boston College Environmental Affairs Law Review* 67.

136 *UNFCCC* arts 2, 3(4)–(5); *Kyoto Protocol* art 2(1)(a). See also Ferrey, above n 135, 85; Adrian J Bradbrook, 'Energy Efficiency and the *Energy Charter Treaty*' (1997) 14 *Environmental and Planning Law Journal* 327; Bernd Hirschl, 'International Renewable Energy Policy — Between Marginalization and Initial Approaches' (2009) 37 *Energy Policy* 4407, 4409–11.

137 Bodansky, 'The *United Nations Framework Convention on Climate Change*', above n 123, 508–9, 541–2. See also Intergovernmental Negotiating Committee for a Framework Convention on Climate Change, *Preparation of a Framework Convention on Climate Change: Set of Informal Papers Provided by Delegations, Related to the Preparation of A Framework Convention on Climate Change*, UN Doc A/AC.237/Misc.1/Add.1 (22 May 1991); Intergovernmental Negotiating Committee for a Framework Convention on Climate Change, *Matters Relating to Commitments: Review of the Adequacy of Commitments in Article 4, Para 2(A) and (B) — Note by the Interim Secretariat*, 10th sess, Agenda Item 3(b), UN Doc A/AC.237/65 (25 July 1994) annex [20], [28]. *UNFCCC* states parties have previously endorsed international financial support for renewable energy activities within the regime: see Global Environment Facility, 'Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs' (Operational Program No 6, 2003) <http://www.thegef.org/gef/sites/thegef.org/files/documents/document/OP_6_English.pdf>.

138 *Vienna Convention on the Law of Treaties*, opened for signature 23 May 1969, 1155 UNTS 331 (entered into force 27 January 1980) ('*VCLT*'). For discussion on the use and limits of this provision: see generally Duncan French, 'Treaty Interpretation and the Incorporation of Extraneous Legal Rules' (2006) 55 *International and Comparative Law Quarterly* 281.

139 See generally Crawford, *Brownlie's Principles of Public International Law*, above n 27, 382–3; Birnie, Boyle and Redgwell, *International Law and the Environment*, above n 42, 19–22. Birnie, Boyle and Redgwell discuss challenges to this approach, one challenge being that in the cases cited, interpretation related to 'particular phrases or provisions' of a treaty rather than general revision or reinterpretation: at 20–1.

4(2)(a)[140] and *Kyoto Protocol* art 2(1)(a)(iv)[141] to develop and adopt national laws and policies that increase the share of renewable energy in the domestic and international energy supply mix. This approach could equally apply to other forms of clean technology.

Such an approach to interpretation — which is in principle supported by international jurisprudence,[142] though not without challenge — would significantly advance the object and purpose of the climate change regime, and facilitate systemic integration and coherence between different but related areas of international law.[143] Unless the climate change regime is 'self-contained',[144] at a minimum the sustainable development discourse may lend some normative weight to the increased use of renewable energy. Without modification, the existing regime's superficial engagement with the issue of energy generation is likely to prove inadequate to effectively mitigate climate change. The following section examines whether renewable energy law holds more promise in the regional context of Europe.

C *Regional Renewable Energy Law: Charter Exhortations*

Regional energy supply and energy intensity reduction goals have gained traction in recent history, precipitating various arrangements.[145] This section analyses the *Energy Charter Treaty* ('*ECT*'),[146] an international law instrument applied in a regional context, as a comparator to the general international law analysis above. The *ECT* is the first and only multilateral treaty directly related

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140 *UNFCCC* arts (4)(1)(b)–(c), 4(2)(a).

141 *Kyoto Protocol* art 2(1)(a)(iv).

142 See *Island of Palmas (The Netherlands v United States of America) (Award)* (1928) 2 RIAA 831, 845; *Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council* Resolution 276 (1970) *(Advisory Opinion)* [1971] ICJ Rep 16, 31–2 [53] ('*Namibia Opinion*'); *Gabčíkovo* [1997] ICJ Rep 7, 67 [112]; *Oil Platforms (Islamic Republic of Iran v United States of America) (Judgment)* [2003] ICJ Rep 161, 182 [41]; *Award in the Arbitration regarding the Iron Rhine ('Ijzeren Rijn') Railway between the Kingdom of Belgium and the Kingdom of the Netherlands, Decision of 24 May 2005 (Belgium v The Netherlands) (Award)* (2005) 27 RIAA 35, 66 [59], 73–4 [81], 115–16 [221].

143 See generally Campbell McLachlan, 'The Principle of Systematic Integration and Article 31(3)(c) of the *Vienna Convention*' (2005) 54 *International and Comparative Law Quarterly* 279.

144 See generally International Law Commission, *Fragmentation of International Law: Difficulties Arising from the Diversification and Expansion of International Law*, UN GAOR, 58th sess, UN Doc A/CN.4/L.682 (13 April 2006).

145 One such arrangement aims to diversify energy mix by producing 20 gigawatts of renewable energy per annum: Union for the Mediterranean, *Mediterranean Solar Plan* (19 January 2012) <http://ufmsecretariat.org/mediterranean-solar-plan/>. See also Africa-EU Partnership, *Energy* (July 2012) <http://www.africa-eu-partnership.org/areas-cooperation/energy>; *NAFTA* ch 6; International Institute for Sustainable Development, *Ministers Adopt Beijing Action Plan for 2013–2015* (20 July 2012) <http://africasd.iisd.org/news/ministers-adopt-beijing-action-plan-for-2013-2015/>.

146 *Energy Charter Treaty*, opened for signature 17 December 1994, 2080 UNTS 95 (entered into force 16 April 1998) ('*ECT*').

to energy matters, yet is essentially devoid of any meaningful renewable energy obligations.[147]

It is noted briefly that another regional body, the European Union, has imposed concrete binding obligations on member states, requiring that 20 per cent of its total energy share be derived from 'renewable sources' by 2020.[148] This law seeks to balance sovereignty with renewable energy targets by largely allowing choice in the implementation of technology — further strengthening the European Union's position as a climate change and a clean technology political innovator.[149] Such innovation is lacking in international law, which is not constituted by a supranational legal and political framework that enables similar progressive action.

