

IUCN  
Environmental  
Law Programme

# Energy Law and Sustainable Development

Edited by Adrian J. Bradbrook and Richard L. Ottinger

IUCN Environmental Policy and Law Paper No. 47

**IUCN**  
The World Conservation Union

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**IUCN – The World Conservation Union  
2003**

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# Table of Contents

Foreword <i>Nicholas A. Robinson</i>	vii
Preface <i>John Scanlon</i>	xv
Message <i>Joke Waller-Hunter</i>	xvii
Acknowledgements <i>Adrian J. Bradbrook and Richard L. Ottinger</i>	xviii
About the authors	xix
<b>Development and energy</b> <i>José Goldemberg</i>	1
<b>Energy, climate change and sustainable development</b> <i>David R. Hodas</i>	11
<b>Energy and biodiversity: Understanding complex relationships</b> <i>Jeffrey A. McNeely</i>	31
<b>Sustainable development in the petroleum sector</b> <i>Jacqueline Lang Weaver</i>	45
<b>Legal measures to promote renewable and energy efficiency resources</b> <i>Richard L. Ottinger and Fred Zalzman</i>	79
<b>Legislative measures for promotion of renewable energy: Wind energy development in Denmark as a case study</b> <i>Rikke Munk Hansen</i>	115
<b>The Report of the World Commission on Dams: Some implications for energy law</b> <i>Achim Steiner and Lawrence J. M. Haas</i>	139
<b>The contribution of international law to achieving global sustainable energy production and consumption</b> <i>Adrian J. Bradbrook and Ralph D. Wahnschafft</i>	153
<b>The role of selected international agencies in the formation of international energy law and policy towards sustainable development</b> <i>Thomas W. Wälde</i>	171
<b>Green pricing and green power marketing: Demand-side mechanisms for promoting “green power” in deregulated electricity markets</b> <i>Alexandra S. Wawryk</i>	203
<b>Does electricity market liberalization contribute to energy sustainability?</b> <i>Barry Barton</i>	217

# Foreword

The World Summit on Sustainable Development (WSSD) recommends that nations undertake the reform of their energy regimes.<sup>1</sup> This is a matter of great urgency, since most national systems for generating electrical energy, or otherwise consuming fossil fuels, are the primary sources of greenhouse gases contributing to climate change. Forthcoming debates about how most effectively to implement the Kyoto Protocol<sup>2</sup> will lend urgency to these WSSD recommendations. The expert authors of this book provide us with important guidance on how nations may respond to the WSSD's recommendations on a worldwide basis.

Given the fundamental challenges posed by the reports of the Intergovernmental Panel on Climate Change (IPCC),<sup>3</sup> nations inevitably will find themselves undertaking a far more fundamental assessment of their energy regimes than has ever been the case. The recommendations of the WSSD carry implications which extend well beyond even the scope of the essays provided in the chapters of this book. By way of this foreword, one may speculate on some of these implications.

One principal analytic tool of ecosystem management is measuring the flow of energy through living and inanimate systems. Since climate change functions within Earth's biosphere, energy flow measurement should be assessed at this level, as well as within individual ecosystems. Solar energy fuels life in the biosphere, and is recycled over centuries in fossil fuels and over decades in trees. The process of photosynthesis channels solar energy into resources that sustain all life on earth. These natural laws are only dimly perceived, however, by the utilitarian human laws that govern how short-term energy is supplied to our human economy.

As contemporary energy law has developed over the past century in each nation, it has rarely had occasion to integrate such ecological assessment into its fundamental norms or legal framework. The challenge of the coming generations is to accomplish this integration. Without integration of energy law and environmental law, human society cannot meet the goals for sustainable development envisioned at the 1992 UN Conference on Environment and Development in Rio de Janeiro. Reformation of energy laws will be an essential element of the transition to attain sustainability within national and global economies.

Energy law has developed through a disjointed body of statutes and treaties. Energy law is most often considered to be merely a variant of public administrative law. However, rather than being a refined and integrated legal field of law, the laws of this sector are characterized by a lack of basic principles or integrative systems. Its costs are underwritten by application of public finance laws. It has evolved incrementally over time, in an essentially instrumental manner, reactive to perceived needs to find sources of energy to consume. Energy law facilitates the development of whatever energy system is possible in light of available technology. Its short-term goal is always to supply electricity or such other basic fuels as each society requires.

Energy law's emphasis has been on ensuring an adequate supply of energy, rather than providing energy systems with an emphasis on maximizing efficiency, respecting ecology or ensuring equity in use among all users.<sup>4</sup> As a result, energy law has developed without much regard for the negative environmental impacts of energy generation. Prices for energy services for decades have ignored environmental externalities, and most often disregarded whether the poor can access such services. Most nations have been obliged to compensate for these shortcomings by enacting statutes, and negotiating several treaties,<sup>5</sup> to cope with the economic

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<sup>1</sup> Plan of Implementation for the United Nations World Summit on Sustainable Development, adopted September 4, 2002, Johannesburg, South Africa.

<sup>2</sup> The Kyoto Protocol to the UN Framework Convention on Climate Change is available at <[www.unfccc.int](http://www.unfccc.int)>

<sup>3</sup> Reports of the International Panel on Climate Change are available at <[www.ipcc.ch](http://www.ipcc.ch)>

<sup>4</sup> This paper does not focus on the property law regime for the ownership of natural resources, such as fugacious fuels like oil and gas or hard minerals such as coal or uranium, or the property regimes providing access to land sites or water bodies. Property rights often are a basic element of the costs determinative of which energy sources are developed to provide energy. Rather, energy law is here discussed as the framework of public policies and administrative law that governs the extraction or generation, provision and distribution of energy to users. Energy law extends from customary practices, such as an individual's conduct like a charcoal dealer in a developing nation, to the corporate enterprises generating electricity, whether owned by the State, or in a parastatal form, or privately owned. Both private companies and government-owned properties, in both capitalist or socialist states, produce the same sort of issues as discussed here, and the administrative rules in both types of economies, or in mixed economies, appear to suffer comparable dysfunctions. Environmental law readdresses these dysfunctions alike in whatever economic setting is involved.

