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## RENEWABLE ENERGY & ENVIRONMENTAL PROTECTION

*This report concerns laws governing renewable sources of energy and environmental protection in Australia, Brazil, Israel, India, and South Africa.*

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AUSTRALIA

LAWS GOVERNING RENEWABLE SOURCES OF ENERGY &  
ENVIRONMENTAL PROTECTION

*Executive Summary*

*The development and deployment of renewable technologies is an integral part of the Australian government's response to climate change. Governments at the federal, state and territorial level have implemented laws and policies to encourage the development and use of renewable energy, including those derived from wind and solar power, and biofuels. The government's actions include a mandatory renewable energy target scheme, which promotes renewables-based electricity generation through a market-based mechanism.*

*The federal government is planning to introduce a national greenhouse gas emissions trading regime by July 1, 2011. The government believes that increased use of renewable energy can make an important contribution to the reductions in greenhouse gases that will be necessary under the emissions trading scheme. To this end, the federal government has recently announced a number of new policy measures to support renewable energy, including an expanded national renewable energy target scheme, and a new Clean Energy Initiative. The Prime Minister has also announced that Australia would join the International Renewable Agency.*

**I. Introduction**

**A. Renewable Energy in Australia**

Renewable energy accounts for some 5% of Australia's total energy consumption, with 6.5% of Australia's public electricity consumption coming from renewable sources. Hydroelectricity is the dominant renewable source of electricity generation, with wind and solar powers making a significantly smaller, but growing, impact.<sup>1</sup>

In 2007, biofuels accounted for 0.5% of Australia's petrol and diesel supply, with fuel ethanol production estimated at 112 million liters and biodiesel production estimated at 59 million liters.<sup>2</sup>

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<sup>1</sup> Energy in Australia 2009 (Commonwealth of Australia, 2009, p 33, available at [http://www.abare.gov.au/publications\\_html/energy/energy\\_09/auEnergy09.pdf](http://www.abare.gov.au/publications_html/energy/energy_09/auEnergy09.pdf)).

<sup>2</sup> See Assessing The Environmental Externalities For Biofuels In Australia, Australian Bureau of Agricultural and Resource Economics, Conference Paper Number 0.91 (February 2009), available at [http://www.abare.gov.au/publications\\_html/conference/conference\\_09/9\\_1\\_Biofuels.pdf](http://www.abare.gov.au/publications_html/conference/conference_09/9_1_Biofuels.pdf). (last visited June 7, 2009).

## B. Government Policy

Australia's governments (federal, state and territorial) have implemented laws and policies to promote the development and use of renewable energy. These laws include targets, grants, fuel excise reductions and market-based mechanisms.<sup>3</sup> Renewable energy is an important element of the federal government's response to climate change. The federal government is planning to implement a national emissions trading scheme by July 1, 2011.<sup>4</sup> The government believes that the increased development and use of renewables, particularly the renewable-generation of electricity, can make an important contribution to the greenhouse gas emissions reductions that will be necessary under the emissions trading scheme.<sup>5</sup>

Recently, the federal government has made a number of new policy announcements with regards to renewable energy. In the 2009-2010 budget, the federal government announced a new \$A4.5billion Clean Energy Initiative, intended to support Australia's efforts to reduce greenhouse gas emissions and to support the growth of green sector jobs.<sup>6</sup> In May 2009, the Prime Minister announced that Australia would join the International Renewable Energy Agency.<sup>7</sup> The Australian government has also agreed to expand Australia's renewable energy target and to bring state and territorial targets under one national scheme.

## C. Jurisdiction

In Australia, both federal, state, and territorial governments have jurisdiction over environmental matters. Under Australia's federal system, the federal government has the specific powers listed in the Australian Constitution with the remaining powers being vested in the states.<sup>8</sup> While the Australian Constitution does not expressly confer power over environmental matters on the federal government, the High Court has ruled that the federal

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<sup>3</sup> For further information about the range of laws, policies and incentives at the federal and state level in Australia, see <http://www.ret.gov.au/Documents/mce/documents/NationalAndStateRenewableEnergyInitiatives20060222142535.pdf>. See also Global Renewable Energy Database of the International Energy Agency, available at: <http://www.iea.org/textbase/pm/?mode=re&action=view&country=Australia> (last visited June 7, 2009).

<sup>4</sup> See joint media release, New Measures for the Carbon Pollution Reduction Scheme, Prime Minister, Treasurer and Minister for Climate Change and Water (May 4, 2009), available at [http://www.pm.gov.au/media/Release/2009/media\\_release\\_0970.cfm](http://www.pm.gov.au/media/Release/2009/media_release_0970.cfm) (last visited June 5, 2009).

<sup>5</sup> See Renewable Energy Target Scheme Design, available at the website for the Department of Climate Change, <http://www.climatechange.gov.au/renewabletarget/pubs/RET-scheme-design.pdf> (last visited June 5, 2009).

<sup>6</sup> See media release, \$4.5billion Clean Energy Initiative, for Resources and Energy, (May 12, 2009), available at <http://www.environment.gov.au/minister/wong/2009/budmr20090512g.html> (last visited June 5, 2009).

<sup>7</sup> See media release, Australia To Join The International Renewable Energy Agency, Prime Minister (May 17, 2009), available at [http://www.pm.gov.au/media/Release/2009/media\\_release\\_0999.cfm](http://www.pm.gov.au/media/Release/2009/media_release_0999.cfm) (last visited June 5, 2009).