The *ECT* is founded on the post-Cold War non-binding European *Energy Charter* ('*EC*'). Its purpose is to provide a legal and institutional framework to integrate and improve the efficient operation of energy markets in Europe.[150] In this regard, it may be characterised as a watershed sectoral energy — and energy security — instrument.[151] The *ECT* establishes a broad range of legal rights and obligations.[152] This section focuses on its environmental impact obligations.

While it has been claimed that the *ECT* and its *Protocol on Energy Efficiency and Related Environmental Aspects* ('*PEEREA*')[153] mark the origins of international law regarding energy efficiency,[154] the same cannot be said for renewable energy. The *ECT* does not have a separate protocol for any specific energy type. In one of its few publications on renewable energy, the Energy Charter Secretariat ('EC Secretariat') expressly acknowledges that renewable energy is not textually incorporated into the *PEEREA*, but asserts that the link is 'obvious'.[155] The same report provides helpful analysis of climate and energy science, barriers to renewable energy uptake and domestic policy options for

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147 Bradbrook, 'The Development of Renewable Energy Technologies and Energy Efficiency Measures through Public International Law', above n 42, 117–18. See also Bradbrook, 'Energy Efficiency and the *Energy Charter Treaty*', above n 136; Craig Bamberger and Thomas Wälde, 'The *Energy Charter Treaty*' in Martha Roggenkamp et al (eds), *Energy Law in Europe: National, EU and International Law and Institutions* (Oxford University Press, 2nd ed, 2007) 145.

148 *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* [2009] OJ L 140/16, art 13.

149 Miranda A Schreurs and Yves Tiberghien, 'Multi-Level Reinforcement: Explaining European Union Leadership in Climate Change Mitigation' (2007) 7(4) *Global Environmental Politics* 19, 23–4.

150 *ECT* Preamble para 5, art 2. The *ECT* has 53 Eurasian members in addition to observer states from around the world: Fatouros, above n 21, 412.

151 *Final Act of the* European Energy Charter *Conference* [1998] OJ L 69/5, pt IV [1(a)] ('*Final Act of the EECC*'). Reservations to the *ECT* are not permitted: *ECT* art 46. Accordingly, 'understandings' may be used for interpretative purposes that support the *ECT*'s object and purpose: *VCLT* arts 19, 31, 32.

152 See especially *ECT* pts II–IV art 7.

153 *Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects*, opened for signature 17 December 1994, 2081 UNTS 3 (entered into force 16 April 1998) ('*PEEREA*').

154 Lyster and Bradbrook, *Energy Law and the Environment*, above n 61, 57. The *PEEREA* makes no reference to renewable energy. For an examination of obligations, see Bradbrook, 'Energy Efficiency and the *Energy Charter Treaty*', above n 136.

155 'Integration of Energy Efficiency and Renewable Energy Policies' (Report, Energy Charter, 2005) 2.

contracting parties to promote renewable energy and energy efficiency.[156] However, the report does not indicate whether or how the *ECT* or *PEEREA* may be used to advance such matters, thus returning attention to their limited legal roles.

That the *ECT* incorporates renewable energy obligations can only be extrapolated from two treaty sections. First, the *ECT* relates to 'Economic Activity in the Energy Sector' that includes 'production' among other aspects of the energy cycle.[157] Activities 'illustrative' of production include the construction and operation of power generation facilities, particularly those powered by renewable energy sources.[158] Consequently, renewable energy is considered a type of energy investment touched by the *ECT* in general. Secondly, while the *ECT* ostensibly imposes renewable energy obligations on contracting parties, they are situated within the section on 'Environmental Aspects'.[159] The subordinated role of this section is highlighted by its structural location — under 'Part IV: Miscellaneous Provisions'. Interestingly, Part IV reaffirms the parties' sovereignty and sovereign rights over energy resources, while concurrently requiring those parties to 'undertake' to facilitate access to energy resources.[160] Fatouros also highlights the range of specific-to-vague obligations in the *ECT*.[161]

As to the content of the environmental requirements, contracting parties are to follow various international environmental law-like principles when implementing obligations — namely sustainable development, precautionary measures and the concept that 'in principle' the polluter should pay.[162] Thomas Wälde commented that on environmental matters the *ECT* 'tries to be as "politically correct" as possible' but 'very carefully avoids any legally binding environmental obligation'.[163] The only express reference to renewable energy is found *ECT* art 19(1)(d) which requires parties to 'have particular regard … to developing and using renewable energy sources' and to promote cleaner fuels.[164] This is phrased as a particularly weak form of obligation of conduct and does not indicate a mandatory obligation to develop, use, promote or implement renewable energy law or policy domestically. Further indirectly related

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156 A similar and more comprehensive report was produced about energy efficiency law and policy among contracting parties: see 'The Road Towards an Energy-Efficient Future: Report to the Ministerial Conference "Environment for Europe", Kiev, Ukraine, May 21–23, 2003' (Report, EC Secretariat, 2003).

157 *ECT* art 1(5).

158 *Final Act of the EECC*, pt IV [2(b)(ii)].

159 *ECT* art 19(d).

160 Ibid arts 18(1), (4).

161 Fatouros, above n 21, 413.

162 *ECT* art 19(1).

163 Thomas W Waelde, 'Sustainable Development and the 1994 *Energy Charter Treaty*: Between Pseudo-Action and the Management of Environmental Investment Risk' in Friedl Weiss, Erik Denters, Paul de Waart (eds), *International Economic Law with a Human Face* (Kluwer Law International, 1998) 223, 236. Waelde explores other possible perspectives and treaty interpretations against the general corpus of environmental obligations: at 240–5.

164 This goal is reiterated, politically, in the context of promoting energy efficiency and energy supply diversity in order to minimise environmental harm: see Energy Charter Conference, 'Concluding Document of The Hague Conference on the European *Energy Charter*' (The Hague, 17 December 1991) Title I para 3(iii), as contained in *The* Energy Charter Treaty *and Related Documents: A Legal Framework for International Energy Cooperation* (Energy Charter Secretariat, 2004).

requirements include promoting 'awareness of the Environmental Impacts of energy systems' on human welfare and the climate, as well as the research, development and application of technologies that will 'minimize' harmful impacts of the energy cycle.[165] The significance of any residual legal status that may exist is eviscerated by the requirement that parties 'strive' to achieve these obligations in an 'economically efficient' manner.[166]

The net picture is that while the *ECT* exhorts broad legal obligations relating to renewable energy and environmental protection, it is devoid of meaningful legal content and contains weak policy recommendations at best. It is a pro-investment treaty that favours traditional production and consumption of non-renewable energies. Accordingly, the *ECT*'s energy obligations appear to be of minimal relevance in facilitating the SE4ALL renewable energy goals.

