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### Energy and law - Searching for new directions

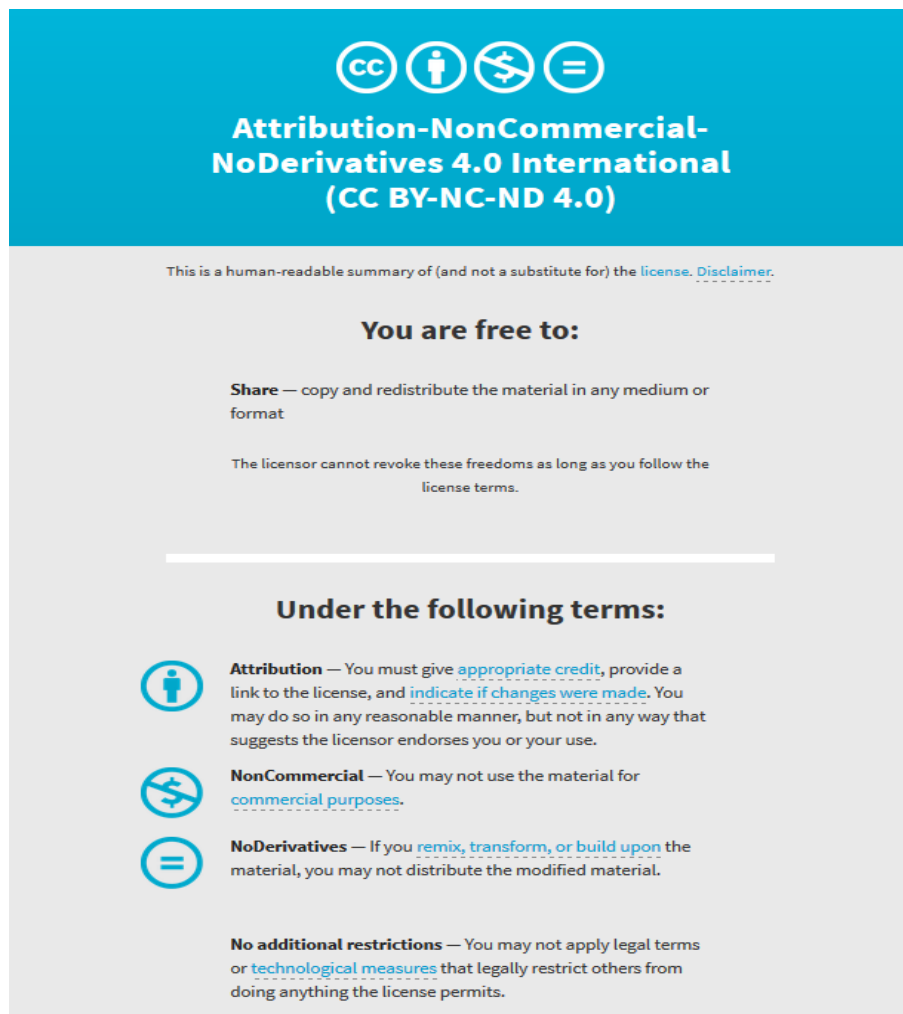
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## ENERGY AND LAW — SEARCHING FOR NEW DIRECTIONS

ADRIAN BRADBROOK

It is a little known fact that Judith Gardam has a professional interest in energy law dating back to the beginning of her long and distinguished academic career. While energy law is not her major legal interest, or one for which she has built her international reputation, this interest has continued for over thirty years until the present time. Her first university position was as a Research Fellow at the Melbourne Law School, based at the University of Melbourne, financed by an Australian Research Council grant to Professor Michael Crommelin, and her major LLM thesis<sup>1</sup> and her first four published articles were on the Australian law relating to hydrocarbon pipelines.<sup>2</sup> Her interests in the energy sector later changed and expanded to include

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1 Judith Gardam, *Government Regulation of Hydrocarbon Pipelines in Australia* (LLM Thesis, University of Melbourne, 1981).

2 Judith Gardam, 'Petroleum Pipelines — Land Use Planning and Environmental Aspects' (1987) 4 *Environmental and Planning Law Journal* 253; Judith Gardam, 'The Constitutional Implications of the Federal Pipeline Authority Act 1973' [1986] *Australian Mining and Petroleum Law Association Yearbook* 422; Judith Gardam, 'Legislative Regulation of the Construction and Operation of Pipelines in New South Wales' (1980) 8 *Australian Business Law Review* 386; Judith Butcher (as she then was), 'Government Regulation of Construction and Operation of Hydrocarbon Pipelines' (1977) 11 *Melbourne University Law Review* 146.

the link between energy and armed conflict<sup>3</sup> and energy and human rights law.<sup>4</sup> In both these areas, Judith was able to marry her interest in energy law with her major research focus on public international law.

The purpose of this chapter is to review the reasons for, and the current state of, international law in relation to the energy sector. It will then consider in detail the energy themes that motivate Judith and their possible evolution. As we will see, her emphasis is very much on sustainable energy solutions.

### THE CURRENT STATE OF INTERNATIONAL ENERGY LAW

The role and development of public international law in the energy sector has been slow to be recognised and has been late in development. Historically, energy policy and law have been strongly linked to national sovereignty and have been considered to be outside the role of international agreements. As recently as 1992, when Agenda 21<sup>5</sup> was negotiated internationally at the United Nations Conference on Environment and Development (UNCED), it proved impossible, due to competing national interests, for the international community to agree on a chapter on energy policy. Chapter 9 of this instrument, which was originally envisaged as a comprehensive chapter on energy, proved impossible to negotiate and was eventually replaced by a loosely worded chapter on the atmosphere, which makes only selective and limited references to sustainable energy solutions.<sup>6</sup>

The past twenty-five years have seen a gradual change in international attitudes to energy production and consumption, and today international energy law is rapidly evolving. There are many reasons for this evolution:

- Perhaps the greatest driver towards international co-operation and development has been the recognition that energy production and consumption have international environmental consequences and do not respect international boundaries. There have been many different manifestations of this, ranging from acid rain, caused in eastern European and Asian countries by the burning of sulphur-laden coal in countries

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3 Judith Gardam, 'Energy and the Law of Armed Conflict' (1997) 15 *Journal of Energy and Natural Resources Law* 87.