<sup>8</sup> See Lyster, R. and Bradbrook A., *Energy Law And The Environment*, 80 (Cambridge University Press, 2006).

government can rely on other powers, in particular the corporations and external affairs powers, to enact laws concerning the environment.<sup>9</sup>

## II. Relevant Domestic Legislation

### A. Production, Development and Use of Renewable Sources of Energy

#### Renewable Energy Targets

Australia's national goal is that by 2020, 20% of Australia's electricity supply will be derived from renewable energy.<sup>10</sup> In addition, some state and territorial governments have established renewable energy goals. For example, the state of Victoria has a renewable energy target requiring that by 2016, 10% of Victoria's electricity consumption be derived from renewable sources.<sup>11</sup>

#### Mandatory Renewable Energy Target Scheme

The Mandatory Renewable Energy Target (MRET) scheme is a market-based mechanism which uses tradable renewable energy certificates to guarantee a market for renewables-based generation. Under the MRET, wholesale purchasers of electricity (liable entities)<sup>12</sup> have a legal responsibility to obtain an increasing percentage of their electricity from renewable energy-based generation.<sup>13</sup> Liable entities make a proportionate contribution toward overall annual targets under the scheme.<sup>14</sup> These targets rise progressively to 9500 Gigawatt hours in 2010.<sup>15</sup>

Liable entities meet their obligation to obtain electricity from renewable sources each year by surrendering sufficient renewable energy certificates to meet their liability.<sup>16</sup> A renewable energy certificate is an electronic form of currency, which is issued for the generation of electricity from eligible renewable sources, including certain renewable resource based power stations (such as wind, hydro, solar and biogas), and from the installation of some solar water

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<sup>9</sup> Commonwealth of Australia v. Tasmania (1983) 158 CLR 1 (the Tasmanian Dams case).

<sup>10</sup> See media Release, Ratifying the Kyoto Protocol, Prime Minister of Australia (Dec. 3, 2007), available at [http://www.pm.gov.au/media/Release/2007/media\\_release\\_0003.cfm](http://www.pm.gov.au/media/Release/2007/media_release_0003.cfm) (last visited June 5, 2009).

<sup>11</sup> See Victorian Renewable Energy Target Act 2006 (Vic), available at <http://www.esc.vic.gov.au/public/VRET/Legislation.htm> (last visited May 29, 2009).

<sup>12</sup> Liability under the scheme is determined according to whether an entity has made a relevant acquisition of electricity as set out in Part 3 of the Renewable Energy (Electricity) Act 2000 (Cth).

<sup>13</sup> Renewable Energy (Electricity) Act 2000 (Cth) §38.

<sup>14</sup> See MRET The Basics, Office of the Renewable Energy Regulator (April 2009) available at: <http://www.orer.gov.au/publications/pubs/mret-thebasics-0309.pdf> (last visited June 5, 2009). See also Renewable Power Percentage webpage of the Office of the Renewable Energy Regulator for details of how the rate of liability is calculated, available at <http://www.orer.gov.au/rpp/index.html> (last visited June 5, 2009).

<sup>15</sup> *Id.* §40.

<sup>16</sup> *Id.* §44.

heaters and small generation units.<sup>17</sup> One renewable energy certificate is equivalent to one megawatt-hour (MWh) of renewable energy.<sup>18</sup> Renewable energy certificates must be registered by the Office of the Renewable Energy Regulator when created.<sup>19</sup>

Liable entities generally acquire renewable energy certificates by purchasing them<sup>20</sup> and the price is determined by demand.<sup>21</sup> If a liable entity fails to surrender sufficient renewable energy certificates to meet their legal liability in any year, they are accountable for a penalty of \$A40<sup>22</sup> per renewable energy certificate for which they are short.<sup>23</sup>

### Biofuels Targets

In 2005, the federal government announced that it had agreed to a work program with Australian industry to meet a biofuels production target of 350 million liters by 2010.<sup>24</sup> In addition, some states have established biofuels mandates. For example, New South Wales requires that the total amount of fuel sold at the primary wholesale level be comprised of 2% ethanol.<sup>25</sup>

### Excise Tax

Biodiesel and ethanol that is produced in Australia is subject to excise duty. Excise duty is a tax on certain goods that are made or manufactured in Australia. In general, excise duty is paid by the manufacturer or distributor.<sup>26</sup>

The cleaner fuels grant scheme provides grants which effectively offset the excise and customs duty payable on biodiesel.<sup>27</sup> These grants are generally paid to the last person in the

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<sup>17</sup> *Id.* Division 4.

<sup>18</sup> *Id.* §18.

<sup>19</sup> *Id.* §26.

<sup>20</sup> *Id.* §8.

<sup>21</sup> See website of the Office of the Renewable Energy Regulator at: <http://www.orer.gov.au/recs/index.html> (last visited June 7, 2009).

<sup>22</sup> Renewable Energy (Electricity) Act 2000 (Cth) §6.

<sup>23</sup> *Id.* §36.

<sup>24</sup> See media release, Working Together To Support Australian Biofuels, Prime Minister (Sept. 25, 2005) available at: [http://pandora.nla.gov.au/pan/10052/20051121-0000/www.pm.gov.au/news/media\\_releases/media\\_Release1591.html](http://pandora.nla.gov.au/pan/10052/20051121-0000/www.pm.gov.au/news/media_releases/media_Release1591.html) (last visited 9 June, 2009).