Nevertheless, in 2001 the EC Secretariat established the Legal Advisory Task Force to assist in drafting balanced and legally coherent model agreements, commencing with cross-border pipelines.[167] In 2011, a detailed and comprehensive model agreement was drafted for cross-border electricity projects, including an intergovernmental agreement and a heads of government agreement, for states and investors to voluntarily use in negotiations.[168] Its aim is to facilitate the efficient realisation of prospective cross-border electricity systems by addressing complex technical and regulatory aspects of energy transmission.[169] These models could potentially help to reduce knowledge barriers and investment risk, increase transparency and facilitate swifter action on certain (primarily on-grid) electricity infrastructure projects contemplated in light of SE4ALL.

The following section moves from regional regulation to examine the increasingly normative influence of non-state actors on international renewable energy law and policy development.

D *Actors and Institutions: Facilitating Global Cooperation*

Making SE4ALL a reality will require engagement and governance by multiple stakeholders.[170] The number of non-state actors with broad or narrow mandates related to energy and renewable energy — which may also vary in terms of their formality, openness and international or regional scope — has increased dramatically since the WSSD. There remains, however, no single international organisation with a mandate to regulate all energy matters. This

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165 *ECT* arts 19(1)(f), (1)(g), (3)(b).

166 Lyster and Bradbrook, *Energy Law and the Environment*, above n 61, 60; Clare Shine, 'Environmental Protection under the *Energy Charter Treaty*' in Thomas Wälde (ed), *The* Energy Charter Treaty*: An East-West Gateway for Investment & Trade* (Kluwer Law International, 1996) 520, 544; Waelde, 'Sustainable Development and the 1994 *Energy Charter Treaty*', above n 163, 239. *ECT* art 19(1) states that economic efficiency requires parties to 'act in a [c]ost-[e]ffective manner'. *ECT* art 19(3)(d) provides that '"cost-effective" means to achieve a defined objective at the lowest cost or to achieve the greatest benefit at a given cost'.

167 Energy Charter Secretariat, *Legal Advisory Task Force* <http://www.encharter.org/index.php?id=282>.

168 Energy Charter Secretariat, 'Model Intergovernmental and Host Government Agreements for Cross-Border Electricity Projects' (2011).

169 Ibid 7 [29], 9 [40].

170 Klugman et al, above n 85, 71.

section first considers particular actors that have influenced the development of international law related to energy, focusing in particular on the role of UN-Energy. It then examines in detail the mandate and potential of one international organisation pertinent to renewable energy governance: IRENA. These two entities are the newest and most immediately relevant to international renewable energy cooperation.

1 *Advocates, Agencies, Banks and Think Tanks: Shaping Energy Policy*

The number of non-state actors that influence the development of international law related to energy, in addition to contributing to its fragmentation, has increased significantly in recent history.[171] The array includes non-governmental organisations (Renewable Energy and Energy Efficiency Partnership, Renewable Energy Policy Network for the 21st Century), political conferences (International Energy Forum, World Future Energy Summit, Group of Twenty Finance Ministers and Central Bank Governors, G8), international organisations (IRENA, OECD, International Energy Agency)[172] and UN agencies and programmes (UN-Energy, UN Environment Programme, UN Development Programme, World Bank). International financial institutions in particular now play a crucial role in transitioning to a low-carbon economy.[173]

The intergovernmental International Conference for Renewable Energy series, established in 2004 in Bonn,[174] is of particular significance. The Conference advocates for and contributes to the progression of domestic renewable energy policy by raising awareness and facilitating the global exchange of policy and technology experience.[175] It has expressly declared the centrality of renewable energy to the contemporary international community:

> Ministers and Government Representatives from 154 countries … acknowledge that renewable energies combined with enhanced energy efficiency, can significantly contribute to sustainable development, to providing access to energy, especially for the poor, to mitigating greenhouse gas emissions, reducing harmful air pollutants, thereby creating new economic opportunities, and enhancing energy security through cooperation and collaboration.
>
> ...
>
> *[A]gree* to build upon the results and agreements reached at the Earth Summit … the Millennium Declaration and the Millennium Development Goals … and the

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171 Fatouros, above n 21, 378–9, 398–9; Redgwell, 'International Regulation of Energy Activities', above n 19, 19; Ellen Hey, 'International Institutions' in Daniel Bodansky, Jutta Brunnée and Ellen Hey (eds), *The Oxford Handbook of International Environmental Law* (Oxford University Press, 2007) 749, 755–60.

172 Since 2005 when the International Energy Agency's mandate expanded: see Group of Eight, above n 56, 3 [11(a)].

173 *UNSG Report 2009*, UN Doc A/64/277, 21 [43]. On the democracy deficit of international organisations: see generally Daniel Bodansky, 'The Legitimacy of International Governance: A Coming Challenge for International Environmental Law?' (1999) 93 *American Journal of International Law* 596.

174 Renewable Energy Policy Network for the 21st Century, *Renewables 2004* <http://www.ren21.net/REN21Activities/IRECs/Renewables2004.aspx>. The conference was proposed at the World Summit on Sustainable Development by then German Chancellor Gerhard Schröder.

175 For a circumspect assessment of the conference outcomes, see Hirschl, above n 136, 4411–12.

> World Summit for Sustainable Development … *reaffirm* their commitment to substantially increase with a sense of urgency the global share of renewable energy in the total energy supply.[176]

Similar intentions are encapsulated in declarations made at the 2005 (Beijing), 2008 (Washington) and 2010 (Delhi) Conferences — although attendance at some of the conferences was affected by the global financial crisis — and these intentions have resulted in hundreds of voluntary pledges for action on renewable energy.[177] At the Abu Dhabi Conference in January 2013, 160 ministers welcomed the SE4ALL initiative and declared that they 'will continue to pursue its combined goals of providing access to modern energy services for all, doubling the share of renewable energy, and doubling energy efficiency by 2030'.[178] They also 'support the unanimous declaration' of the Decade of Sustainable Energy for All, underscoring 'the need for increased use of renewable sources of energy'.[179]

These sustained ministerial statements, spanning multiple years, are examples of state practice that appear to evince a consistent intention to increase renewable energy use. It is less apparent whether they also evince a belief that such practice is 'rendered obligatory by the existence of a rule requiring it':[180] that is, whether there is sufficient *opinio iuris sive necessitatis* to recognise an existing, or support the formation of a new, customary obligation. Nonetheless, their normative influence is considerable and demonstrative of the direction of international renewable energy discourse and policy.