<sup>5</sup> See, e.g., the 1979 Geneva Convention on Long-Range Transboundary Air Pollution, and its Protocols. 1302 U.N.T.S. 217, 18 I.L.M. 1442.

“externalities” generated by the energy sector. Principal among the environmental externalities are the following: air pollution including “acid rain,” waste water pollution, significant solid and hazardous waste products from mining or combustion of coal or use of enriched uranium, disregard for the reclamation of mined lands and their ecosystems, discharge of waste heat from cooling systems into aquatic ecosystems, loss of habitat and soil salting in the wake of hydroelectric dam development, and impacts associated with constructing high tension electric power lines or natural gas pipelines.

Environmental laws currently only partially, and imperfectly, regulate these impacts of the energy sector. The continuing accumulation of such problems bodes ill for how energy law will handle the new challenges that the energy sector faces as it contemplates reduction of carbon dioxide emissions required under the Kyoto Protocol, or the improved application of the environmental impact assessment to energy sector projects, as is required by national environmental impact assessment (EIA) laws<sup>6</sup> or the 1998 Århus Convention on Public Access to Information, Participation in Decision-making and Access to Environmental Justice.<sup>7</sup> Because practically every nation has favoured systems that supply energy exclusively through economic sector preferences, energy law today only superficially addresses how energy suppliers could better take economic, social or ecological responsibility for the adverse effects of their processes and services. In most places, since the utility services that supply energy are a near monopoly, those societies that decide to require energy suppliers to consider social or environmental issues have chosen to establish regulatory systems<sup>8</sup> to ensure that the pricing of energy is balanced between (a) generating fees sufficient to pay for the investment in building and operating the energy systems, (b) providing a “reasonable” profit to the governmental, parastatal, or private enterprises that build and operate the energy systems, and (c) ensuring that the public can afford to pay the fees and showing that the fees appear fair to the users.

Historically, the regulatory systems established to meet these energy objectives have operated as a distinct and relatively independent sector of government and the economy.<sup>9</sup> For instance, regulations often establish exclusive service areas with enough customers to permit the enterprise generating and transmitting electricity to recover its costs associated with supplying electricity, and make a reasonable profit. Little attention has been devoted to how the energy sector relates to the broader environmental context in which it is embedded. Hydroelectric systems, and their dams, have been obliged to consider alternative uses of rivers and lakes, because these resources serve navigation and fishing interests also. For instance, during the Progressive era in the United States of America, Congress enacted Section 10 of the Federal Power Act of 1920<sup>10</sup> requiring that the federal regulatory agency<sup>11</sup> balance the competing demands of water before it could decide whether or not to authorize a new hydroelectric power facility which might interfere with other water uses. This has been held to require a study of alternative sources of energy that might obviate the need for the proposed hydroelectric facility.<sup>12</sup> Out of specific licensing proceedings in the USA,<sup>13</sup> for instance, experience was gained that helped Congress to enact a generic administrative procedure for weighing these sorts of

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<sup>6</sup> Principle 17 of the Rio Declaration on Environment and Development provides that “Environmental impact assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.” UN Doc. A/CONF.151/26, 31 I.L.M. 874 (1992). For the oldest application of EIA, see the environmental impact assessment in the USA required under the National Environmental Policy Act (NEPA), 42 U.S.C. 4321, *et seq.*, and its regulations at 40 C.F.R. Part 1500. The European Union has required that its members enact legislation for EIA since 1985: Council Directive 85/337 of June 27, 1985, on the Assessment of the Effects of Certain Public and Private Projects on the Environment. *Official Journal* L175 (July 5, 1985): “Member States shall adopt all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue, *inter alia*, of their nature, size or location are made subject to an assessment with regard to their effects.” (Article 2.1).

<sup>7</sup> See the Århus Convention, which incorporates EIA.

<sup>8</sup> See, e.g., the Public Service Commission of the State of New York, Public Services Law.

<sup>9</sup> In this regard, the energy regulatory regimes share some of the same dysfunctional relationships to the social and environmental foundations for sustainable development that characterize the debate over the liberalized trade sector and the environment sector. For proposals to bridge this gap see generally Daniel C. Esty and Maria H. Ivanova, “Revitalizing International Environmental Governance: A Function-Driven Approach,” in Esty and Ivanova, *Global Environmental Governance Options and Opportunities* (New Haven, Conn., Yale School of Environmental Science and Forestry, 2002) pp.193–4, available at <[www.yale.edu/environment/publications](http://www.yale.edu/environment/publications)>

<sup>10</sup> Federal Power Act, 16 U.S.C. 791–828c.

<sup>11</sup> Initially this was the Federal Power Commission, which was reconstituted during the presidency of Jimmy Carter to be the Federal Energy Regulatory Commission (FERC).

<sup>12</sup> *Scenic Hudson Preservation Conference v. Federal Power Commission*, 354 F. 2d.608 (2d Cir. 1965), *cert. den.* 384 U.S. 941 (1966). More recently, IUCN, the World Bank and others, participated in the preparation of the report of the World Commission on Dams, which outlines the competing factors and need for better environmental impact assessment and public participation in the development of new hydroelectric facilities around the world.