<sup>25</sup> Biofuel (Ethanol Content) Act (NSW) 2007.

<sup>26</sup> See Australian Taxation Office website on excise tax, available at <http://ato.gov.au/businesses/pathway.asp?pc=001/003/095> (last visited June 9, 2009).

<sup>27</sup> Energy Grants (Cleaner Fuels) Scheme Act 2004 (Cth) §2A.

distribution chain before the biodiesel enters the marketplace.<sup>28</sup> The grants are to be progressively phased out from July 1, 2001 to 2015.<sup>29</sup>

Under the ethanol production grants program, grants are provided to Australian ethanol producers which effectively offset the excise duty.<sup>30</sup> This program is scheduled to end on June 1, 2011.<sup>31</sup> After that date, grants will be provided to licensed ethanol manufacturers and ethanol importers under the cleaner fuels grant scheme, to partially offset excise and customs duty. These grants will be progressively reduced until they are finally phased out in 2015.<sup>32</sup>

## **B. Environmental Impact of the Production and Use of Renewable Energy Sources and Measures Taken to Protect the Environment**

### Environment Protection and Biodiversity Conservation Act

At the federal level, the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) is the key piece of legislation for the protection and management of locations and actions which have national environment significance. Included are:

- World Heritage and National Heritage place;
- National Heritage places;
- wetlands of international importance;
- threatened species and ecological communities;
- migratory species identified in international agreements;
- Commonwealth marine areas; and
- nuclear actions (including uranium mines).<sup>33</sup>

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<sup>28</sup> See The Cleaner Fuels Grant Scheme guide, available at: <http://ato.gov.au/businesses/content.asp?doc=/content/00128216.htm&page=10&H10> (last visited June 9, 2009).

<sup>29</sup> *Id.* §8.

<sup>30</sup> See Ethanol Production Grants at AusIndustry website, available at [http://www.ausindustry.gov.au/EnergyandFuels/EthanolProductionGrantsEPG/Pages/EthanolProductionGrants\(EPG\).aspx](http://www.ausindustry.gov.au/EnergyandFuels/EthanolProductionGrantsEPG/Pages/EthanolProductionGrants(EPG).aspx) (last visited May 29, 2009).

<sup>31</sup> See Department of Resources, Energy and Tourism website, available at [http://www.ret.gov.au/resources/resources\\_programs/alternative\\_fuels\\_programs/ethanol\\_and\\_biodiesel\\_production\\_grant\\_excise/Pages/EthanolandBiodieselProductionGrantExcise.aspx](http://www.ret.gov.au/resources/resources_programs/alternative_fuels_programs/ethanol_and_biodiesel_production_grant_excise/Pages/EthanolandBiodieselProductionGrantExcise.aspx) (last visited May 29, 2009).

<sup>32</sup> See Energy Grants (Cleaner Fuels) Scheme Act 2004 (Cth) §8, and Australian Taxation Office website available at <http://ato.gov.au/businesses/content.asp?doc=/content/52768.htm&pc=001/003/095/005/007&mnu=&mfp=&st=&cy=1> (last visited May 29, 2009).

<sup>33</sup> Environment Protection and Biodiversity Conservation Act 1999 (Cth) §§12(2), 15B(2), 16(2), 19, 20(2), 21(4), 23 (4), 24A (8) and 25 (2), 67.

The Act also applies to actions taken on federal land that are likely to have a significant impact on the environment or on federal land,<sup>34</sup> and actions carried out by a federal agency that are likely to have a significant impact on the environment in Australia or overseas.<sup>35</sup>

Those wishing to engage in certain actions,<sup>36</sup> such as projects or developments that might have a significant impact on matters of national environmental significance, or involve a federal agency or federal land, are required to submit their proposal to Minister for Environment, Water, Heritage and the Arts.<sup>37</sup> After receipt of the proposal, and releasing of the proposal for public comment,<sup>38</sup> the Minister must decide whether the proposal requires assessment<sup>39</sup> and, if so, what form that assessment must take.<sup>40</sup> For example, the Minister may require the preparation of an environmental impact statement.<sup>41</sup> Once the assessment is made, the Minister must decide whether the proposal can proceed and what, if any, conditions are to be attached to the proposal.<sup>42</sup>

### State and Territorial Regulation

State and territorial governments have also enacted laws relating to the environmental impact and assessment of matters not covered by the EPBC Act. These laws regulate the environmental impact of certain business and development activities.<sup>43</sup> Individual jurisdictions may differ in their specific requirements with respect to environmental impact assessments.<sup>44</sup> Some states have issued specific guidelines for renewable energy projects. Victoria, for example, has issued Wind Policy and Planning Guidelines which establish the assessment mechanism to be used for wind energy projects and the planning framework for consideration of wind energy projects.<sup>45</sup>

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<sup>34</sup> *Id.* §26.

<sup>35</sup> *Id.* §28.

<sup>36</sup> See the definition of “action” *Id.* §523.

<sup>37</sup> *Id.* §68.

<sup>38</sup> *Id.* §74(3).

<sup>39</sup> *Id.* §75.

<sup>40</sup> *Id.* Chapter 4.

<sup>41</sup> *Id.* §87.

<sup>42</sup> *Id.* §§133 and 134.