4 See Adrian Bradbrook and Judith Gardam, 'Energy and Poverty: A Proposal to Harness International Law to Advance Universal Access to Modern Energy Services' (2010) 57 *Netherlands International Law Review* 1; Adrian Bradbrook, Judith Gardam and Monique Cormier, 'A Human Dimension to the Energy Debate: Access to Modern Energy Services' (2008) 26 *Journal of Energy and Natural Resources Law* 526; Adrian Bradbrook and Judith Gardam, 'Placing Access to Energy Services within a Human Rights Framework' (2006) 28 *Human Rights Quarterly* 389.

5 *United Nations Conference on Environment and Development*, UN GAOR, 46<sup>th</sup> sess, Agenda Item 21, UN Doc A/Conf. 151/26 (12 August 1992) annex II.

6 The energy provisions are contained in ch 9.12 of the instrument.

upwind, to the Chernobyl nuclear accident in 1986, which caused radioactive nuclear fallout in many western European nations. In recent years, the major global environmental concern has been climate change, to which energy production and consumption is the major contributing factor.<sup>7</sup>

- Closely linked with this factor is the increasing use of the high seas for energy development and transport. The majority of world trade in oil is by sea in large tankers, and these have occasioned some spectacular environmental disasters due to oil leaks as a result of groundings and sinkings. The first of these was the *Torrey Canyon*, which foundered off the southwest coast of England in 1967, while perhaps the most notorious and polluting was the *Exxon Valdez*, which sank off the Alaskan coast in 1989.<sup>8</sup> Offshore oil and gas exploration and production have also spawned international instruments, such as the 1989 International Maritime Organization Guidelines and Standards for the Removal of Offshore Installations and Structures.<sup>9</sup> There is considerable potential for energy production and development from renewable resources in the high seas in the future, although this has not yet occurred other than at the research and demonstration stages. Such possible uses of the high seas include wave energy, offshore wind energy, ocean currents, and ocean thermal energy conversion (OTEC).<sup>10</sup>
- International co-operation and development have also increased as a result of energy trade. There are a growing number of bilateral and multilateral international instruments that have been negotiated in

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7 In developed countries, the energy sector accounts for around 80 per cent of all carbon emissions. The exact figure for the USA is 82.0 per cent: United States Environmental Protection Agency, *Overview of Greenhouse Gases* (15 April 2016) <[www.epa.gov/climatechange/ghgemissions/gases/co2.html](http://www.epa.gov/climatechange/ghgemissions/gases/co2.html)>. The figure for Australia is 76.9 per cent: Carbon Neutral, *Climate Change* (2015) <[www.carbonneutral.com.au/climate-change/australian-emissions/html](http://www.carbonneutral.com.au/climate-change/australian-emissions/html)>.

8 See Richard A Cahill, *Strandings and their Causes* (Fairplay Publications, 1985); John Townsend, *The Exxon Valdez* 1989 (Raintree, 1999). For information from the US Environment Protection Agency, see United States Environmental Protection Agency, *Oil Spills Prevention and Preparedness Regulations* (11 April 2016) <[www.epa.gov/oilspill/exxon.htm](http://www.epa.gov/oilspill/exxon.htm)>.

9 1989 Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone, 10 October 1989, 16<sup>th</sup> Assembly of the International Maritime Organization, IMO Assembly Resolution A.672(16) (adopted 19 October 1989).

10 For a discussion of OTEC and the legal issues associated with its introduction, see Todd Griset, 'Harnessing the Ocean's Power: Opportunities in Renewable Ocean Energy Resources' (2011) 16 *Ocean and Coastal Law Journal* 395; Michael Reisman, 'Key International Legal Issues with regard to Ocean Thermal Energy Conversion Systems' (1981) 11 *California Western International Law Journal* 425; Kent Keith, 'Laws Affecting the Development of Ocean Thermal Energy Conversion in the United States' (1982) 43 *University of Pittsburg Law Review* 1. The United States has legislated in this area: *Ocean Energy Thermal Conversion Act*, 42 USC ch 99 (2006).

recent years in this field. The best-known and most comprehensive of these is the Energy Charter Treaty,<sup>11</sup> negotiated in the early 1990s to promote trade between western Europe and the newly emerging nations of eastern Europe following the collapse of the Soviet Union. There are also many international agreements for the construction and operation of transboundary oil and gas pipelines.<sup>12</sup>

- International institutions have become prominent in this field. The United Nations is heavily involved in promoting sustainable energy solutions worldwide. Both the United Nations Development Programme and the United Nations Environment Programme have produced reports and developed policies promoting environmental and poverty-alleviating programs focused on energy, and all the six United Nations economic and social commissions have engaged in projects promoting sustainable energy.<sup>13</sup> Outside the United Nations, there is the International Energy Agency (IEA),<sup>14</sup> which was initially established by the Council of the Organisation for Economic Co-operation and Development (OECD) following the Arab Oil Embargo in 1973/4,<sup>15</sup> and which now researches on a range of international energy issues, focusing in particular on achieving sustainable energy outcomes. There is also the International Renewable Energy Agency (IRENA),<sup>16</sup> set up under the aegis of the German government, which under its founding agreement<sup>17</sup> researches all aspects of renewable energy development and promotion worldwide.

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

12 See, for example, Munir Maniruzzaman, 'International Energy Contracts and Cross-Border Pipeline Projects: Stabilization, Renegotiation and Economic Balancing in Changed Circumstances — Some Recent Trends' (2006) 4(4) *Oil, Gas & Energy Law Intelligence* 1149; Rafael Leal-Arcas and Mariya Peykova, 'Energy Transit Activities: Collection of Intergovernmental Agreements on Oil and Gas Transit Pipelines and Commentary' (Research Paper No 177/2014, Queen Mary School of Law, 16 December 2014).

13 The relevant commission for Australia is the United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP), which has its headquarters in Bangkok, Thailand.

14 Established by the *Agreement on an International Energy Program*, signed 18 November 1974, 1040 UNTS 271 (entered into force 19 January 1976). See also Ann Florini, 'The International Energy Agency in Global Energy Governance' (2011) 2 *Global Policy* 40; Richard Scott, *The History of the International Energy Agency, 1974-1994: IEA, the First 20 Years* (OECD Publications and Information Centre, 1994-95) vols 1-2.

15 Established by the OECD Council at its 373<sup>rd</sup> Meeting on 15 November 1974.

16 See International Renewable Energy Agency (2015) <[www.irena.org/](http://www.irena.org/)>.

17 *Statute of the International Renewable Energy Agency (IRENA)*, opened for signature 26 January 2009, 2700 UNTS 27 (entered into force 8 July 2010).