<sup>13</sup> *Ibidum*. The *Scenic Hudson* case highlighted the need to take a hard look at alternatives.

alternatives. In consequence Congress enacted the National Environmental Policy Act of 1969, which first established environmental impact assessment procedures.<sup>14</sup>

Environmental impact assessment is now widely used by many nations to determine what sort of new energy systems should be licensed. Unfortunately, far too often the EIA process is treated as a routine exercise, without requiring a thorough study of environmental effects or a valid consultation with potentially affected stakeholders.<sup>15</sup> Even where EIA is well established in national law, EIA is not yet used to measure the ways to avoid greenhouse gas emissions, or to sequester any carbon dioxide that may be emitted. EIA procedures also are rarely, if ever, applied to existing energy development regimes, such as the refining, distribution and use of petrol.<sup>16</sup>

Indeed, so effective are society's vested economic interests in the use of petroleum as a preferred energy source that the nations producing oil and gas prevented any sustainable use energy recommendations from being included in the action plan adopted at the UN Conference on Environment and Development in 1992 in Rio de Janeiro. Rio's Earth Summit recommended that EIA "shall" be used in national environmental decision-making,<sup>17</sup> but EIA was not mentioned in the action plan adopted at the Rio Earth Summit, known as Agenda 21.<sup>18</sup> The only references in Agenda 21 were to the need to use energy sources more efficiently and environmentally in the context of the transportation sector.<sup>19</sup>

This does not mean that Agenda 21 was irrelevant to energy and climate issues. It also had a chapter on "safe and environmentally sound management of radioactive wastes,"<sup>20</sup> recognising that this one fuel cycle had long-term and dangerous consequences for human health and the environment. In addition, a number of the chapters of Agenda 21 implicitly address an energy law agenda. For instance, between the 1972 United Nations Conference on the Human Environment in Stockholm and the 1992 UN Conference on Environment and Development in Rio de Janeiro, environmental law had emerged as the fastest growing field of law at both national and international levels (it still is today). The success that environmental regulation has had in abating pollution and enhancing environmental quality throughout States such as Singapore, the UK, the USA, Canada, Australia, or The Netherlands stands in stark relief against the acute and still growing threats to public health from air, soil, and water pollution in urban centres such as Bangkok, New Delhi, Mexico City, or Beijing. To combat the environmental degradation trends, Agenda 21 called for rapid development of further environmental law.<sup>21</sup>

Experience with environmental laws illustrates how appropriate legal systems can foster progressively wider uses of clean energy and transportation systems. Case studies of these experiences are the best evidence that the practical measures needed to implement the Kyoto Protocol of the UN Framework Convention on Climate Change have in fact been field tested and are ready to be employed to stabilize greenhouse gas emissions. For instance, air pollution control legislation commonly establishes health standards, monitors where those standards have not been attained, and then requires concrete and measurable steps to curb air emissions. Conversion to clean fuels and rigorous use of energy efficiency technology readily emerges as a

<sup>14</sup> NEPA is at 42 U.S.C. 4321.

<sup>15</sup> See, e.g. *Shehla Zia and Others v. WAPDA*, PLD 1994, SC 693 (1994), in which the Pakistan Supreme Court ordered high-tension electric lines not placed over congested urban residential areas without undertaking health impact assessments first. Programmatic EIAs were used to assess potential exploitation of coal resources in the northern plains of the USA or to determine whether to permit oil and gas exploration in the outer continental shelf of the USA during the energy crisis of the 1970s; see for instance, *Sierra Club v. Morton*, 510 F. 2d 813 (5<sup>th</sup> Circuit 1975). The use of EIA by international organizations such as the World Bank, has been timid and of limited value in ensuring sustainable environment decisions.

<sup>16</sup> The EU EIA Directive includes petro-refining in the list, but most NEPA FERC decisions relate to pipelines and power line routes, or state EIA procedures relate to supply routes, and not to extraction or refining by facilities owned by the private enterprises. In developing nations, the *Shehla Zia* decision, *supra ibidum*, is a rare exception to the trends that EIA is not often performed for energy infrastructure development.

<sup>17</sup> Principle 17, Rio Declaration on Environment and Development (1992).

<sup>18</sup> See, N. A. Robinson (Ed.), *Agenda 21: Earth's Action Plan* (Dobbs Ferry, N.Y., Oceana Publications, 1993) [cited herein as *Agenda 21*].

<sup>19</sup> Agenda 21, Para. 7.5 recommended "promoting sustainable energy and transport systems in human settlements," and in Paras 7.46 to 7.52 elaborated on this recommendation, noting that "[t]ransport accounts for about 30% of commercial energy consumption and for about 60 per cent of total global consumption of liquid petroleum. In developing countries, rapid motorization and insufficient investments in urban-transport planning, traffic management and infrastructure, are creating increasing problems in terms of accidents and injury, health, noise, congestion and loss of productivity similar to those occurring in many developed countries. All of these problems have a severe impact on urban populations, particularly the low-income and no-income groups." Para 7.48.

<sup>20</sup> Agenda 21, Chapter 22.

<sup>21</sup> Agenda 21, Chapter 8.

cost-saving and immediately available means to comply with the strict air pollution laws. Laws requiring the public disclosure of all air emissions, and the media coverage of those emissions, have further stimulated companies and governmental authorities alike to seek to cut emissions, rather than receive the censure of the public.

In addition to air pollution issues, environmental impact assessments (EIAs) feature in environmental laws and are now a mature legal system established in all regions. EIA techniques have been used to promote the study of alternative means for supplying energy and meeting transportation needs. Since the legal framework for EIA is in place, EIA can and should be more conscientiously used for requiring the study of clean energy options. The retarding factor in EIA is often the lack of government will to use it toward these ends, coupled with the failure to permit public oversight or enforcement of the EIA process in many States. The success of public participation in the implementation of the National Environmental Policy Act (NEPA) in the USA demonstrates the value of such oversight in promoting sound energy practices. Agenda 21 was silent on how to implement EIA, but implicit in Principle 17 of the Rio Declaration on Environment and Development is that EIA's examination of "alternatives" to proposed government actions must entail examining alternative means to promote energy efficiency and avoid exacerbating green house gas emissions.