<sup>43</sup> Relevant state and territory laws include: Environmental Planning and Assessment Act 1980 (NSW); Environmental Protection Act 1970 (Vic); Environmental Protection Act 1986 (WA); Environmental Protection Act 1994 (Qu); Environmental Protection Act 1997 (ACT); and Development Act 1993 (SA).

<sup>44</sup> See further Thomas, G. and Elliott, M., *Environmental impact assessment in Australia: theory and practice* (Federation Press, Australia, 2005).

<sup>45</sup> The Wind Policy and Planning Guidelines are available at <http://www.resourcesmart.vic.gov.au/documents/WindEnergyGuidelines.pdf> (last visited May 29, 2009).

### Fuel Quality Standards

Australia's federal fuel quality standards<sup>46</sup> place obligations on the fuel industry to meet strict environmental performance requirements. The purpose of the standards includes reducing the level of pollutants from vehicle emissions that may cause environmental and health problems. Currently, Australia has a fuel standard in place for biodiesel<sup>47</sup> and is considering an appropriate fuel standard for ethanol.<sup>48</sup>

### **III. International Agreements and Treaties**

On May 17, 2009, the federal government announced that Australia will join the International Renewable Energy Agency (IRENA).<sup>49</sup>

The following key treaties and agreements relevant to renewable energy have entered into force in Australia:

- Kyoto Protocol to the United Nations Framework Convention on Climate Change [2008] ATS 2. Entered into force in Australia on March 11, 2008.<sup>50</sup>
- Asia Pacific Partnership for Clean Development and Climate. Charter adopted January 11-13, 2005.<sup>51</sup>
- Australia and the United States, Joint Statement on Environmental Cooperation, May 18, 2004.<sup>52</sup>
- United Nations Framework Convention on Climate Change [1994] ATS 2. Entered into force in Australia on March 21, 1994.<sup>53</sup>

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<sup>46</sup> Fuel Quality Standards Act 2000 (Cth).

<sup>47</sup> Fuel Standard (Biodiesel) Determination 2003 (Cth).

<sup>48</sup> See further website of Government of Australia, Department of the Environment, Water, Heritage and the Arts, available at <http://www.environment.gov.au/atmosphere/fuelquality/standards/ethanol/index.html> (last visited May 29, 2009).

<sup>49</sup> See media release, Australia to join the International Renewable Energy Agency, Prime Minister *supra* note 7.

<sup>50</sup> The United Nations Framework Convention on Climate Change, opened for signature March 16, 1998, 2302 UNTS 148 (entered into force Feb 16, 2005). United Nations Framework Convention on Climate Change website, available at [http://unfccc.int/essential\\_background/kyoto\\_protocol/items/1678.php](http://unfccc.int/essential_background/kyoto_protocol/items/1678.php) (last visited May 12, 2009).

<sup>51</sup> See website for the Asia Pacific Partnership for Clean Development and Climate, available at <http://www.asiapacificpartnership.org/english/default.aspx> (last visited May 29, 2009).

<sup>52</sup> See Australian Government Department of the Environment, Water, Heritage and the Arts website, available at <http://www.environment.gov.au/about/international/publications/statement.html> (last visited May 29, 2009).

<sup>53</sup> The United Nations Framework Convention on Climate Change, opened for signature June 4, 1992, 1771 UNTS 107 (entered into force March 21, 1994). The United Nations Framework Convention on Climate Change

- Agreement on an International Energy Program [1979] ATS 7. Entered into force in Australia on July 27, 1979.<sup>54</sup>

#### IV. Recent Developments / Initiatives

##### Policy Reviews

The federal government is reviewing a number of policies related to the development and use of renewable energy. A national energy white paper is being developed to identify a comprehensive energy policy framework for 2030 and beyond.<sup>55</sup> The terms of reference for the paper include “facilitating the development, adoption and export of cleaner, adequate, reliable and affordable energy and conservation technologies and practices.”<sup>56</sup> In addition, an internal government review of Australia’s biofuels programs and policies is underway,<sup>57</sup> as is the review of Australia’s future tax system, which includes a review of Australia fuel excise arrangements.<sup>58</sup>

##### Renewable Energy Target Scheme

Australia’s federal, state and territorial governments have reached agreement on an expanded national Renewable Energy Target (RET) scheme.<sup>59</sup> The RET will replace the existing Mandatory Renewable Energy Target (MRET), and will bring existing state-based targets under a single, national scheme. The expanded RET increases the target for renewable energy by more than four times to 45,000 gigawatt-hours by 2020. The RET will also include “solar credits” which are renewable energy certificates generated from small scale solar, wind and hydro-electricity systems.<sup>60</sup>

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website, available at [http://unfccc.int/essential\\_background/convention/background/items/1349.php](http://unfccc.int/essential_background/convention/background/items/1349.php) (last visited May 12, 2009).

<sup>54</sup> Entered into force generally on November 18, 1974 (provisionally) and January 19, 1976 (definitively). International Energy Agency website, available at <http://www.iea.org/about/docs/IEP.PDF> (last visited May 29, 2009).

<sup>55</sup> National Energy Policy—Framework 2030: Strategic Directions Paper, March 2009.

<sup>56</sup> The energy white paper is due for release by the end of 2009. *See further*, Energy White Paper: Terms of Reference, available at the website of the Department of Resources, Energy and Tourism, [http://www.ret.gov.au/energy/Documents/facts%20statistics%20publications/Terms\\_of\\_Reference\\_Energy\\_White\\_paper.pdf](http://www.ret.gov.au/energy/Documents/facts%20statistics%20publications/Terms_of_Reference_Energy_White_paper.pdf) (last visited May 22, 2009).