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In general terms, the current state of international energy law appears to be as follows:

- There are comprehensive energy trade agreements designed to promote and regulate trade at the regional and world level. These have been relatively easy to negotiate and implement.
- There are some international agreements relating to the environmental hazards associated with energy production and development, although these are by no means sufficient. These have been much harder to negotiate and the results have been patchy. There was immediate recognition, following the Chernobyl nuclear incident, that there needs to be timely notification by the host country of any future incidents and an effective system of international co-operation to rapidly respond to a nuclear emergency. This led to the negotiation of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency<sup>18</sup> and the Convention on Early Notification of a Nuclear Accident<sup>19</sup> within six months of the emergency arising. The world community also succeeded in concluding and ratifying the 1985 Vienna Convention for the Protection of the Ozone Layer<sup>20</sup> and the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer (and its amendments)<sup>21</sup> to control the problem of ozone depletion, partly caused by the energy industry. In contrast, there has been a depressingly slow international response to the pressing need to take effective action on climate change, and, according to the most recent scientific research on climate change, the existing instruments are totally inadequate to address the problem.<sup>22</sup>
- Despite the work of the international institutions in this field, there have been very few international instruments promoting sustainable energy development worldwide. While the parties to the Energy Charter Treaty successfully concluded a comprehensive Protocol on Energy Efficiency

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18 *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*, opened for signature 26 September 1986, 1457 UNTS 134 (entered into force 27 October 1986).

19 *Convention on Early Notification of a Nuclear Accident*, opened for signature 26 September 1986, 1439 UNTS 276 (entered into force 27 October 1986).

20 *Vienna Convention for the Protection of the Ozone Layer*, opened for signature 22 March 1985, 1513 UNTS 324 (entered into force 22 September 1988).

21 *Montreal Protocol on Substances that Deplete the Ozone Layer*, signed 16 September 1987, 1522 UNTS 451 (entered into force 1 January 1989).

22 See below n 60 and accompanying text. Contribution of Working Groups I, II and III to the *Fifth Assessment Report* of the Intergovernmental Panel on Climate Change [Core Writing Team, RK Pachauri and LA Meyer (eds)] IPCC, Geneva, Switzerland, 151.

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and Related Matters,<sup>23</sup> there are only passing references to the need to promote sustainable energy solutions in the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.<sup>24</sup> Outside these areas, there are only isolated examples of international instruments relating to renewable energy and energy efficiency.

- In relation to the use of the high seas for energy trade and energy production, the only relevant instrument is the United Nations Convention on the Law of the Sea,<sup>25</sup> which contains few relevant references.<sup>26</sup>

The overall conclusion is that whereas national laws in most countries contain comprehensive legislation regulating the production and consumption of those energy resources relevant to their jurisdictions (although not always comprehensive or effective legislation relating to the associated environmental harm), public international law in this field is in its infancy and is in need of further development.

It is important to examine the reasons for this inadequate response by international law. There is substantial doubt in many quarters that international law can achieve much in light of the different vested interests of the various countries. There are enormous differences in outlook between energy-exporting nations, which tend to see moves towards diversity of energy supplies and focus on renewable energies and energy efficiency as a threat to their sovereign wealth, and energy-importing nations, which have diametrically opposite economic interests. There is also the focus of the international community on national sovereignty, and the refusal of many countries to enter into any agreements which might compromise this principle.

Both these reasons are understandable, if not excusable. What is more perplexing, however, is the notion held by some lawyers and politicians that international law has nothing to offer to promote sustainable energy. This view is not only held by those who are opposed to significant legal change, but also even by some lawyers who campaign in favour of sustainable energy.<sup>27</sup> In some cases, it may be the result of ignorance of public international law, as the subject is optional at most

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23 *Protocol on Energy Efficiency and Related Matters* (signed December 1994) 34 ILM 446 (entered into force April 1998).

24 *Kyoto Protocol to the United Nations Framework Convention on Climate Change*, opened for signature 11 December 1997, 2303 UNTS 148 (entered into force 16 February 2005). There is no mention of energy at all in the Paris Agreement, FCCC/CP/2015/10/Add.1.

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

26 *Ibid* art 56. The major relevant provision is Article 56, relating to the exclusive economic zone.

27 A good illustration of this is my colleague and friend, Professor Richard Ottinger, Dean Emeritus of Pace Law School, White Plains, NY, USA, with whom I have argued this issue on a number of occasions.

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law schools and receives comparatively little attention in traditional legal education. In other cases, it results from the argument that, first, international law is not really 'law', as in most areas there is no effective legal means of enforcement; and, second, that nations can — and in many cases do — breach their obligations with impunity.

Like most international law academics, Judith Gardam has frequently had this debate with her students at The University of Adelaide, some of whom have been openly skeptical about the relevance of the subject. Indeed, she has debated this so often that she later began including an opening session with the students entitled 'Is international law "law"?''

The answer is that in light of international law theory, whereby international law is based purely on the consent of nations and cannot be imposed on them against their will, it is inappropriate to talk of enforcement. Moreover, the distinction between law and politics is sometimes seen as less clear-cut in the case of international law than in the case of domestic law. In reality, international law is a legal system that relies on distinct and sophisticated means by which to ensure compliance with its requirements.

### THE EVOLUTION OF SUSTAINABLE ENERGY LAW

The future of energy law is very unpredictable. Energy planners long ago abandoned the notion of energy planning in favour of 'scenario planning', out of the realisation that nearly all plans with a horizon of ten years or more turn out to be incorrect.<sup>28</sup>

Rather than trying to predict future energy law developments, I will discuss those features or themes in energy policy favoured by Judith in order to explain their potential role in shaping international energy law. In examining Judith's writings and in many conversations we have had, I have identified the following six themes:

1. energy and poverty
2. maximising the range of legal options
3. resolving issues by lateral thinking
4. the incremental or gradual approach to international law development
5. advancing renewable energy resources and energy efficiency
6. links with the law of armed conflict.

I discuss these themes in more detail below.

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<sup>28</sup> For a discussion of scenario planning, see Jeremy Bentham, 'The Scenario Approach to Possible Futures for Oil and Natural Gas' (2014) 64 *Energy Policy* 87.