Many experts in energy and environmental law recognised that these energy recommendations implicit in Agenda 21 would not by themselves be strong enough to reverse current unsustainable patterns of energy use. The UN Development Programme, with commendable support from Sweden, and the UN World Energy Council and the UN Department of Economic and Social Affairs in the UN Secretariat, undertook preparation of the World Energy Assessment.<sup>22</sup> Released in September of 2000, this comprehensive report assessed the fuel cycles used to generate energy supplied, and their competing values and problems. UNDP Administrator, Mark Malloch Brown, called the report "a real landmark. It combined a clear and cogent assessment of the current world energy situation with a detailed analysis of the implications for the poor and the environment. It shows how and why the pursuit of economic growth and environmental protection can be mutually reinforcing goals rather than conflicting ones. And it provides a wide range of provocative but feasible recommendations on how to address these overarching problems."<sup>23</sup> The World Energy Assessment became one of the major contributions to the deliberations of the 9th Session of the UN Commission on Sustainable Development, which examined the role of energy in sustainability. Ironically, the UNDP discontinued its work to promote an understanding of the World Energy Assessment in the same year that the World Summit on Sustainable Development convened in Johannesburg.

In the same time-frame, members of the International Union for Conservation of Nature and Natural Resources (IUCN), including the Pace University Center for Environmental Legal Studies through its Energy Project,<sup>24</sup> brought the same issues to the governing assembly of IUCN. At the first World Conservation Congress in Montreal in 1994, IUCN members mandated the Union's Commission on Environmental Law (CEL) to examine how energy laws could be adapted to ensure environmental protection and advance sustainable development.<sup>25</sup> It was clear to IUCN's Commission on Environmental Law that the objectives of the 1992 United Nations Framework Convention on Climate Change<sup>26</sup> could not be achieved without building the sustainability policies adopted at the UN Conference on Environment and Development (UNCED)<sup>27</sup> in 1992 into the energy laws of each nation. Since 1994, the IUCN CEL Climate and Energy Law Specialist Group has assiduously researched and defined an agenda for the new generation of energy laws, and provided expert advice for the 9th Session of the UN Commission on Sustainable Development in its deliberations in New York.

Largely because Agenda 21 contains no explicit chapter on energy, the UN Commission on Sustainable Development devoted its 9th Session in 2002 to an examination of the role that energy plays in sustainable

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<sup>22</sup> *World Energy Assessment*, (New York, UNDP) 2000.

<sup>23</sup> Statement by Mark Malloch Brown at the luncheon marking the launch of the World Energy Assessment, New York, September 20, 2000 (UNDP).

<sup>24</sup> The Pace Energy Project prepared the leading academic study on the unintended environmental harm produced by established energy systems, see R. Ottinger, *et al.*, *The Environmental Costs of Electricity* (Dobbs Ferry, New York, Oceana Publications, 1990).

<sup>25</sup> IUCN 1<sup>st</sup> World Conservation Congress, Resolution 1.41 (Montreal, Canada); this mandate was renewed at the 2<sup>nd</sup> World Conservation Congress in Amman, Jordan, in the year 2000, through Res. 2.17.

<sup>26</sup> UNFCCC, 1771 UNTS 107 (1992).

<sup>27</sup> Rio Declaration on Environment and Development, UN Doc.A/CONF.15126 (1992), and Agenda 21, UN Doc.A/CONF.26 (volumes I-III) (1992), reprinted with annotations in N. A. Robinson, *Agenda 21: Earth's Action Plan* (Dobbs Ferry, New York, Oceana Publications, 1993).

development. As an Observer in the UN General Assembly, IUCN has a right and duty to participate in such meetings to provide its expertise to its State Members and other UN Members. Consequently, the IUCN CEL Climate and Energy Law Specialist Group was invited to participate in a one-week experts' consultation at the UN headquarters in New York in early 1999, and subsequently in the CSD's deliberations.<sup>28</sup> Many of the positions that the IUCN Specialist Group advanced had earlier been presented to the "Millennium Conference on Energy, Environment and Clean Mobility," in Geneva, Switzerland, in January of 2000. IUCN's Director General, Dr Marietta Koch-Weser, presented the keynote address to that Conference, setting out the fundamental link between the fields of energy and nature conservation. This Conference was also a significant input for the 9th Session of the Commission on Sustainable Development.

In late 2000, IUCN (through its Climate and Energy Law Specialist Group) and the International Council of Scientific Unions (ICSU) presented a joint paper to the Commission on Sustainable Development in a dialogue that had been scheduled to explore ideas of achieving equitable access to cleaner energy, exploring choices for producing, distributing and consuming energy, and developing public-private partnerships to achieve sustainable energy for transport, and transport planning choices.<sup>29</sup> IUCN's Climate and Energy Law Specialist Group participated, by invitation, in an inter-sessional Energy Expert Group meeting (26 February–2 March 2001) convened before the 9th Session of the Commission on Sustainable Development, to explore alternative energy paths to enhance sustainable development.<sup>30</sup>

The recommendations of the 9th CSD provided the foundation for the decisions taken in the Preparatory Committee for the World Summit on Sustainable Development, and ultimately reflected in the WSSD's Johannesburg Plan of Implementation (adopted 4 September 2002). While details are not set forth in the Plan of Implementation, as discussed below, many of the most salient issues are elaborated in this book. The chapters that follow here elaborated the energy recommendations of the Johannesburg Plan of Implementation. This book focuses on the issues that will necessarily constitute the agenda for the reform of energy law systems worldwide.

Perhaps the greatest political events made in Johannesburg at the time of the WSSD were the decisions by Canada and the Russian Federation to ratify the Kyoto Protocol. Canada subsequently took its decision to ratify, and the Russia action can be anticipated. These ratifications will be sufficient to bring the Kyoto Protocol into force, but the practical fate of the Kyoto Protocol depends on how it will be implemented. Ratifications alone do not, of course, implement the Protocol; the legal frameworks for implementation remain to be put in place in each nation. The challenge will be to integrate environmental and energy law into a synthesis that furthers sustainable energy generation and use.