<sup>57</sup> *See* the website of the Department of Agriculture, Fisheries and Forestry, available at <http://www.daff.gov.au/natural-resources/biofuelsbio-energy> (last visited May 29, 2009).

<sup>58</sup> *See* the website for Australia’s Future Tax System, available at <http://taxreview.treasury.gov.au/content/Content.aspx?doc=html/home.htm> (last visited May 29, 2009).

<sup>59</sup> *See* Communiqué, Council of Australian Governments, (April 30, 2009) available at [http://www.coag.gov.au/coag\\_meeting\\_outcomes/2009-04-30/docs/20090430\\_communique.pdf](http://www.coag.gov.au/coag_meeting_outcomes/2009-04-30/docs/20090430_communique.pdf) (last visited June 5, 2009).

<sup>60</sup> *See* Renewable Energy Target Scheme Design, available at <http://www.climatechange.gov.au/renewabletarget/pubs/RET-scheme-design.pdf> (last visited May 29, 2009).

### Renewable Energy Fund

The Renewable Energy Fund provides \$A500 million in competitive grants to support the development and deployment of renewable energy technologies, including those developed through the Second Generation Biofuels Research and Development Program, and the Renewable Energy Demonstration Program.<sup>61</sup>

The Second Generation Biofuels Research and Development Program provide matching grants for the research and development into second-generation biofuel technologies.<sup>62</sup> The Renewable Energy Demonstration Program promotes the commercialization and deployment of commercial scale new renewable energy technologies for power generation by assisting with the demonstration of these technologies.<sup>63</sup>

### Clean Energy Initiative

Two programs within the federal government's new Clean Energy Initiative are of particular relevance to renewable energy; the Solar Flagships Program, and the establishment of "Renewable Australia."<sup>64</sup>

With the Solar Flagships program, the government intends to develop up to four individual solar power plants on the national power grid, creating an additional 1,000 megawatts of solar generation capacity. These plants may demonstrate both solar thermal and solar photovoltaic technologies with a capacity equal to and greater than a current coal-fired power station.<sup>65</sup>

The government has also announced that funding will be provided for the establishment of a new body, "Renewables Australia," which will assist with the development and commercialization of renewable energy technologies. Renewables Australia will provide advice on the implementation of renewable energy technologies, and also support growth in skills and capacity for domestic and international markets.<sup>66</sup>

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<sup>61</sup> See Renewable Energy Fund website, available at <http://www.ret.gov.au/energy/energy%20programs/RenewableEnergyFund/Pages/RenewableEnergyFund.aspx> (last visited May 29, 2009).

<sup>62</sup> See the website for the Department of Resources and Energy, available at [http://www.ret.gov.au/resources/resources\\_programs/alternative\\_fuels\\_programs/second\\_generation\\_biofuels\\_research\\_and\\_development\\_program/Pages/SecondGenerationBiofuelsResearchandDevelopmentProgram.aspx](http://www.ret.gov.au/resources/resources_programs/alternative_fuels_programs/second_generation_biofuels_research_and_development_program/Pages/SecondGenerationBiofuelsResearchandDevelopmentProgram.aspx) (last visited May 29, 2009).

<sup>63</sup> See website for the Renewable Energy Fund, available at [http://www.ret.gov.au/energy/energy%20programs/RenewableEnergyFund/renewable\\_energy\\_demonstration\\_program/Pages/RenewableEnergyDemonstrationProgram.aspx](http://www.ret.gov.au/energy/energy%20programs/RenewableEnergyFund/renewable_energy_demonstration_program/Pages/RenewableEnergyDemonstrationProgram.aspx) (last visited May 29, 2009).

<sup>64</sup> See Joint Media Release, \$4.5 billion Clean Energy Initiative (May 13, 2009), available at <http://www.environment.gov.au/minister/wong/2009/budmr20090512g.html> (last visited June 5, 2009).

<sup>65</sup> See Clean Energy Initiative, Department of Resources, Energy and Tourism, May 13, 2009 available at [http://www.ret.gov.au/Department/Documents/CEI%20Fact%20Sheet%20\(13%20May%2009\).pdf](http://www.ret.gov.au/Department/Documents/CEI%20Fact%20Sheet%20(13%20May%2009).pdf) (last visited May 29, 2009).

<sup>66</sup> Id.

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ENVIRONMENTAL PROTECTION**

*Executive Summary*

*The Brazilian experience with renewable sources of energy started at the beginning of the twentieth century with the experimentation with biofuels as a substitute for gasoline. In the seventies, during the petroleum crisis, the use of ethanol gained momentum and a government program was launched to implement and develop the ethanol industry, but in the mid-eighties, the reduction in oil prices forced the abatement of the program.*

*In the twenty-first century, a new oil crisis coupled with environmental concerns brought biofuels back into the search for a new energy agenda. In response, the government launched different programs for the development and use of alternative sources of renewable energy, and further improved environmental protection with the issuance of new legislation.*

*The previous experience with alternative sources of energy allowed Brazil to quickly develop a new energy industry and several agreements are being signed with different countries to continue developing the production and use of renewable sources of energy, with the hope that it will help not only the economy, but the environment as well.*

**I. Introduction**

This report covers the domestic laws enacted for the production, development, and use of renewable sources of energy; measures taken to protect the environment as a result of the production and use of these new sources of energy; international agreements that Brazil is a party to in these areas; and, highlights of legislative developments in the area of energy that are currently under congressional consideration.