## Energy and Poverty

The strongest theme is undoubtedly the link between energy and poverty. The alleviation of poverty has been a recent focus of the United Nations, and is one of the goals listed in the Sustainable Development Goals, a declaration of the General Assembly in 2015.<sup>29</sup> To achieve this goal will require the universal access to modern energy services. This is recognised in Goal 7 of the 2015 Declaration: 'Ensure Access to Affordable, Reliable, Sustainable and Modern Energy For All'. Without such access people are destined to live in poverty. The provision of such access many years ago was the major factor lifting the standard of development in developed countries and is a key element in providing a sustainable way of living for all the world's population. In recognition of the importance of the issue, in 2011 the United Nations declared 2012 to be the International Year of Sustainable Energy for All,<sup>30</sup> and in the following year it declared 2014-24 as the United Nations Decade of Sustainable Energy for All.<sup>31</sup> The Secretary-General, Ban Ki-Moon, went further and established a Sustainable Energy for All challenge for 2030, which seeks to achieve universal access to energy services by 2030.<sup>32</sup>

Energy is required to boil, purify, disinfect and store water.<sup>33</sup> The use by less developed states of traditional fuels such as wood, dung and charcoal for cooking, food preparation and space heating<sup>34</sup> not only exacerbates the long-standing environmental problems in many countries, particularly in Africa, of loss of habitat and desertification,<sup>35</sup> but also leads to distinctive health problems. As many as two

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29 *United Nations Declaration*, GA Res 70/1 (25 September 2015).

30 *International Year of Sustainable Energy for All*, GA Res 65/151, 65<sup>th</sup> sess, Agenda Item 20, UN Doc A/RES/65/151 (16 February 2011).

31 United Nations General Assembly, 'United Nations General Assembly Declares 2014-2024 Decade of Sustainable Energy for All' (Press Release, GA/11333 — EN/274, 21 December 2012).

32 Ban Ki-moon, *Sustainable Energy for All: A Vision Statement — Report of the Secretary General*, Agenda Item 19, UN Doc A/66/645 (22 December 2011) 4.

33 For a discussion of the relevance of the access to modern energy services to the provision of clean water, see Amulya Reddy, 'Energy Technologies and Policies for Rural Development' in Thomas Johansson and José Goldemberg (eds), *Energy for Sustainable Development: A Policy Agenda* (United Nations Development Programme, 2002) 115, 126.

34 In Africa, charcoal and firewood constitute 67 per cent of primary energy use: see Kui-Nang Mak and Friedrich Soltau, 'A United Nations Perspective on Law and Energy for Sustainable Development' in Adrian Bradbrook et al (eds), *The Law of Energy for Sustainable Development* (Cambridge University Press, 2005) 17.

35 The link between desertification and energy is recognised in para 41(d) of the *Plan of Implementation of the World Summit on Sustainable Development*, UN Doc A/CONF.199/20 (4 September 2002). This

million people die prematurely each year from exposure to indoor air pollution caused by the use of solid fuels for cooking.<sup>36</sup>

The lack of access to modern energy services is particularly detrimental to women and children. Fuel gathering by children means that children's educational needs suffer, as there is little time available for education. Education is further prejudiced by the fact that the lack of electric lighting in the home means that study is effectively impossible after nightfall. Women suffer, as in most developing countries women and girls are responsible for cooking and heating.<sup>37</sup> As a result of indoor air pollution in native dwellings, they experience a higher rate of respiratory disease than men. Without modern energy services, they are forced to spend a significant amount of time searching for and collecting fuel, in the process risking sexual assault and snake bites. The time spent in fuel acquisition prevents women from engaging in income-producing and community activities as well as from improving their levels of education. The same situation applies to water, with women traditionally being responsible for ensuring the water supply for household needs. The absence of energy for water pumps substantially increases the time spent on such activities.<sup>38</sup> In light of this evidence, and bearing in mind Judith's strong emphasis in her published works on gender equality, it is not surprising that she has published three major articles focusing on the issue of access to energy services in less developed nations and the possible role of international and domestic law in alleviating this problem.<sup>39</sup>

At the national level, several states have taken legislative or policy steps to recognise the importance of modern energy services to human development. For example, South African legislation ensures that electricity service providers make electricity available 'to every applicant who is in a position to make satisfactory

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requires states to 'integrate measures to prevent and combat desertification as well as to mitigate the effect of drought through relevant policies and programmes, such as ... energy ...'

36 Thomas Johannsson and José Goldemberg, 'The Role of Energy in Sustainable Development: Basic Facts and Issues' in Johannsson and Goldemberg (eds), *Energy for Sustainable Development: A Policy Agenda* (United Nations Development Programme, 2002) 25, 32.

37 See Gunnar Köhlin et al, 'Energy, Gender and Development: What are the Linkages? Where is the Evidence?' (Policy Research Working Paper 5800, The World Bank, September 2011); Joy Clancy et al, *Gender Equity in Access to and Benefits from Modern Energy and Improved Energy Technologies: World Development Report Background Paper* (ETC Nederland BV, 2011); UNDP, *Gender and Equity for Sustainable Development: A Toolkit and Resource Guide* (United Nations Development Programme, 2004); Gail V Karlsson (ed), *Generating Opportunities: Case Studies on Energy and Women* (United Nations Development Programme, 2001).

38 UNDP, *Gender and Equity for Sustainable Development: A Toolkit and Resource Guide* (United Nations Development Programme, 2004) 14.

39 See above n 4.

arrangements for payment'.<sup>40</sup> This obligation upon electricity service providers has been interpreted as a right of applicants to access electricity supply if they have satisfied the payment requirements.<sup>41</sup> While this access is conditional on payment, many national electricity policies are increasingly being formulated in rights-based terminology that guarantees safe, affordable, adequate and reliable supplies of electricity available to all. In India and Brazil, the national governments each have a long-term plan to provide access to electricity to all rural households.<sup>42</sup>

There has also been action at the regional level. For example, the 1996 Protocol on Energy adopted by the South African Development Community, Article 3, states that one of its objectives is to 'strive to ensure the provision of reliable, continued and sustainable energy services in the most efficient and cost-effective manner'. Some regional organisations have also acknowledged the importance to human development of access to modern energy services. Pursuant to the European Council Directive 2009/72, Article 3(3), member states of the European Union are obliged to

ensure that all household customers ... enjoy universal service, that is the right to be supplied with electricity of a specified quality within their territory at reasonable, easily and clearly comparable, transparent and non-discriminatory prices.<sup>43</sup>

It is at the multilateral level that legal initiatives in this area have been sparse. One of the few international law instruments that specifically refer to energy in the context of overcoming poverty is the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW).<sup>44</sup> Article 14(2)(h) of this Convention obliges state parties to eliminate discrimination against women, particularly in rural areas, and to ensure that they 'enjoy adequate living conditions, particularly in relation to housing, sanitation, electricity and water supply, transport and communication'. Some instruments, such as the International Covenant on Economic, Social and

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<sup>40</sup> *Electricity Act 1987* (South Africa) s 10(1). See also *Loi no 2000-108 du fevrier 2000 relative à la modernisation et au développement du service public de l'électricité* (France) art 1.