The UN's constitutive document, the *UN Charter*, does not expressly articulate a mandate or purpose for the organisation in relation to energy and the environment.[181] However, energy is said to fall within the UN's broad and general competence.[182] The UN has established over 40 disparate programmes related to energy, providing US$16 billion in funding, with US$4 billion dedicated to renewable energy projects.[183] In 2004, UN-Energy was established

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176 International Conference for Renewable Energies, 'Political Declaration' (Declaration, 4 June 2004) <http://www.ren21.net/Portals/0/documents/irecs/renew2004/Political_declaration_final.pdf> (emphasis in original). See also International Conference for Renewable Energies, 'List of Commitments: International Action Programme' (30 August 2004) <http://www.ren21.net/Portals/0/documents/irecs/renew2004/List_of_Actions_and_Commitments.pdf>.

177 National Development and Reform Commission, People's Republic of China, *Beijing Declaration on Renewable Energy for Sustainable Development* (9 November 2005) <http://en.ndrc.gov.cn/newsrelease/t20051109_49228.htm>; Washington International Renewable Energy Conference, 'WIREC 2008' (Report, Conference 2008) <http://www.acore.org/images/uploads/WIREC_Report.pdf>; Delhi International Renewable Energy Conference, 'DIREC Declaration' (Declaration, 29 October 2010) <http://www.direc2010.gov.in/pdf/DIREC-Declaration.pdf>.

178 'Declaration of the Abu Dhabi International Renewable Energy Conference' (Declaration, 17 January 2013) [6] <http://www.ren21.net/Portals/0/documents/ADIREC/ADIREC%20Declaration%20--%20final%20--%2017%20Jan%202013.pdf>.

179 Ibid [7].

180 *North Sea Continental Shelf* [1969] ICJ Rep 3, 44 [77].

181 See *Charter of the United Nations* art 1(1), (3).

182 See ibid arts 1, 55, 66.

183 Alain Lafontaine et al, 'Delivering on Energy: An Overview of Activities by UN-Energy and its Members' (Report, United Nations, 2010) 2.

as a mechanism for inter-agency collaboration across those programmes.[184] Its specific aim is to promote 'system-wide' coherence in the field of energy, including renewable energy, especially in relation to activities in response to the WSSD.[185] UN-Energy's mandate stops short of facilitating intergovernmental renewable energy cooperation: that role is fulfilled by IRENA.

2 *IRENA: Power to Influence*

Historically, there has been no international or intergovernmental process to promote, 'host or facilitate dialogue' on energy issues.[186] With the opening of IRENA on 4 April 2011, this gap has been partially filled.[187] As at 27 January 2013 it had 106 members, including the EU, and 54 signatories.[188] As an international organisation regulated by public international law, IRENA's competence and powers are determined as follows: first, by express language in its constitutive treaty; secondly, implied as necessary to 'effectively' fulfil its function; and thirdly, by subsequent practice.[189]

The scope of IRENA's express mandate includes promoting widespread, increased adoption and 'sustainable use of all forms of renewable energy'.[190] The potential force of these activities is diluted by the requirement that they 'tak[e] into account' states' national and domestic priorities.[191] Substantively, IRENA has no express competence or implied power to negotiate or establish international legal obligations with respect to renewable energy targets.[192] This may limit the organisation's potential as an avenue for the facilitation of SE4ALL, where such a power could assist in improving the coordination and effectiveness of the 118 domestic renewable energy targets currently enacted.

However, as contended by Meyer, this narrow mandate could be perceived as a strength by removing 'governance risk' — substantive rules and processes that undermine market or behavioural risks — and 'epistemic issues' from powers to

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184 Ibid 4. See also UN-Energy, *UN-Energy Terms of Reference* <http://www.un-energy.org/about/terms-of-reference/>.

185 Lafontaine et al, above n 183, 4.

186 WEHAB Working Group, above n 90, 16.

187 States parties were '*convinced*' of renewable energy's major role in reducing GHG emissions: *Statute of the International Renewable Energy Agency*, opened for signature 26 January 2009, 48 ILM 1223 (entered into force 8 July 2010) Preamble ('*IRENA Statute*') (emphasis in original).

188 International Renewable Energy Agency, *IRENA Membership* (2013) <http://www.irena.org/Menu/Index.aspx?mnu=Cat&PriMenuID=46&CatID=67>. Membership is open to United Nations member states and regional intergovernmental economic integration organisations, with observer status for non-governmental organisations with an interest in renewable energy: see *IRENA Statute* arts VI(A), VII(A).

189 See *Reparation for Injuries Suffered in the Service of the United Nations (Advisory Opinion)* [1949] ICJ Rep 174, 180, 182–3; *Certain Expenses of the United Nations (Advisory Opinion)* [1962] ICJ Rep 151, 157, 168, 177; *Namibia Advisory Opinion* [1971] ICJ Rep 16, 22 [21]–[22]; *Nuclear Weapons Opinion* [1996] ICJ Rep 226, 74–5 [19]. See also E Lauterpacht, 'The Development of the Law of International Organization by the Decisions of International Tribunals' (1976) 152 *Recueil des Cours* 377, 416, 420, 430–2; Philippe Sands and Pierre Klein, *Bowett's Law of International Institutions* (Sweet & Maxwell, 6th ed, 2009); *IRENA Statute* art XIII(A).

190 *IRENA Statute* art II.