**II. Relevant Domestic Legislation**

The Brazilian quest for a substitute to fossil fuel started in the 1920s when the Institute of National Technology (*INT – Instituto Nacional de Tecnologia*) tested biofuels on internal combustion engines.<sup>1</sup> For economic reasons, on February 20, 1931, Decree No. 19,717 made

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<sup>1</sup> Paulo Teixeira de Sousa, *The Ethanol and Biodiesel Programmes in Brazil: A Brief Discussion* (U.N University Conference on Hydrogen Fuel Cells and Alternatives in the Transport Sector: Issues for Developing

mandatory the addition of five percent of ethanol (*álcool anidro*) produced in Brazil to all imported gasoline.<sup>2</sup> On September 23, 1938, in order to develop the production of gasoline and the petroleum industry in Brazil, the government issued Decree-Law No. 737 making mandatory the addition of ethanol (*álcool anidro*) to all gasoline produced in Brazil.<sup>3</sup>

In 1993, moved by environmental reasons instead of economic ones, the government, in an effort to reduce the emissions of pollutants by automotive vehicles, issued Law No. 8,723,<sup>4</sup> which established as mandatory the addition of 22 percent of ethanol (*álcool etílico anidro combustível*) to gasoline,<sup>5</sup> and determined the amount of allowable gas emissions for different types of motor vehicles, as well as the periods of time required for the implementation of these measures and, consequently, compliance with them by the appropriate industries.<sup>6</sup>

On July 2, 2003, Law No. 8,723 was amended by Law No. 10,696, giving the executive branch the power to increase the limit of ethanol added to gasoline to up to 25 percent or decrease it to 20 percent.<sup>7</sup>

### A. Ethanol Program (ProÁlcool)

In the 1970s, the petroleum crisis substantially increased oil prices, and the heavy dependence on imported oil forced Brazil to launch a national program of commercial renewable fuel, the National Program of Alcohol (*ProÁlcool – Programa Nacional do Álcool*).<sup>8</sup> It was designed to be used as an alternative to replace the fossil fuel used in automobiles by biofuels, mainly ethanol made from sugar cane.<sup>9</sup>

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Countries, Research Highlights, Nov. 2005), available at <http://www.intech.unu.edu/events/workshops/hfc05/abstracts.php> (last visited Feb. 12, 2010).

<sup>2</sup> *Álcool*, Petrobrás, Espaço Conhecer, <http://www2.petrobras.com.br/espacoconhecer/Energias/Renovaveis/Alcool.asp> (last visited Feb. 12, 2010).

<sup>3</sup> Decreto-Lei No. 737, de 23 de Setembro de 1938, art. 1, available at the website of the National Agency of Petroleum, Natural Gas and Biofuels, <http://nxt.anp.gov.br/NXT/gateway.dll?f=templates&fn=default.htm&vid=anp:10.1048/enu>.

<sup>4</sup> Lei No. 8.723 de 28 de Outubro de 1993, art. 1, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/L8723.htm](http://www.planalto.gov.br/ccivil_03/Leis/L8723.htm).

<sup>5</sup> *Id.* art. 9.

<sup>6</sup> *Id.* arts. 1, 2.

<sup>7</sup> Lei No. 10.696, de 2 de Julho de 2003, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/2003/L10.696.htm#art18art9%A71](http://www.planalto.gov.br/ccivil_03/Leis/2003/L10.696.htm#art18art9%A71).

<sup>8</sup> *O que foi o Proálcool?*, UNICA, União da Indústria de Cana de Açúcar, available at <http://www.unica.com.br/FAQ/#> (last visited Feb. 12, 2010).

<sup>9</sup> *História do Etanol*, SIAMIG, Sindicato da Indústria de Fabricação do Álcool no Estado de Minas Gerais, available at [http://www.siamig1.com.br/index.php?option=com\\_content&task=view&id=17&Itemid=62](http://www.siamig1.com.br/index.php?option=com_content&task=view&id=17&Itemid=62) (last visited Feb. 12, 2010).

ProÁcool was created by Decree No. 76,593 of November 14, 1975,<sup>10</sup> which offered government subsidies, tax breaks, and price controls to producers of sugar cane, manioc, and other raw materials and to investors willing to build distilleries to convert the crops into ethanol.<sup>11</sup>

By the mid-eighties ProÁcool was a success and the great majority of all new cars sold in the country used ethanol as fuel.<sup>12</sup> However, in 1986, oil prices started to drop and the availability of public funds to continue to subsidize the program were scarce. Consequently, ProÁcool was gradually phased out.<sup>13</sup> The program did not completely disappear due to the issuance, in 1993, of Law No. 8,723<sup>14</sup> (as noted above), which allowed for the addition of ethanol to gasoline.