<sup>41</sup> *Meyer v Moqhaka Local Municipality* Case No 4008/2003 [2004] ZAFSHC 122 (unreported, per Rampai J) 24.

<sup>42</sup> See Rosana Rodrigues dos Santos, 'Electricity for All' Rural Electrification Program — Brazil' <[www.zef.de/fileadmin/webfiles/renewables/abstracts/Oldenburg/Abstract\\_Rosana.pdf](http://www.zef.de/fileadmin/webfiles/renewables/abstracts/Oldenburg/Abstract_Rosana.pdf)>; Hon P Sayeed, Minister of Power, India, 'The Path to Sustainability: Accessibility, Availability, Acceptability', Keynote Address at the World Energy Congress, Sydney, Australia, September 2004.

<sup>43</sup> Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC (1) (2009) OJ L 211 /55.

<sup>44</sup> *Convention on the Elimination of All Forms of Discrimination against Women*, opened for signature 18 December 1979, 1249 UNTS 13 (entered into force 3 September 1981).

Cultural Rights,<sup>45</sup> apply to the issue of access to modern energy services tangentially, but do not address the issue directly.<sup>46</sup>

Judith's major contribution in this area has been to develop (with the current author) a proposal justifying and detailing a new international instrument, a Statement of Principles for Achieving Energy Access for All.<sup>47</sup> This proposed new 'soft law' instrument contains novel ideas by Judith (and her co-author), together with ideas influenced by other soft law instruments, in particular Agenda 21<sup>48</sup> and the Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests.<sup>49</sup> The new instrument proposes clauses relating to objectives, defining universal access to modern energy services, providing for accessibility and affordability, preventing discrimination, linking the issue with sustainable energy, and providing for state actions and strategies to implement access to modern energy services, together with participatory rights and remedies and international co-operation.<sup>50</sup>

### Maximising the Range of Legal Options

Judith is in favour of using the full range of legal options available to promote sustainable energy solutions. This applies both to domestic and international law.

In relation to international law, this means using all forms of soft law as well as the traditional binding (or 'hard law') treaties, protocols and conventions.<sup>51</sup> These soft law instruments may take the form of resolutions, declarations, guidelines, agreements, charters or statements of principles.<sup>52</sup> In this sense, Judith's approach is

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45 *International Covenant on Economic, Social and Cultural Rights*, GA Res 2200(XXI), UN GAOR, 21<sup>st</sup> sess, Agenda Item 61, Supp No 16, UN Doc A/6316 (1966) 993.

46 See especially Article 11, which declares the right of everyone to an adequate standard of living for themselves and their family and to the continuous improvement of living conditions.

47 This proposal is detailed in Adrian Bradbrook and Judith Gardam, 'Energy and Poverty: A Proposal to Harness International Law to Advance Universal Access to Modern Energy Services' (2010) 57 *Netherlands International Law Review* 1.

48 Conference on Environment and Development (Agenda 21), UN GAOR, UN Doc A/CONF.151/26 (12 August 1992). See Nicholas Robinson (ed), *Agenda 21: Earth's Action Plan* (Oceana Publications, 1993).

49 Commonly referred to as the *Statement of Forest Principles*, UN Doc A/CONF.151/26 (Vol III) (14 August 1992).

50 For the detailed clauses, see Bradbrook and Gardam, 'Energy and Poverty', above n 4, 13ff.

51 For a discussion of international legal instruments and the means by which they evolve into international law, see Alan Boyle and Christine Chinkin, *The Making of International Law* (Oxford University Press, 2007) 104-8, 210-60.

52 Edith Weiss, 'Conclusions: Understanding Compliance with Soft Law' in Dina Shelton (ed), *Commitment and Compliance: The Role of Non-Binding Norms in the International Legal System* (Oxford

consistent with the general development of international environmental law since its inception in the Stockholm Declaration of 1972. One of the distinguishing features of international environmental law has been the rapid development of soft law instruments, which until that time were little used and which are still less common in other areas of international law. The use of soft law documents as a form of confidence and consensus-building among nations in order to tackle environmental issues has proved to be successful in a number of different contexts and has the capability to provide the framework for the resolution of future energy issues.

In relation to domestic law, the role of law is sometimes misunderstood. The traditional methods of introducing change into society consist of regulation, stimulation and education, or a combination of any two or more of these measures.<sup>53</sup> Many people see the role of law as limited to regulation, which economists and others often refer to disparagingly as 'command and control' measures.<sup>54</sup> Economists prefer to effect changes by way of stimulatory changes (such as income tax deductions, government grants or loans to industry, or investment allowances). Most lawyers would agree on the importance of stimulatory measures.

However, those critical of the role of the law seem to overlook two factors. First, most stimulatory measures require law for their introduction. Thus, for example, every proposed tax concession given to investors in the energy sector requires a change to an existing statute or regulation to implement it. Second, and perhaps more importantly, society is not simply presented with a choice between regulation and stimulation in order to achieve a desired result. There is the further option of introducing both regulatory *and* stimulatory measures. This is often the most effective of the alternatives. It is sometimes referred to as the 'carrot and stick' approach. The 'stick' (that is, the regulatory measure) ensures that the private operator reaches prescribed minimum standards of performance. The 'carrot' (that is, the stimulatory measure) ensures that the operator goes as far as possible beyond the minimum prescribed performance standard. Regulation without stimulation means that there is no incentive to go beyond minimum standards, while stimulation without regulation may not produce any action at all.

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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; Christine M Chinkin, 'The Challenge of Soft Law: Development and Change in International Law' (1989) 38 *International and Comparative Law Quarterly* 850.

53 I discuss this issue in Adrian Bradbrook, 'Energy Law as an Academic Discipline' (1996) 14 *Journal of Energy and Natural Resources Law* 190, 214ff.

54 For a theoretical discussion of regulation, see Barry Barton, 'The Theoretical Context of Regulation' in Barry Barton et al, *Regulating Energy and Natural Resources* (2006). See also Julia Black, 'Regulatory Conversations' (2002) 29 *Journal of Law & Society* 163.