191 Ibid art II(a).

192 The IRENA Assembly, Council and Secretariat have weak powers to 'recommend': ibid arts IV(A)(1), IX(A)(3)(a)–(b), IX(G), X(F), XI.

bind;[193] it could potentially equip IRENA to become a streamlined institutional facilitator and global centre of excellence for renewable energy. On this reading, in theory IRENA could propel global innovation and diffusion of renewable energy technology, which is likely to bring about the indirect benefit of reducing climate change compliance costs.[194]

IRENA marks a significant advancement in intergovernmental discussion and cooperation on renewable energy finance, technology and knowledge. Importantly, its programmatic activities engage countries, international organisations and, crucially, the private sector, all of which must cooperate to deliver scalable renewable energy systems. Early signs of IRENA's positive tangible impact are evident. It has, among other things: released a Nationally Appropriate Mitigation Actions handbook to assist in the transition to sustainable energy production and consumption; engaged representatives from Gulf states to discuss increasing regional renewable energy; agreed on a memorandum with the Dubai Electricity and Water Authority to accelerate Dubai's renewable energy uptake; and created the Global Atlas for Renewable Energy Resources.[195]

In light of the newly declared Decade of Sustainable Energy for All, IRENA is well positioned to become the 'renewables hub' for multilateral action and to facilitate global renewable energy cooperation.[196] The recently-launched IRENA renewable energy *Roadmap to 2030* will energise this process,[197] and in doing so will also advance universal access to energy. Although IRENA faces challenges in driving renewable energy uptake, it has received the endorsements necessary to harness the ongoing global awakening of renewable energy consciousness that will advance SE4ALL.[198]

Despite IRENA's current activities and future potential, its limited competence could be problematic. It has the power to influence, but no binding mandate. There presently remains no international institutional entity capable of negotiating and monitoring international principles, rules and standards on

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193 Timothy Meyer, 'Global Public Goods, Governance Risk, and International Energy' (2012) 22 *Duke Journal of Comparative & International Law* 319, 320–1.

194 Ibid 335–6.

195 International Renewable Energy Agency, *Guide Launched for National Policy Makers on Renewable Energy* (30 November 2012) <http://www.irena.org/News/Description.aspx?NType=NWS&PriMenuID=16&cati d=84&mnu=cat&News_ID=267>; International Renewable Energy Agency, *A Renewable Energy Future for the Gulf? — COP 18* (4 December 2012) <http://www.irena.org/News/Description.aspx?NType=NWS&PriMenuID16&catid=84&mnu=cat&News_ID=270>; International Renewable Energy Agency, *IRENA and DEWA Sign Memorandum to Accelerate Dubai's Renewable Energy Uptake* (19 December 2012) <http://www.irena.org/News/Description.aspx?NType=NWS&PriMenuID=16&catid=84&mnu=cat&News_ID=271>; International Renewable Energy Agency, *Welcome to the Global Atlas* (2013) <http://www.irena.org/GlobalAtlas/>.

196 Assembly, International Renewable Energy Agency, *Decision on the Work Programme and Budget for 2013*, IRENA Doc A/3/DC/13 (14 January 2013) [24]–[26].

197 International Renewable Energy Agency, *Doubling the Global Share of Renewable Energy: A Roadmap to 2030* (2013) <http://www.irena.org/menu/index.aspx?mnu=Subcat&PriMenuID=36&CatID=141&SubcatID=290>.

198 'Declaration of the Abu Dhabi International Renewable Energy Conference', above n 178, [8]–[9].

renewable energy.[199] Such a forum — while no doubt a challenge to establish — would considerably advance SE4ALL and assist in mitigating climate change. The question remains, as World Trade Organization Director-General Pascal Lamy asks, does the world need new, more comprehensive global governance in energy?[200] Whether subsequent practice will expand IRENA's competence to include binding renewable energy governance remains to be seen, but for the moment it provides a promising channel to unlock political will and effectively address climate change outside of, or in addition to, the *UNFCCC* process.

The foregoing discussion examined the proliferation of non-binding instruments and deficiencies in international legal architecture relating to renewable energy. While the prevalence, content and legal status of the various instruments may be contentious, their collective influence is large, particularly when combined with that of non-state actors. Arguably, the increased momentum since 1992 for renewable energy may be building toward a crystallisation of rules, principles or policies of customary international law. But despite decades of policies, programmes and funding,[201] 'very little to no progress' has been made towards achieving the 450 parts per million target.[202] Yet energy production can be 'relatively easily' de-carbonised through renewable energy.[203] These goals, however, cannot be fully achieved without unprecedented global cooperation. This justifies international law's time to shine on renewable energy regulation. The following Part explores four possible mechanisms for the regulation of renewable energy through which the international legal system may advance the goals of SE4ALL.

IV THE FUTURE OF INTERNATIONAL LAW AND RENEWABLE ENERGY

'Because energy issues transcend boundaries, global goals' and specific measurable targets can assist in harmonising national law and policy development.[204] This Part asks how international energy law might facilitate increasing global renewable energy generation and diversification of the supply mix. It then provides a conceptual overview of select possible legal

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199 Achim Steiner et al, 'International Institutional Arrangements in Support of Renewable Energy' in Dirk Aßmann, Ulrich Laumanns and Dieter Uh (eds), *Renewable Energy: A Global Review of Technologies, Policies and Markets* (Routledge, 2006) 152, 152–3, 157; Ferrey, above n 135, 126.

200 Pascal Lamy, 'Energy, Trade and Global Governance' in Joost Pauwelyn (ed), *Global Challenges at the Intersection of Trade, Energy and the Environment* (The Graduate Institute/Centre for Trade and Economic Integration, 2010) 15, 18. There is an extensive commentary on energy and the environment within the World Trade Organization.

201 *UNSG Report 2011*, UN Doc A/66/287, 5 [15].

202 Johan C I Kuylenstierna et al, 'Atmosphere', in *Global Environment Outlook 5: Environment for the Future We Want* (Research Outlook, United Nations Environment Programme, 2012) 31, 36, 38, 61.

203 Arvizu et al, above n 6, 127. For example, it is suggested that Australia could economically de-carbonise within 10 years: see generally Matthew Wright et al, 'Australian Sustainable Energy: Zero Carbon Australia Stationary Energy Plan' (Research Report, The University of Melbourne Energy Research Institute/Beyond Zero Emissions, 2010).