The increase in oil prices coupled with environmental issues and the need for an alternative source of energy at the beginning of the 21<sup>st</sup> century led Brazil, once again, to make use of biofuels. It happened in 2003 when an old technology was improved and a flex-fuel engine was introduced into the automotive industry. The new engine enabled a vehicle to run on gasoline, ethanol, or a mixture of both and was rapidly accepted by the general public.<sup>15</sup>

## B. Biodiesel Program

On July 2, 2003, the Brazilian government issued a decree<sup>16</sup> creating an inter-ministerial group for the purpose of presenting a study about the viability of using vegetable oil (biodiesel) as an alternative source of energy and suggesting the necessary and proper course of action for the use of biodiesel.<sup>17</sup>

The findings of the inter-ministerial group provided the Brazilian President with the necessary foundation to establish the National Program of Production and Use of Biodiesel (*PNPB – Programa Nacional de Produção e Uso de Biodiesel*), which was considered to be strategic and of immediate priority for Brazil.<sup>18</sup> An additional decree issued on December 23,

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<sup>10</sup> Decreto No. 76.593 de 14 de Novembro de 1975, available at the website of the Brazilian Federal Senate, <http://www6.senado.gov.br/legislacao/ListaPublicacoes.action?id=123069>.

<sup>11</sup> *Id.* arts. 2, 5, 6, 7.

<sup>12</sup> *ProÁcool – Programa Brasileiro de Ácool*, Biodieselbr.com, available at <http://www.biodieselbr.com/proalcool/pro-alcool.htm> (last visited Feb. 12, 2010).

<sup>13</sup> *História e Biodiesel*, Biodieselbr.com, available at <http://www.biodieselbr.com/biodiesel/historia/biodiesel-historia.htm> (last visited Feb. 12, 2010).

<sup>14</sup> Lei No. 8.723 de 28 de Outubro de 1993, art. 1, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/L8723.htm](http://www.planalto.gov.br/ccivil_03/Leis/L8723.htm).

<sup>15</sup> *História e Biodiesel*, *supra* note 13; see also *ProÁcool – Programa Brasileiro de Ácool*, *supra* note 12.

<sup>16</sup> Decreto de 2 de Julho de 2003, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/DNN/2003/Dnn9920.htm](http://www.planalto.gov.br/ccivil_03/DNN/2003/Dnn9920.htm).

<sup>17</sup> *Id.* art. 1.

<sup>18</sup> Programa Nacional de Produção e Uso de Biodiesel, available at the website of the Brazilian federal government, <http://www.biodiesel.gov.br/programa.html> (last visited Feb. 12, 2010).

2003,<sup>19</sup> created a committee to implement PNPB based on the recommendations made to the President.

On November 24, 2004, the National Agency of Petroleum (*ANP – Agência Nacional do Petróleo*)<sup>20</sup> issued Resolutions No. 41 and 42 regulating the biodiesel industry, making mandatory the issuance of an authorization by ANP for the production of biodiesel,<sup>21</sup> and establishing the norms and specifications for the new fuel.<sup>22</sup>

To finance PNPB, the National Bank of Economic and Social Development (*BNDES – Banco Nacional de Desenvolvimento Econômico e Social*)<sup>23</sup> issued, on December 3, 2004, Resolution No. 1,135 creating a program to provide financial support to investments in biodiesel, which covered all phases of the production chain.<sup>24</sup>

On December 6, 2004, Brazilian President Luiz Inácio Lula da Silva officially launched PNPB, which in turn created the legal conditions for introducing biofuel into the Brazilian energy matrix.<sup>25</sup>

PNPB was designed to: (1) reduce the use of diesel derived from fossil fuel, helping both the economy and the environment, because less money would be spent to purchase imported oil and the use of biodiesel would decrease the amount of pollutants emitted from engine exhaust systems, inasmuch as biodiesel is considered to be friendlier to the environment; (2) encourage the production of biodiesel from different raw materials (oil from seeds and animal fat) all over the country, decreasing regional disparities; (3) promote social inclusion through the participation of small farmers, as it would create jobs and generate wealth; and (4) increase environmental sustainability.<sup>26</sup>

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<sup>19</sup> Decreto de 23 de Dezembro de 2003, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/DNN/2003/Dnn10093.htm](http://www.planalto.gov.br/ccivil_03/DNN/2003/Dnn10093.htm).

<sup>20</sup> The National Agency of Petroleum was created by Law No. 9.478, of August 6, 1997, art. 7, as a federal agency subordinated to the Ministry of Mines and Energy in charge of regulating the petroleum industry. Decree No. 2.455 of January 14, 1998, further regulates ANP, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/decreto/D2455.htm](http://www.planalto.gov.br/ccivil_03/decreto/D2455.htm).

<sup>21</sup> Resolução No. 41, de 24 de Novembro de 2004, art. 1, Ministério das Minas e Energia, Agência Nacional do Petróleo, available at [http://www.biodiesel.gov.br/docs/Resolucao\\_41.pdf](http://www.biodiesel.gov.br/docs/Resolucao_41.pdf).

<sup>22</sup> Resolução No. 42, de 24 de Novembro de 2004, art. 1, Ministério das Minas e Energia, Agência Nacional do Petróleo, available at [http://www.biodiesel.gov.br/docs/Resolucao\\_42.pdf](http://www.biodiesel.gov.br/docs/Resolucao_42.pdf).

<sup>23</sup> The National Bank of Economic and Social Development was created as a federal agency (*autarquia federal*) by Law No. 1.628 of June 20, 1952, which was later changed by Law No. 5.662 of June 21, 1971, to a federal public company subordinated to the Ministry of Development, Industry and Exterior Trade (*Ministério do Desenvolvimento, Indústria e Comércio Exterior*). For more information see [http://www.bndes.gov.br/SiteBNDES/bndes/bndes\\_pt/Institucional/O\\_BNDES/A\\_Empresa/](http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/O_BNDES/A_Empresa/).