Finally, the argument that education has nothing to do with the law misconceives the proper role of law in society. There are many illustrations of law being introduced as a primarily educative measure. Outside the energy sector, laws requiring the mandatory wearing of seatbelts in cars and crash helmets for motor cycles, and laws requiring plain packaging or requiring a compulsory health warning to be displayed on tobacco products, are useful examples.<sup>55</sup> Within the energy sector, many jurisdictions already have laws designed to educate the public. An example is legislation requiring the manufacturers and retailers of specified electrical appliances to display a label on each appliance showing its average energy consumption and level of efficiency according to a prescribed testing procedure.<sup>56</sup> This energy labelling requirement has been extended in some jurisdictions to motor vehicles<sup>57</sup> and has the potential of being used more extensively to promote sustainable energy solutions.

### Resolving Issues by Lateral Thinking

Judith is a strong believer in the art of lateral thinking to resolve entrenched disputes. While she has not written any articles on this point, we have often conversed on this topic. One illustration of this is the work by Judith and her co-author on developing guidelines for the protection of women in times of armed conflict.<sup>58</sup>

In the environmental area, the failure of the international community to resolve effectively the pressing and complex issue of climate change despite years of fruitless negotiations and conferences suggests that the area is ripe for examining an alternative approach. The Kyoto Protocol, which took so long to negotiate, had nowhere near the impact that was necessary, as reported by the Intergovernmental Panel on Climate Change (IPCC), to stabilise, let alone reduce, atmospheric carbon emissions.<sup>59</sup> While nations belatedly agreed to more rigorous carbon emissions standards in 2015 in the Paris Agreement,<sup>60</sup> much further work remains to be done to resolve the issue. The complexity of the climate change issue arises from the fact

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55 See, for example, *Tobacco Plain Packaging Act 2011* (Cth).

56 See, for example, Council Directive 92/75/EEC of 22 September 1992 on the indication by labelling and standard product information of the consumption of energy and other resources by household appliances OJ [1992] L 297 /16.

57 See, for example, Vehicle Standard (Australian Design Rule 81/02 — Fuel Consumption Labelling for Light Vehicles) 2008 (as amended), made under the *Motor Vehicle Standards Act 1989* (Cth) s 7(1).

58 Judith Gardam and Michelle Jarvis, 'Women and Armed Conflict: The International Response to the Beijing Platform for Action' (2000) 32 *Columbia Human Rights Law Review* 1.

59 See Intergovernmental Panel on Climate Change, *Fifth Assessment Report on Climate Change* (Synthesis Report, IPCC, 2014).

60 UNFCCC/CP/2015/10/Add.1.

that it threatens the continued economic growth of developed nations, along with the right to development of developing nations; it affects the economic future of nations that trade in fossil fuels, particularly oil and coal; and it is unequal in its impact, in that some nations may actually benefit from a milder climate, while the very existence of others may be threatened and may disappear as a result of rising sea levels.

One idea is to tackle directly the major underlying cause of climate change: energy production and consumption. Energy is responsible for well over half the world's anthropogenic carbon emissions into the atmosphere. The actual percentage of carbon emissions attributable to energy production and consumption vary in each country according to that country's energy mix, but in developed countries such as the twenty-seven member states of the European Union it exceeds 80 per cent.<sup>61</sup> The alarmingly high contribution of energy to atmospheric carbon emissions is caused by continued heavy reliance worldwide on fossil fuels, particularly coal and oil, for energy needs.

I submit that the most effective solution to the climate change issue is to promote energy efficiency and renewable energy technologies to the maximum extent practicable. Such an approach could also arguably be extended to nuclear energy, which has the advantage of having no atmospheric carbon emissions (except in the construction phase). However, opinions differ on nuclear energy, and as a solution it appears to raise more environmental problems than it solves, particularly in light of the 2010 Fukushima disaster.

I submit that international law could best promote energy efficiency and renewable energy resources by creating a further energy-specific Protocol to the United Nations Framework Convention on Climate Change. The rationale is that, as energy production and consumption contribute the major share of atmospheric carbon emissions, if energy-based carbon emissions can be significantly reduced, the climate change issue will be automatically resolved.

There is no doubt that energy efficiency and renewable energy technologies are appropriate subjects for international law regulation, as there are already in existence important international instruments in these areas. The most significant is the Protocol on Energy Efficiency and Related Environmental Aspects,<sup>62</sup> based on

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61 European Energy Agency, *EN01 Energy And Non-Energy-Related Greenhouse Gas Emissions* <<http://www.eea.europa.eu/data-and-maps/indicators/en01-energy-related-greenhouse-gas-emissions/en01>>.

62 *Protocol on Energy Efficiency and Related Environmental Aspects*, opened for signature 17 December 1994, 34 ILM 446 (entered into force 22 April 1998). This Protocol is discussed in Adrian Bradbrook, 'Energy Efficiency and the Energy Charter Treaty' (1997) 14 *Environmental and Planning Law Journal* 327.



the Energy Charter Treaty.<sup>63</sup> This instrument could serve as a possible model for a more general Protocol proposed in this context. In itself, however, the Protocol to the Energy Charter Treaty cannot be regarded as an adequate world response to the issue. Renewable energy resources are largely overlooked in this Protocol, and the various clauses are phrased in a very general and non-binding manner and do not impose targets. Most importantly of all, however, there are currently only forty-five state parties to the Protocol, and the major energy-producing and consuming nations, such as the United States, China and India, are not included.

In an earlier article I have suggested the terms of a possible Energy Protocol to the UNFCCC.<sup>64</sup> In general, the terms consist of a variety of novel ideas, together with ideas and clauses contained in other conventions and protocols, particularly the Kyoto Protocol and the Protocol on Energy Efficiency and Related Environmental Aspects. The major feature of the proposal is to apply the principle of common, but differentiated, responsibilities to energy production and consumption. This principle has been recognised in international treaties since the Montreal Protocol in 1989. It has achieved further recognition in the UNFCCC and the Kyoto Protocol, where developed countries were listed in Annex 1 to the Convention and subjected to additional and more onerous legal responsibilities. As energy emissions in developed countries have been largely responsible for the creation of the climate change problem, it would seem equally appropriate, in this context, for the developed countries to assume additional responsibilities to reduce energy consumption based on fossil fuels.