204 WEHAB Working Group, above n 90, 15; Baste et al, above n 33, 470–1.

mechanisms,[205] cognisant that political will remains an obstacle to the implementation of any suggestion. The options canvassed include:

(i) an international energy convention;
(ii) an energy protocol to the *UNFCCC*;
(iii) reform and a new protocol to the *ECT*; and
(iv) an international declaration on renewable energy principles.[206]

As an aside, IRENA could have an increased role in this space, should states empower it with a mandate to set global renewable energy standards and generation targets.

A *International Energy Convention: Targeting Generation*

International conventions are the predominant form of international regulation. To date there is no binding global treaty governing sustainable energy, let alone the energy sector as a whole. Negotiating treaties is complex and challenging. However, given the urgent need for global cooperation on energy and the environment and the gravity of predicted climatic consequences, a binding agreement may be 'justified'.[207] It has been suggested that a centralised, legally-binding climate governance framework with strict 'targets and timetables' is the most effective means to pursue globally coordinated emissions reductions sufficient to stay below the 2°C (or 1.5°C) climate change threshold.[208] Perhaps regulating energy in a similar fashion would assist in achieving this goal and the SE4ALL target of doubling renewable energy. For any international energy convention with binding targets to be credible, it must address the endemic issues stalling climate negotiations — equity, contribution, capacity, finance and technology transfer — in a constructive and progressive manner. Templates exist to inform the content of an energy convention, including the previously unsuccessful *Global Energy Charter*[209] and *Directive*

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205 A full feasibility analysis of any option would have to exhaustively consider: legal form (eg, whether and to what extent the instrument is binding); character of commitments (eg, mandatory or discretionary); and accountability and enforcement mechanisms: Remi Moncel et al, 'Building the Climate Change Regime: Survey and Analysis of Approaches' (Working Paper, United Nations Environment Programme/World Resources Institute, 2011) 6–7.

206 For excellent analysis on possible legal mechanisms to address climate change: see generally Joseph E Aldy and Robert N Stavins (eds), *Architectures for Agreement: Addressing Global Climate Change in the Post*-Kyoto *World* (Cambridge University Press, 2007). See also Joseph E Aldy and Robert N Stavins (eds), *Post*-Kyoto *International Climate Policy: Implementing Architectures for Agreement* (Cambridge University Press, 2010).

207 Lyster and Bradbrook, *Energy Law and the Environment*, above n 61, 199. See also Adrian Bradbrook, 'Drafting a New International Convention on Energy Efficiency and Renewable Energy' in Peter Catania, Brian Golchert and Chenn Q Zhou (eds), *Energy 2000: The Beginning of a New Millennium* (Technomic Publishing, 2000) 1105, 1105–15.

208 Hare et al, above n 105, 603–4, 608.

209 World Sustainable Energy Coalition, *Global Energy Charter for Sustainable Development*, Cercle Mondiale du Consensus <http://www.cmdc.net/echarter.html>. *VCLT* art 2(1)(a) defines 'treaty', which is synonymous with 'convention', as:

> an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation …

2009/28/EC.[210] The latter has been accepted by states despite concerns around issues of sovereignty and autonomy over national policy.

B *Energy Protocol to the* UNFCCC*: Durban Platform Possibility?*

If an independent energy convention is untenable, an energy protocol to the *UNFCCC* may garner stronger political support.[211] Due to the enormous GHG mitigation potential of renewable energy, an energy protocol is a reasonable conceptual evolution of the climate change regime. As previously discussed, renewable energy is referenced in both the *UNFCCC* and *Kyoto Protocol* in non-binding terms. One advantage of an energy protocol is that *UNFCCC* states parties are not compelled to join. However this also risks a repeat of the *Kyoto Protocol* entry into force experience. Thoughtful academic models already exist for a complete energy protocol,[212] which could conceivably form a vital part of a package of measures adopted as part of the ADP negotiations.

The express purpose of the ADP is 'to develop a protocol, another legal instrument or an agreed outcome with legal force under the [*UNFCCC*] applicable to all Parties'.[213] An energy protocol could provide a meaningful and environmentally effective mechanism to advance the ADP goal of raising the 'ambition levels' of states parties — their collective political will to propose and implement domestic activities that will reduce GHG emissions enough to avoid exceeding the 2°C threshold.[214] Time is of the essence, as the preparatory process, including negotiations for a text, must lead to the adoption of the future outcome by no later than 2015, so that it may come into effect and be implemented from 2020 onwards.[215]

Renewable energy has been contemplated in early-stage discussions among states parties as an option to increase the ambition of existing pledges and 'supplementary' measures to reduce emissions before 2020 (known as

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210 *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* [2009] OJ L 140/16.

211 *UNFCCC* art 17 permits the adoption of protocols to the *Convention*. See also Jacob Werksman and Kirk Herbertson, 'The Aftermath of Copenhagen: Does International Law Have a Role to Play in a Global Response to Climate Change?' (2010) 25 *Maryland Journal of International Law* 109.

212 See, eg, Adrian J Bradbrook, 'The Development of a Protocol on Energy Efficiency and Renewable Energy to the *United Nations Framework Convention on Climate Change*' (2001) 5 *New Zealand Journal of Environmental Law* 55. Options to develop protocols for other promising technologies have also been raised: see, eg, Francesco Sindico and Joyeeta Gupta, 'Moving the Climate Change Regime Further through a Hydrogen Protocol' (2004) 13 *Review of European Community and International Environmental Law* 175.

213 *ADP Decision*, UN Doc FCCC/CP/2011/9/Add.1, para 2. For discussion on the legal meaning of the language used, possible design elements, model options and political challenges, see Daniel Bodansky and Sandra Day O'Connor, 'The Durban Platform: Issues and Options for a 2015 Agreement' (Centre for Climate and Energy Solutions, December 2012); Lavanya Rajamani, 'The Durban Platform for Enhanced Action and the Future of the Climate Regime' (2012) 61 *International and Comparative Law Quarterly* 501.

214 Edward Cameron, *What is Ambition in the Context of Climate Change?* (26 November 2012) World Resources Institute Insights <http://insights.wri.org/news/2012/11/what-ambition-context-climate-change>.

215 *ADP Decision*, UN Doc FCCC/CP/2011/9/Add.1, para 4.