The significance of the challenge to reform energy policy and law transcends the event of the World Summit on Sustainable Development in 2002. Climate change constitutes one of Earth's most fundamental challenges, and will be so for the next few decades. The economic costs of internalizing what are now energy externalities will require a basic reordering of the global economy and each nation's economy. Many nations have come to recognise that they need to undertake significant reductions in greenhouse gas emissions if the objectives of the Kyoto Protocol are to be realized. Even where national leaders are unwilling to reach these conclusions, as in the USA currently under President George W. Bush, local authorities and other political subdivisions have taken decisive action, as in California's initiative to require measurable cutbacks on motor vehicle greenhouse gas emissions as a condition for their sale in California. The growing consensus of nations in support of advancing recommendations for energy law reform provide the basis for moving from study to implementation of the recommendations.

The delegates to the Preparatory Committee of the WSSD built on this growing body of recommendations and the decisions of the 9th Session of the UN Commission on Sustainable Development. Although no agreement could be reached on binding, or even merely recommended timetables and targets for abating existing greenhouse gas emissions or for averting new emissions, it is nonetheless significant that the Johannesburg Plan of Implementation does set forth the energy recommendations that were missing from Rio's Agenda 21. Energy policy is now a core part of the agenda for sustainable development.

On 4 September 2002, the WSSD agreed that sustainable development requires a refocusing of energy. First, in the Johannesburg Declaration on Sustainable Development the delegates included access to energy as

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<sup>28</sup> Professor Richard L. Ottinger (USA), Prof. David Hodas (USA), and Ambassador Ben Mudho (Kenya) comprised the team present for the meetings.

<sup>29</sup> IUCN-ICSU CSD-9 Dialogue Paper (November 2000).

<sup>30</sup> See [http://www.un.org/esa/sustdev/csd9/csd9\\_2001.htm](http://www.un.org/esa/sustdev/csd9/csd9_2001.htm)

a basic requirement for human dignity,<sup>31</sup> and also noted “the global environment continues to suffer.... The adverse effects of climate change are already evident.”<sup>32</sup> In this political declaration, the nations at the WSSD committed themselves “to the Johannesburg Plan of Implementation and to expedite the achievement of the time-bound, socio-economic and environmental targets contained therein.”<sup>33</sup>

The final core provisions of the Johannesburg Plan of Implementation were negotiated and agreed upon in paragraph 8 of the text adopted on 4 September 2002. The nations agree to take joint actions “to improve access to reliable and affordable energy services...sufficient to facilitate the...goal of halving the proportion of people in poverty by 2015.”<sup>34</sup> The nations expressly recognise that provision of access to energy is basic to providing other basic services, such as power to pump and supply clean, potable water. In order to meet this ambitious target, the nations agreed on eight priority recommendations:

- 1) “*Improve access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services and resources.*” Doing so entails giving priority attention to rural electrification and decentralized energy systems. In places such as much of Africa, where most communities are not part of any centralized national power grid, local systems for generating electricity will need to be established. Such efforts will require accelerated research into hydrogen fuel cell technology, and wider use of wind and solar power, or where appropriate small head hydroelectric power in mountain areas. To accomplish such results, nations must engage in “intensifying regional and international cooperation in support of national efforts, including through capacity-building, [and] financial and technological assistance.”<sup>35</sup>
- 2) “*Improve access to modern biomass technologies.*” This recognises that opportunities exist to use what is now agricultural or silvicultural waste as an energy asset. Biomass is to be considered for commercial operation, and use in rural areas.<sup>36</sup>
- 3) “*Support the transition to the cleaner use of liquid and gaseous fossil fuels, where considered more environmentally sound, socially acceptable and cost-effective.*”<sup>37</sup> Whether any fossil fuels can be used without exacerbating greenhouse gas emissions and the attendant climate change, is a troubling question. Since fossil fuels are going to be used for some decades to come, however, social engineering to limit the growth in their use is essential. Previous investments in fossil fuel energy systems will tend to retard use of any such innovative legal and economic measures; incentives will be needed to effect this transition. The Johannesburg Plan of Implementation is silent on this aspect.
- 4) “*Develop national energy policies and regulatory frameworks that will help to create the necessary economic, social and institutional conditions in the energy sector*”<sup>38</sup> in order to meet the goals in the first recommendation. Emphasis is given to doing so in rural, peri-urban and urban areas. This recommendation expressly recognises the need for reforms in energy law, such as those that the IUCN Legal Specialist Group is studying and designing. These recommendations invite more detailed analysis of what sort of regulatory frameworks are needed for licensing energy systems, for economic incentives and disincentives to promote sustainable systems, and for procedures for impact assessment and public participation in energy/environmental decision-making. Above all, before any effective regulatory reforms can be fashioned, there is a need to re-assess the fundamental principles and policy that should guide sustainable energy policy. These principles need to be incorporated into national energy statutes and regulations.
- 5) “*Enhance international and regional cooperation*” to meet the above ends, again “with special

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<sup>31</sup> Paragraph 18 of the Johannesburg Declaration on Sustainable Development, UN Doc. A/CONF.1999/L.6/Rev. 3 (4 September 2002), states that: “We welcome the Johannesburg Summit focus on the individuality of human dignity and are resolved through decisions on targets, timetables and partnerships to speedily increase access to basic requirements such as clean water, sanitation, energy, health care, food security and the protection of biodiversity....”

<sup>32</sup> Paragraph 13 of the Johannesburg Declaration on Sustainable Development, *Ibidum*, states that: “The global environment continues to suffer. Loss of biodiversity continues, fish stocks continue to be depleted, desertification claims more and more fertile land, the adverse effects of climate change are already evident, natural disasters are more frequent and more devastating and developing countries more vulnerable, and air, water and marine pollution continue to rob millions of a decent life.”