The proposed additional legal responsibilities for developed countries would be to ensure that their energy consumption be reduced by an agreed percentage over a specified time period. This would mirror the core provisions of the Kyoto Protocol, whereby developed country parties collectively agreed, in Article 3.1, to reduce their overall emissions of atmospheric carbon emissions by at least 5 per cent below 1990 levels in the commitment period 2008 to 2012. Each developed country party also agreed, in Annex B to the Protocol, to individual targets in the same commitment period.

I propose the adoption of energy intensity as the measuring system for energy consumption. 'Energy intensity' is defined in the proposed Protocol as 'the level of

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

64 Adrian 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. See also Stuart Bruce, 'International Law and Renewable Energy: Facilitating Sustainable Energy for All' (2013) 14 *Melbourne Journal of International Law* 1, 30ff.



energy needed per unit of output'.<sup>65</sup> Energy intensity is commonly used by energy specialists as an accurate measure of testing comparative energy efficiency levels. The essence of the proposal is that any given manufactured item requires a certain amount of energy to produce. The country that produces the given item using the smallest level of energy will have the lowest energy intensity (and vice versa). The aim for each country is to record the lowest level of energy intensity possible. Each developed country party will be required to reduce its energy intensity by an agreed percentage below initial levels in the first commitment period.<sup>66</sup> Developing countries would not be subject to binding energy intensity reductions, but would be required to undertake a variety of important measures promoting and co-operating in furthering the adoption of improved energy efficiency and renewable energy technologies.

### The Incremental or Gradual Approach to International Law Development

Judith believes that the gradual approach to international energy law development has the best potential for achieving change. Customary international law has a lot to offer in such circumstances. Much of her work on other aspects of international law development has examined the role of custom.<sup>67</sup> In many ways, although the origins and theory behind the two systems are quite different, in practice customary law is the international law equivalent to common law. Unfortunately, energy law has emerged so recently on the international law scene that there has been no time yet for the development of custom.<sup>68</sup> It is only in the very long term that custom may play a role in this context. In the meantime, the law in this field will only progress by developing new international law instruments.

Following the gradual approach, Judith supports the use in international energy law of the current favoured approach in environmental law in negotiating complex issues by seeking to use one or more non-binding soft law instruments and/or a Framework Convention as a precursor to a final comprehensive convention. Soft law instruments can be used to build confidence amongst nations that would otherwise refuse to sign and ratify a binding convention. This approach has operated

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65 For a discussion of energy intensity, see Ralph Samuelson, 'The Unexpected Challenges of Using Energy Intensity as a Policy Objective' (2014) 64 *Energy Policy* 373; Hisham Khatib, 'Energy Intensity: A New Look' (1995) 23 *Energy Policy* 727.

66 If energy intensity is considered to be too complex, it would be possible with minor amendments to the proposed Protocol to adopt a system of percentage reduction of either total energy consumption or fossil fuel consumption.

67 See Gardam and Jarvis, above n 58.

68 On this point, see Bruce, above n 64, 27.

very effectively in the case of ozone depletion, where the framework Vienna Convention was followed by a more comprehensive Montreal Protocol on Substances that Deplete the Ozone Layer,<sup>69</sup> together with later minor updating and amending protocols. This is also the approach being adopted to resolve the climate change issue, where the international community initially approved the United Nations Framework Convention on Climate Change and followed it up with the more detailed Kyoto Protocol and Paris Agreement.

### Advancing Renewable Energy Resources and Energy Efficiency

Judith believes in the notion of 'treading lightly on the Earth'. She has been influenced by the spiritual dimension underpinning environmental protection theory and the Gaia principle.<sup>70</sup> She thus naturally supports the use of renewable energy and energy efficiency technologies so as to reduce the need to use fossil fuels and to minimise the environmental harm caused by their continued use. In reducing the need for fossil fuels, renewable energy and energy efficiency technologies also assist in achieving national energy independence and security, as discussed below.<sup>71</sup>

This does not mean that Judith supports every type of renewable energy technology, however. She sensibly draws a distinction between 'clean' energy and other energy sources. For example, renewable energy includes hydro-electricity. This form of development, while being clean in the sense that it does not pollute the atmosphere, usually involves the building of dams and the creation of artificial lakes, which necessarily involve the drowning of land and often the displacement of people. While environmental groups provide general support for renewable energy projects, they usually strongly resist this type of development. Judith limits her support to small-scale 'run of the river' hydro projects, which cause no environmental harm.

A further example is nuclear energy. This form of energy is argued to be clean in the sense that it avoids the environmental harm usually associated with fossil fuel exploration and production and causes no atmospheric carbon emissions. In the late 1990s and 2000s, the world experienced a renewal of interest in this resource with the advent of concern about global warming, although this trend has gone into reverse since the Fukushima nuclear accident in Japan in 2010. Because of its potential to cause catastrophic environmental harm, Judith is a strong opponent of nuclear energy.

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69 *Montreal Protocol on Substances that Deplete the Ozone Layer*, signed 16 September 1987, 1522 UNTS 451 (entered into force 1 January 1989).

70 See generally, Gaia Theory, *Model and Metaphor for the 21<sup>st</sup> Century* <[www.gaiatheory.org](http://www.gaiatheory.org)>.

71 See below nn 72-3 and accompanying text.

## Links with the Law of Armed Conflict

Consistent with her work on the international law of armed conflict and the protection of civilians in such times, Judith is concerned with the possibility that energy shortages may eventually lead to armed conflict in many areas. Since as early as the 1970s, we have seen cases of energy 'blackmail', when the Arab oil embargo against Israel and selected countries that supported Israel caused severe energy shortages and economic disruption. We have also seen energy 'blackmail' occurring in Europe, when Russia has cut off or reduced gas supplies to certain countries in retaliation for political measures that they disagreed with. For this reason Judith strongly favours the need for nations to try to achieve energy independence. This work can be promoted by international organisations specialising in the field of sustainable energy.

The role of energy in causing international instability has long been overlooked.<sup>72</sup> Nations are unlikely to declare openly their concern over energy security, as there is no principle of international law that entitles one country to intervene militarily to acquire energy forcibly from another country. Nevertheless, evidence exists to show that energy security issues are responsible for much international instability in modern times. The current international dispute over sovereignty in the Spratly and Paracel Islands in the South China Sea is clearly concerned with the energy resources in the seas surrounding the islands rather than with sovereignty in the islands themselves. The long-standing dispute between the United Kingdom and Argentina over sovereignty of the Falkland (Malvinas) Islands has been fuelled by the likelihood of significant reserves of petroleum and gas in the surrounding seas.<sup>73</sup> Similarly, the willingness (or otherwise) of the United States to intervene militarily in various disputes seems to be largely motivated by concerns over oil and gas supplies. In this regard, its willingness to intervene in Iraq and in other war theatres of the Middle East can be contrasted with its refusal to engage in areas with few or no oil and gas reserves, such as Rwanda and Bosnia.