'Workstream 2').[216] The generation and use of renewable energy must now be injected into discussions on the 'scope, structure and design' of the ADP agreement (known as 'Workstream 1'),[217] which will lock in the trajectory of future climate negotiations and action post-2020.[218] Even if an energy protocol is not possible, perhaps due to political or constitutional constraints on participation (such as the current US position),[219] action on renewable energy — and energy efficiency — must form a meaningful part of the ADP package. Otherwise, the negotiations may prove yet another irreversible missed opportunity to benefit current and future generations.

C *Protocol to the* ECT*: Globalising Energy*

If renewable energy regulation or promotion will be excluded indefinitely from the climate regime, the aforementioned energy protocol could be adopted by the *ECT*, with necessary modifications particular to the regime's context. The EC Secretariat is presently undertaking a process of review and modernisation. As membership is open to all states, regardless of geography,[220] one goal of modernisation is the broadening of the *ECT*'s geographic scope to become a truly global energy cooperation instrument.[221] Additionally, the EC Secretariat has committed to investigate its investment regime in the context of renewable energy technology transfer.[222] Undoubtedly, reform of the *ECT*'s general provisions is also required. With the *PEEREA* and a modified energy protocol, the *ECT* could be elevated to become the first global instrument dedicated to all energy activities.

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216 Co-Chairs, Ad Hoc Working Group on the Durban Platform for Enhanced Action, *Summary of the Roundtable on Workstream 2: ADP 1, Part 2 — Doha, Qatar, November–December 2012*, Doc ADP.2012.7.InformalSummary (7 February 2013) [16], [30] <http://unfccc.int/resource/docs/2012/adp1/eng/7infsum.pdf>; Co-Chairs, Ad Hoc Working Group on the Durban Platform for Enhanced Action, *Summary of the Round Tables under Workstream 2: ADP 2, Part 2 — Bonn, Germany, 413 June 2013*, Doc ADP.2013.12.InformalSummary (25 July 2013) [17(d)], [18(a)] <http://unfccc.int/resource/docs/2013/adp2/eng/12infsum.pdf>.

217 On the status of the *ADP* negotiations: see Co-Chairs, Ad Hoc Working Group on the Durban Platform for Enhanced Action, *Reflections on the Doha Session and the Year Ahead — Note by the Co-Chairs of the Ad Hoc Working Group on the Durban Platform for Enhanced Action*, Doc ADP.2012.9.InformalNote (18 February 2013) [7], [14].

218 Hare et al, above n 105, 600.

219 In 1997 the United States Senate passed the Byrd-Hagel resolution prohibiting the US from accepting binding obligations 'to limit or reduce greenhouse gas emissions' under any *UNFCCC* progeny unless developing country parties accepted mandatory commitments: see Expressing the Sense of the Senate regarding the Conditions for the United States becoming a Signatory to any International Agreement on Greenhouse Gas Emissions under the *United Nations Framework Convention on Climate Change*, S Res 98, 105th Congress (1997). This is likely to pose an obstacle for *ADP* negotiations and outcome options.

220 See *ECT* art 41; Energy Charter Secretariat, 'Road Map for the Modernisation of the *Energy Charter* Process' (Decision, 24 November 2010).

221 Energy Charter Secretariat, 'Road Map for the Modernisation of the Energy Charter Process', above n 220, 3.

222 Ibid 6–7.

D *Declaration on Renewable Energy Principles: Soft at First*

The final possibility suggested here is a non-binding international declaration on renewable energy principles. Since 2005, renewable and alternative sources of energy have gained considerable attention within the informal political forums of the G8 and Group of Twenty ('G20').[223] While this development is undoubtedly positive, the espoused commitments are general, open-textured, hortatory and vague. There are no concrete and specific international principles to marshal global cooperation for the domestic promotion of renewable energy. A declaration could quickly provide an enabling framework for actors and de facto rules and standards for renewable energy policy and development.[224] It could also send a clear policy signal to the market — an important force in driving the clean energy transition — and become the 'core' of soft international law related to energy,[225] organising and amplifying the existing impact of international policy instruments and non-state actors discussed above.[226]

The types of entities that become party to a declaration (for example, states, intergovernmental organisations and non-natural legal persons) and, in particular, the way in which the declaration comes into being, will influence its legal and normative strength. If a declaration is adopted through a UNGA resolution, or an annex thereto, by consensus or unanimous vote with normative and prescriptive textual language, it could provide a basis for the progressive development of international law or for the consolidation of existing customary rules.[227] Under these circumstances, it could be elevated to a 'law-making' resolution akin to the *Rio Declaration*.[228] As a soft law instrument, a declaration could be a 'probationary' precursor to the development of hard law on renewable energy,[229]

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223 Ann Florini, 'The International Energy Agency in Global Energy Governance' (2011) 2 *Global Policy* 40, 45, cited in Meyer, above n 193, 345.

224 See generally Adrian Bradbrook, Achim Steiner and Thomas Wälde, 'International Institutional Arrangements Bundling the Forces — But How?' (2003) 5 *Oil, Gas & Energy Law Intelligence Journal* <www.ogel.org/article.asp?key=645>; Redgwell, 'International Soft Law and Globalization', above n 65, 97–9.

225 Lyster and Bradbrook, *Energy Law and the Environment,* above n 61, 198–9; Adrian J Bradbrook and Ralph D Wahnschafft, 'A Statement of Principles for a Global Consensus on Sustainable Energy Production and Consumption' (2001) 19 *Journal of Energy and Natural Resources Law* 143, 144.

226 Bradbrook and Wahnschafft, 'A Statement of Principles for a Global Consensus on Sustainable Energy Production and Consumption', above n 225, 143.

227 Birnie, Boyle and Redgwell, *International Law and the Environment*, above n 42, 31–3; *Texaco Libya* [1977] 53 ILR 389, 486–95 [66]–[74]; Crawford, *Brownlie's Principles of Public International Law*, above n 27, 42.