<sup>33</sup> Para. 36 of the Johannesburg Declaration on Sustainable Development, *Ibidum*.

<sup>34</sup> The Johannesburg Plan of Implementation, UN Doc A/CONF.199/ 20 (4 September 2002), advanced unedited text at Para. 8.

<sup>35</sup> *Id.*, Para. 8(a).

<sup>36</sup> *Id.*, Para. 8(b).

<sup>37</sup> *Id.*, Para 8(c).

<sup>38</sup> *Id.*, Para. 8(d).

*attention to rural and isolated areas.*<sup>39</sup> This will require improvements in international environmental governance systems, which was a priority for the WSSD in its preparation, but one about which no consensus could be realized at Johannesburg. Part X of the Johannesburg Plan of Implementation urged the nations to make the existing systems of multilateral cooperation work more effectively; however, in the energy sector, there is an absence of institutional systems to undertake the cooperation called for here. This is another weakness in the recommendations that will need to be addressed.

- 8) “*Assist and facilitate on an accelerated basis...the access of the poor to energy systems as set forth in recommendation one above.*” This re-iterates the relationship of energy to poverty alleviation. With over 80% of the people of Africa, for instance, having no access to electricity, it is imperative that sustainable development give priority to deploying decentralized renewable energy systems, and develop and deploy hydrogen fuel cell systems to generate electricity in remote places.

Two elements will be required to realize these eight recommendations. *First*, basic principles, which have been pioneered in the context of environmental law, will need to be applied consistently to the realm of energy law, and with greater effectiveness. These include the principles set forth in the UN World Charter for Nature,<sup>40</sup> in the 1992 Declaration of Rio de Janeiro on Environment and Development, and in the earlier Stockholm Declaration on the Human Environment of 1972. These principles are implemented in many nations’ laws, in the Directives of the European Union, and the several multilateral environmental agreements. This is a basic question of ethics, as the Johannesburg Plan of Implementation states.<sup>41</sup> Nonetheless, those who develop the utilitarian and short-term economic objectives of the energy sector have largely ignored these principles. Ignoring these principles is no longer sustainable. Energy law must be grounded on the reuse and recycling of energy, waste avoidance and robust use of procedures for environmental impact assessment and public participation. Assurance of basic electricity and other fuel needs for the poor must be a priority.

*Second*, guided by principle, financial and technological resources should be deployed to put on line, where geographic conditions permit, renewable energy systems (solar, wind, hydro-electric) and to refine and deploy hydrogen fuel cell technologies for motor vehicle design in transport systems and for supply of electricity on a decentralized, rural basis.

It may be that the Conference of the Parties of the UN Framework Convention on Climate Change can advance – as a priority – the development of basic principles to guide the next generation of energy laws. It may be that the Conference of the Parties of the UN Convention on Biological Diversity can develop the standards for effective sequestration of carbon dioxide through photosynthesis. It may be that the Second Committee of the UN General Assembly, and the UN Commission on Sustainable Development, can identify consensus policies that will unite the two sectors of biology and energy. If global ecosystem management has any meaning, it needs to be in the measurement of energy flows, and this endeavour must include the intellectual energy flow of ideas and action across sectors and between these several global forums for decision-making. International cooperation will be essential.

Ultimately, however, energy law reform is the quintessential national issue. Parliaments around the world need to address how to reshape national energy laws. In the period after Stockholm, “capacity building” in legislation was focused on the developing nations. In the period after Johannesburg’s WSSD, the comparable effort must be devoted to working in each of the capitals of the world to build a new framework for sustainable energy law. In such a mission, IUCN and its Commission on Environmental Law are well positioned to assist national legislators as they consider their options to revise energy laws. Ultimately, reshaping energy law will be a common challenge met by each human community within Earth’s biosphere.

*Nicholas A. Robinson*

<sup>39</sup> *Id.*, Para. 8(f); on the issue of failing to agree on enhancements to the international environmental governance, see Nicholas A. Robinson, “Befogged Vision: International Environmental Governance a Decade after Rio,” *William and Mary Law & Policy Review* (forthcoming; an article delivered at a Symposium in May 2002, William & Mary Law School, Williamsburg, Virginia).

<sup>40</sup> UNGA Res. 37/7 (1982).

<sup>41</sup> Paragraph 5 bis: “We acknowledge the importance of ethics for sustainable development, and therefore we emphasize the need to consider ethics in the implementation of Agenda 21.”

# Preface

The IUCN Environmental Law programme (ELP) welcomes the publication of this pioneering work. It reinforces the relevance of the outstanding work being done by members of the IUCN CEL Climate and Energy Law Specialist Group. Furthermore, it demonstrates in a very tangible way how members of this volunteer network of over 800 environmental law specialists from all over the world are contributing to meeting the challenge of:

*“Laying the strongest possible legal foundation at the international, regional and national levels for environmental conservation in the context of sustainable development.”*

*IUCN ELP Mission*

This book was produced through the collaboration of distinguished CEL members and staff of the Environmental Law Centre (ELC), who work together to deliver an integrated global environmental law programme. It draws on the insights of a unique mix of leading experts in the field of energy and climate change. The ELC is proud to be associated with this work, and with good reason. This new publication comprises the most recent ideas on a topic of ever increasing evolution and importance.

Energy has recently emerged at the forefront of sustainable development. The United Nations Development Programme’s World Energy Assessment (2000) linked energy and most of the ills of modern society in both developed and developing countries. The World Summit on Sustainable Development (WSSD) selected energy as one of its five major agenda issues, devising a Plan of Implementation emphasising the role of energy in eradicating poverty. That same plan calls for the establishment of policy and regulatory frameworks to promote the development and dissemination of alternative energy technologies. This ground-breaking publication should serve as an invaluable tool to facilitate this task.