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72 For recent discussions of energy security, see Catherine Redgwell, 'International Energy Security' in Barry Barton et al (eds), *Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (2004) 17; Bengt Johansson, 'Security Aspects of Future Renewable Energy Systems — A Short Overview' (2013) 61 *Energy* 598; Christian Winzer, 'Conceptualizing Energy Security' (2012) 46 *Energy Policy* 36; Benjamin Sovacool and Harry Saunders, 'Competing Policy Packages and the Complexity of Energy Security' (2014) 67 *Energy Policy* 641.

73 This is discussed in the 28 February 2014 edition of *The Economist*: see JB Stanley, *Oil and Gas in the Falkland Treasure Islands?* (28 February 2014, *The Economist*) <[www.economist.com/blogs/americasview/2014/02/oil-and-gas-falklands](http://www.economist.com/blogs/americasview/2014/02/oil-and-gas-falklands)>.

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## CONCLUSION

The discussion above shows that considerable strides have been made by both domestic and international law to the development of sustainable energy. Nevertheless, much remains to be done if we are to achieve a clean energy future worldwide. What further fundamental legal reforms could be made to promote sustainable energy?

The most obvious reform is to the international institutions that work in the energy sector. As discussed earlier,<sup>74</sup> in recent times the United Nations has done much useful work to promote sustainable energy. However, its work has been fragmented and often left unco-ordinated as a result of the division of sustainable energy between the various UN agencies. At present, the work is shared between the United Nations Environment Programme, the United Nations Development Programme, and the United Nations Department of Economic and Social Affairs and its six regional commissions. Each institution has its own perspective on sustainable energy, but none of them has overall responsibility for the promotion of sustainable energy solutions. This problem has been recognised by the United Nations by the establishment in 2004 of UN-Energy. This is described as a 'knowledge network' designed to promote coherence and inter-agency collaboration in relation to the three pillars of sustainable energy (access to energy, renewable energy and sustainable energy).<sup>75</sup> However, as UN-Energy is only an information-sharing network, it does not resolve the core issue of one agency taking sole responsibility for sustainable energy development.

Outside the United Nations, there are three major institutions relevant to sustainable energy — the International Atomic Energy Agency (IAEA),<sup>76</sup> the International Energy Agency (IEA)<sup>77</sup> and the International Renewable Energy Agency (IRENA).<sup>78</sup> The IAEA was established in 1957 in co-operation with the United Nations to promote safe, secure and peaceful nuclear technologies. At that time, nuclear energy was regarded as the likely major worldwide energy source of the future, and in that sense it seemed appropriate to devote an entire specialised agency

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74 See above nn 30-3 and accompanying text.

75 See United Nations Energy (2016) <[www.un-energy.org](http://www.un-energy.org)>.

76 Established in 1957 by the *Statute of the International Atomic Energy Agency*, opened for signature 23 October 1956, 8 UST 1092 (entered into force 29 July 1957); TIAS 3873; discussed in Alan Boyle, 'Nuclear Energy and International Law: An Environmental Perspective' (1989) 60 *British Yearbook International Law* 257.

77 See above n 14.

78 Established by the *Statute of the International Renewable Energy Agency* opened for signature 26 January 2009, 48 ILM 1223 (entry into force 8 July 2010).

to its support. In modern times, however, nuclear energy has only played a minor role worldwide and it seems inappropriate that it has an entire agency while sustainable energy has no such agency. As discussed earlier,<sup>79</sup> the IEA was originally established to co-ordinate the stockpiling of oil reserves to counter any future Arab oil embargo against Western nations, but has since assumed a role supportive of sustainable energy. As for the recently created IRENA,<sup>80</sup> it appears to be effective in promoting renewable energy resources, but unfortunately has no role in furthering the other two pillars of sustainable energy — access to energy and energy efficiency.

I submit that the most effective institutional means of supporting sustainable energy would be either to create a new specialised agency or to fundamentally reform one of the existing institutions to give it that role. While there is no legal reason to do so, for reasons of prestige and influence it would seem more appropriate if such an agency were within the United Nations framework. If this were to occur, the existing United Nations agencies involved with sustainable energy research could be freed of responsibility for such work and could devote their time and resources more fully to other aspects of sustainable development.

The other aspect of existing international law that requires rethinking in the energy context is the notion of state sovereignty. To advance the international law relating to sustainable energy, states will need to accept some limitations on their national energy policy decisions.<sup>81</sup> This will be difficult to achieve as states regard energy policy as an integral part of their sovereignty. However, there are two encouraging signs. First, the developing principles of international environmental law challenge this principle,<sup>82</sup> and we have seen international decisions which at least partially break away from the notion of state sovereignty as sacrosanct.<sup>83</sup> Second, recent international environmental law instruments have shown that in certain circumstances states are prepared to compromise on energy-related matters to achieve a global deal. The UNFCCC, the Kyoto Protocol and the Paris Agreement are the most recent illustrations of this trend.

While it is easy to be pessimistic about the slow pace of development in international sustainable energy law, a consideration of new legal measures supportive of such law, as discussed in this chapter, shows that we have progressed significantly since I referred in 1993 to energy law as 'the neglected aspect of environmental

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79 See above n 14 and accompanying text.

80 See above n 16 and accompanying text.

81 See Bruce, above n 64, 6-8.

82 See Patricia Birnie, Alan Boyle and Catherine Redgwell, *International Law and the Environment* (Oxford University Press, 3<sup>rd</sup> ed, 2009) 217.

83 See, for example, *Trail Smelter Case (United States of America v Canada) (Awards)* (1941) 3 RIAA 1905; *Gabčíkovo-Nagymaros Project (Hungary v Slovakia) (Judgment)* [1997] ICJ Rep 7.

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law'.<sup>84</sup> Let us hope that necessary legal change supportive of sustainable energy will be introduced worldwide before significant non-reversible environmental harm is caused to the planet by continuing to support the fossil fuel industries.

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<sup>84</sup> Adrian Bradbrook, 'Energy Law: The Neglected Aspect of Environmental Law' (1993) 19 *Melbourne University Law Review* 1.