228 Crawford, *Brownlie's Principles of Public International Law*, above n 27, 42.

229 Samantha Besson, 'Theorizing the Sources of International Law' in Samantha Besson and John Tasioulas (eds), *The Philosophy of International Law* (Oxford University Press, 2010) 163, 170 quoted in Charlesworth, above n 67, 198. On the relationship between hard and soft law, see Redgwell, 'International Soft Law and Globalization', above n 65, 94–7.

just as soft law instruments preceded the *UNFCCC* negotiations.[230] By contrast, adoption through processes beyond the UN, be they political (such as the G8, G20 or World Energy Council) or private (as with the genesis of the *Equator Principles*),[231] would be likely to lessen a declaration's legal significance and perhaps also, but not definitively, its normative influence.[232] Again, templates exist for such a declaration: the *Global Energy Charter*,[233] the Mining, Minerals and Sustainable Development Project[234] or the Statement of Principles[235] are all viable models.

The International Energy Agency *Framework for International Energy Technology Cooperation*[236] and *Renewable Energy Framework*[237] could be utilised to assist and develop any of the above suggestions. Whichever of the suggested legal formats might be politically possible, the age of sustainable energy has arrived. Although currently inchoate, the future of international law on renewable energy must take a far more active, dynamic and influential role in facilitating SE4ALL.

V CONCLUSION

This article questioned whether regulating of renewable energy through international law is sufficient to facilitate the achievement of SE4ALL and mitigate climate change. Renewable energy provides an enormous opportunity to drastically reduce GHG emissions, pursue economic growth and enhance energy security. While rhetorical pleas have sought to keep renewable energy regulation within the realm of domestic concern, it has been argued that state sovereignty

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230 See generally Toronto Conference, 'The Changing Atmosphere: Implications for Global Security' (Conference Statement WMO-No 710, Toronto, 27–30 June 1988); Adriaan Jacobovits de Szeged, *Letter Dated 20 June 1989 from the Permanent Representative of the Netherlands to the United Nations Addressed to the Secretary-General*, UN GAOR, 44th sess, Agenda Items 12, 83(f), 86, UN Doc A/44/340 (22 June 1989) annex ('*Declaration of the Hague Adopted at The Hague on 11 March 1989*'); *Protection of Global Climate for Present and Future Generations of Mankind*, GA Res 43/53, UN GAOR, 43rd sess, 70th plen mtg, Agenda Item 148, Supp No 49, UN Doc A/RES/43/53 (6 December 1988). See also Sindico and Gupta, above n 212, 184.

231 Equator Principles Association, *Equator Principles* (2011) <http://www.equator-principles.com/>.

232 Cf the mixed criticisms of the Global Compact, a UN private enterprise partnership aiming to encourage good corporate governance that advances, among other things, the Millennium Development Goals (which themselves do not expressly mention energy): see Redgwell, 'International Soft Law and Globalization', above n 65, 104–6.

233 See World Sustainable Energy Coalition, above n 209.

234 Noé and Pring, above n 60, 431, 434–5. See also MMSD Project, *Breaking New Ground: The Report of the Mining, Minerals, and Sustainable Development* (Earthscan, 2002); Abbi Buxton, 'MMSD+10: Reflecting on a Decade of Mining and Sustainable Development' (Discussion Paper, International Institute for Environment and Development, June 2012).

235 Bradbrook and Wahnschafft, 'A Statement of Principles for a Global Consensus on Sustainable Energy Production and Consumption', above n 225, 158–63. For a modified version, see Lyster and Bradbrook, *Energy Law and the Environment*, above n 61, 208.

236 See International Energy Agency, 'IEA Implementing Agreements: Background and Framework as of 2003' (2003) <http://www.iea.org/techno/Framework_text.pdf>.

237 International Energy Agency, *Implementing Agreement for Renewable Energy Technology Deployment* (2005) <http://iea-retd.org/wp-content/uploads/2011/09/RETD-IA-Text.pdf>. See also International Energy Agency, *Multilateral Technology Initiatives* (2013) <http://www.iea.org/techno/index.asp>.

no longer presents a sustainable challenge to international energy cooperation. Rather, modern common concerns demand responsible sovereignty. Decarbonising energy generation is one way to conform to normative expectations, if not legal obligations. This can be achieved in an increasingly cost-effective manner, while simultaneously improving domestic energy supply security in the context of rising future demand.

It was argued that global energy policy development related to the clean energy transition is primarily facilitated through soft law normativity. Principles and concepts of international environmental law such as sustainable development have proven useful analytical tools to frame energy use in terms of environmental policy consequences. The proliferation of soft international law and continued ministerial support at international conferences has profoundly advanced global renewable energy generation, particularly since the WSSD. One hundred and eighteen states now have domestic renewable energy law. However, meaningful and binding international renewable energy obligations remain conspicuously absent from the *UNFCCC* regime and *ECT*. Instead, international actors and institutions have come to occupy a prominent role in promoting renewable energy adoption and technology transfer, especially through the formation of IRENA.

Against this backdrop, an enquiry is to be made regarding whether reasonably uniform state practice and accompanying *opinio iuris* is sufficiently evident to confirm a customary international law obligation relating to renewable energy.[238] If so, is the UN's SE4ALL charge to double renewable energy by 2030 a restatement of that obligation (if not as custom, then under general international law)? This article has canvassed a broad range of converging state practices, of various forms, all of which support an increase in the use of renewable energy. Whether a critical threshold has been reached in terms of the specific type of practice necessary to satisfy the physical element in custom creation is less clear. Similarly, whether such state practice occurs pursuant to a belief in legal obligation — the mental element in custom creation — is not readily discernable. Even if these issues are resolved, views may differ as to the content (if any) of a possible customary obligation. For example, would it be one of conduct, such as to promote or use best endeavours to increase renewable energy share? Or one of result, to actually double from 15 to 30 per cent the share of renewable energy in the global energy mix? Overall, it is perhaps too early to suggest that a customary obligation relating to renewable energy has crystallised. But if the current intensity and breadth of international activity continues, and if signs of a belief in legal obligation appear, it may not be beyond the realms of possibility.

In light of the urgent global imperatives, further avoidance of stronger international cooperation and regulation of renewable energy is no longer a viable option. Politics, of course, may obstruct the attainment of SE4ALL. States around the world must now demonstrate leadership and foresight to effectively coordinate a global energy transformation. The regulation of renewable energy under international law can play a key role in this process. Billions of lives, today and in the future, depend on it.

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238 On the creation of custom: see generally Richard K Gardiner, *International Law* (Pearson Education, 2003) 101–21.