Energy law, as an integral component of environmental law and overall environmental strategy, is a relatively new concept, which underlines the importance and relevance of this publication. Climate change has not only been the precursor behind this association but also the driving force behind bringing down political barriers which have prevented the overhaul of energy legislation worldwide. At present, Parties to the Kyoto Protocol to the UNFCCC are individually and collectively drafting and amending energy laws in order to meet their obligations under the Protocol.

The purpose of this publication is to facilitate the understanding of the relationship between energy law and sustainable development. In doing so, the IUCN Environmental Law Programme hopes that the information will be used by all stakeholders in the energy debate to further the use of clean renewable sources of energy.

*John Scanlon  
Head, IUCN Environmental Law Programme  
Director, IUCN Environmental Law Centre*



## Message

I commend the IUCN Environmental Law Programme for publishing this extremely insightful handbook. It is interesting and timely in many respects.

It squarely addresses the nexus among development, energy security and climate change. Energy as an engine for development is at the heart of many development strategies, as was most recently confirmed by the World Summit on Sustainable Development. If one takes the objective of the United Nations Framework Convention on Climate Change seriously, the world should be heading towards a carbon constrained energy economy. This publication clearly indicates that we aren't there yet!

The book attempts to link the legal instruments developed at the “environment side” to an energy regime where economic motives dominate and differ across nations, depending on their natural resource endowments, i.e., whether they are blessed with renewable or non-renewable resources. The legal instruments (like environmental impact assessment at the project or policy level) seem to be largely developed through environmental legislation. As such, the title of the book is somewhat misleading: there is not much – at least reported on in this book – in terms of energy law that would contribute to sustainable development. The key is to be found in applying environmental legislation and soft law in the energy sector. This publication certainly supports the pursuit of further integration and the need for mainstreaming climate change concerns in development and energy legislation and policies. As such the recent introduction of climate change legislation at the international and national level, which is at the crossroads of environmental and economic legislation, is certainly a step forward.

It is also interesting to note that the emphasis in the book is more on policies and policy instruments than on legislation in the narrow sense. This seems to confirm a trend of policies moving away from the use of command and control rooted in strict legislation.

In the climate change area the possible (economic) win-wins in terms of more climate friendly energy options combined with less dependence on energy imports, with associated economic benefits, are met with increased attention. The implementation of the Kyoto Protocol will undoubtedly shed further light on evolving practices, which will need careful analysis. The market-based instruments like international emissions trading and the project-based Clean Development Mechanism (CDM) are unprecedented in international agreements. If they go hand in hand with the abolition of environmentally harmful subsidies, major strides can be made towards an environmentally sustainable energy future.

*Joke Waller-Hunter*  
*Executive Secretary*

*United Nations Framework Convention on Climate Change*

# Acknowledgements

Energy issues currently are very much at the focus of international environmental and development deliberations. We have come a long way from the Rio UN Conference on Environment and Development (UNCED) of 1992 and its Agenda 21 that barely mentioned energy's relationship to development at all. Ten years later in the 2002 Johannesburg UN World Summit on Sustainable Development (WSSD), energy was central to the world's development considerations.

This remarkable shift in focus in just a decade was caused by many factors. High on the list were the findings of the world scientific community in the Intergovernmental Panel on Climate Change (IPCC) that expanded human use of fossil fuels since the Industrial Revolution threatens changes in climate that endanger the future of all living things on earth, from agriculture to oceans to biodiversity represented by ecosystem and human and other animal survivability – all this on top of the already known serious environmental and health consequences of highly toxic fossil fuel emissions of sulphuric and nitric acids, small soot particles, mercury and lead leading to air and water pollution and acid rain, and contributing to environmental destruction and animal/human diseases and early death. Terrorism and threatened war against Iraq also contributed importantly.

This book addresses these problems of unsustainability of today's predominant forms of energy production and use. It points the way to a more sustainable future and the legal means for achieving it. In this respect, the book breaks new ground as unlike most past publications in the energy law field the focus is not predominantly on the economic development of fossil fuel resources.

The book chapters are written by leading experts in their fields from around the world. The issues are well scoped in a Foreword by Professor Nicholas A. Robinson, Legal Adviser to IUCN and Chair of its Commission on Environmental Law. The relationship of development and energy is vividly described by Professor José Goldemberg of Brazil, the editor-in-chief of the UNDP-WEC-UNDESA World Energy Assessment, while the relationship between energy and biodiversity is considered by Jeff McNeely of IUCN. Sustainable development in the petroleum sector is covered by Professor Jacqueline Lang Weaver of Houston Law School. Renewable energy and energy efficiency are described by Dean Emeritus Richard Ottinger and Energy Project Director Fred Zalzman of the Pace University School of Law, with wind promotion highlighted with a Denmark case study by Dr Rikke Munk Hansen, formerly with the Danish government, now with the UN Economic and Social Commission for Asia and the Pacific (UNESCAP). Achim Steiner and Larry Haas of IUCN cover hydroelectric energy and the report of the World Commission on Dams. The contribution of international law to achieving sustainable energy for development is discussed by Professor Adrian Bradbrook of the University of Adelaide Law School and Dr Ralph Wahnschafft of UNESCAP, while the role of international agencies in the energy sector is covered by the eminent Dr Thomas Wälde of the University of Dundee, United Kingdom. Market issues are discussed from the Green Power standpoint by Dr Alexandra Wawryk of the University of Adelaide and from the standpoint of the relationship between market liberalization and sustainability by Professor Barry Barton of the University of Waikato in New Zealand.

Thus many viewpoints and perspectives are offered on the legal issues of promoting sustainable energy for development in a book that hopefully will be valuable to all those working in the field.

We would like to thank Nick Robinson for his constant support and encouragement in bringing this project to fruition. We also wish to extend our thanks to John Scanlon, Head of the IUCN Environmental Law Programme for his support, and to Maria Socorro Manguiat, Stephane Levy and Ann DeVoy of the IUCN Environmental Law Centre and the members of the IUCN Publications Services Unit for their editorial and administrative work on this book.

*Adrian J. Bradbrook and Richard L. Ottinger, editors*  
*January 2003*

## About the authors

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**Adrian J. Bradbrook** is the Bonython Professor of Energy Law at the University of Adelaide, Australia and the former Chair (now Vice Chair) of the IUCN Commission on Environmental Law Energy Law and Climate Change Working Group. He is a Fellow of the Australian Institute of Energy and the International Energy Foundation. He is the author of the books, *Solar Energy and the Law* (1984) and *Energy Conservation Legislation for Building Construction and Design* (1993), and has published numerous legal academic articles relating primarily to environmental aspects of energy law, with particular emphasis on energy efficiency and renewable energy resources. He has acted as a consultant and a resource person on various energy efficiency projects with the United Nations Economic and Social Council for Asia and the Pacific.

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**Lawrence J. M. Haas** holds degrees in Civil Engineering and Environmental Studies from Canada. After managing energy and environment projects in Canada with Federal and Provincial government departments, for the past 20 years he has worked internationally leading inter-disciplinary teams working with government, non-government and private sector organizations in several countries in Asia and Africa. Since the early 1990s, much of this work involved advising governments on ways to redefine regulatory and institutional frameworks to build participation and transparency into the selection of infrastructure projects, and to introduce new financing approaches. Mr Haas was Team Leader in the Secretariat of the World Commission on Dams (WCD). Presently he is an independent consultant based in the United Kingdom engaged in various follow-up activities to the WCD, and climate change adaptation work in water and energy resource development.

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**Jeffrey A. McNeely** is Chief Scientist at the IUCN. He has been working on biodiversity-related topics for 40 years, beginning at the Los Angeles Zoo (where he worked while he was at UCLA), followed by 12 years working in Asia (primarily Thailand, Indonesia, and Nepal) before joining IUCN in 1980. He is author or editor of over 30 books, on topics including mammals of Thailand, wildlife management in Southeast Asia,

the relationship between people and wildlife in Southeast Asia, agriculture, economics, biodiversity, climate change, and protected areas. His latest book, co-authored with Sara Scherr, is *Ecoagriculture: Strategies to Feed the World and Save Wild Biodiversity* (2003).

**Richard L. Ottinger** is Dean Emeritus and Professor of Law at Pace Law School in White Plains, New York, where he taught environmental law and was Dean from 1994–1999. He is a member of the IUCN Commission on Environmental Law and Chair of its Climate and Energy Working Group. He served for 16 years in the US Congress, chairing the House Subcommittee on Energy, Conservation and Power. He was a founding staff member of the US Peace Corps and was an Associate in the New York law firm of Clearly, Gottlieb, Friendly & Hamilton. He is a graduate of Harvard Law School and Cornell University.

**Achim Steiner** is the Director General of IUCN. He has degrees from the Universities of Oxford and London. He also studied at the German Development Institute in Berlin and the Harvard Business School. Previously, as Secretary General of the World Commission on Dams, he brought together the public sector, civil society and the private sector in a global policy process on dams and development. Prior to that, he worked as Chief Technical Adviser with GTZ and the Mekong River Commission and was Senior Policy Adviser to IUCN's Global Policy Unit. His professional career also includes extended field assignments in Southern Africa and South Asia. Achim Steiner is a member of the UN Secretary General's Advisory Council for the Global Compact, the Environmental Advisory Council of the European Bank for Reconstruction and Development, the Bureau of China Council for International Cooperation on Environment and Development, and the International Advisory Committee of Global Environmental Action.

**Thomas Wälde** (Dr iur (Frankfurt); LL.M. (Harvard)) holds the Jean Monnet Chair for EU Economics and Energy Law, and is Head of the CEPMLP International Business Transactions programme, University of Dundee, UK. From 1980 to 1990 he was the principal UN adviser on international investment, natural resources and energy. Professor Wälde is now an internationally leading scholar (and government and corporate adviser) in the field of international economic and investment law, regulatory reform and commercial/investment negotiations. He has published widely on energy law. He is editor of the leading international journals in international economic and energy/natural resources law; chief adviser on several EU legislative reform projects; consultant to major international energy/resource companies, international and national agencies (World Bank, EU, IEA, APEC, OPEC, GTZ); and acts as an arbitrator and mediator in energy law issues. He was voted in 2000 Euromoney Survey as the internationally leading practitioner in oil-gas-energy law. He is the Principal of Thomas Wälde & Associates.

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**Alexandra S. Wawryk** received a First Class Economics degree and a PhD in Law from the University of Adelaide, Australia. She is a barrister and solicitor of the Supreme Court of South Australia, and is currently lecturing in Environmental Law at the University of Adelaide. Dr Wawryk has published journal articles in the *Journal of Energy and Natural Resources Law*, the *University of New South Wales Law Journal*, the *Environmental and Planning Law Journal*, the *Melbourne University Law Review*, and the *Australasian Journal of Natural Resources Law and Policy*.

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**Fred Zalcman**, the Executive Director of the Pace Energy Project, has been lead counsel for New York's environmental community in a variety of proceedings before the New York Public Service Commission. Mr Zalcman has been the team leader on a number of consensus-building activities among environmental NGOs on restructuring policy and among insurance companies on benefits of sustainable energy investments. Most recently, Mr Zalcman has focused his efforts on removing economic and environmental regulatory barriers to the development of emerging clean distributed generation technologies. He teaches energy and natural resource law at Pace Law School and has significant experience in energy and environmental matters, both as an attorney and as a policy analyst. Prior to joining Pace in 1994, he was head of the Strategic Planning Section of the Illinois Department of Energy and Natural Resources.