<sup>24</sup> Resolução No. 1.135, de 3 de Dezembro de 2004, Banco Nacional de Desenvolvimento Econômico e Social, available at <http://www.biodiesel.gov.br/docs/resolucao1135bndes.pdf>.

<sup>25</sup> *Id.*; Programa Nacional de Produção e Uso de Biodiesel, *supra* note 18.

<sup>26</sup> Resolução No. 1.135, de 3 de Dezembro de 2004.

To implement the biodiesel program, the government issued several pieces of legislation providing tax incentives to the newborn biodiesel industry and creating a mechanism to stimulate social inclusion in agriculture.

Decree No. 5,297 of December 6, 2004, created the Social Fuel Stamp (*Selo Combustível Social*),<sup>27</sup> an identification provided by the Ministry of Agrarian Development (*Ministério do Desenvolvimento Agrário – MDA*)<sup>28</sup> to biodiesel producers who practice social inclusion through the creation of jobs and regional development.<sup>29</sup>

The stamp is given to producers who make use of raw materials utilized in the biodiesel industry that are produced by small farmers, generating wealth and promoting social inclusion.<sup>30</sup> As a consequence, the government grants these producers tax reductions<sup>31</sup> and exemptions.<sup>32</sup>

On January 13, 2005, Brazil promulgated Law No. 11,097,<sup>33</sup> which introduced biodiesel<sup>34</sup> into the Brazilian energy matrix<sup>35</sup> and expanded the administrative competency of the National Agency of Petroleum to also include natural gas and biofuels as part of the activities regulated by the agency.<sup>36</sup>

As a consequence, the agency's name was changed to the National Agency of Petroleum, Natural Gas and Biofuels (*ANP – Agência Nacional do Petróleo, Gás Natural e Biocombustíveis*), and it was charged with responsibility for regulating and enforcing activities related to the production, quality control, distribution, re-sale, and commercialization of biodiesel and the mixture of diesel with biodiesel.<sup>37</sup>

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<sup>27</sup> Decreto No. 5.297, de 6 de Dezembro de 2004, art. 2, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/\\_Ato2004-2006/2004/Decreto/D5297.htm](http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2004/Decreto/D5297.htm).

<sup>28</sup> *Id.* art. 5.

<sup>29</sup> *Id.* art. 2(§ 1).

<sup>30</sup> Instrução Normativa No. 1, de 5 de Julho de 2005, Ministério do Desenvolvimento Agrário, available at <http://www.biodiesel.gov.br/docs/Minuta1.pdf>. See also Instrução Normativa No. 2, de 30 de Setembro de 2005, Ministério do Desenvolvimento Agrário, available at <http://www.biodiesel.gov.br/docs/IN%2002%20proj%20com%20social.pdf>.

<sup>31</sup> *Id.* Decreto No. 5.297, de 6 de Dezembro de 2004, arts. 3, 4.

<sup>32</sup> Decreto No. 5.298, de 6 de Dezembro de 2004, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/\\_Ato2004-2006/2004/Decreto/D5298.htm](http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2004/Decreto/D5298.htm).

<sup>33</sup> Lei No. 11.097 de 13 de Janeiro de 2005, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/\\_Ato2004-2006/2005/Lei/L11097.htm](http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2005/Lei/L11097.htm).

<sup>34</sup> Pursuant to Article 4 of Law No. 11.097, which amended Law No. 9.478 of August 6, 1997, biodiesel is defined as a biofuel derived from renewable (and biodegradable) biomass (vegetable oils and animal fats) to be used in internal combustion engines with ignition by compression or, according to the rules, for the generation of other type of energy that can replace partially or totally fossil fuels.

<sup>35</sup> *Id.* art. 2.

<sup>36</sup> *Id.* art. 5.

<sup>37</sup> *A ANP e o Biodiesel*, Ministério de Minas e Energia, Agência Nacional do Petróleo, <http://www.anp.gov.br/?pg=13660&m=&t1=&t2=&t3=&t4=&ar=&ps=&cachebust=1263319669785> (last visited Feb. 18, 2010).

According to Article 2 of Law No. 11,097, the amount of biodiesel to be added to the diesel sold commercially to the final consumer was 5 percent in volume, and the period of time to reach this amount was eight years from the date the law was published.<sup>38</sup> In addition, a minimum amount of 2 percent was required to be added within three years.<sup>39</sup>

On May 18, 2005, the government issued Law No. 11,116,<sup>40</sup> converting into law Provisional Measure No. 227 of December 6, 2004, which determines, inter alia, that the import and production of biodiesel must be exclusively exercised by companies (*pessoas jurídicas*) incorporated in Brazil and under Brazilian law, with headquarters and administration in the country, subject to an authorization issued by ANP and a special registration<sup>41</sup> issued by the Secretariat of the Federal Revenue (*SRF – Secretaria da Receita Federal do Ministério da Fazenda*).<sup>42</sup>

To regulate the amount of biodiesel to be added to the diesel made out of fossil fuel, as established in Article 2(§ 1) of Law No. 11,097, on May 20, 2005, the government issued Decree No. 5,448,<sup>43</sup> authorizing the addition, within a period of three years from the law's issuance date, of 2 percent in volume of biodiesel to the fossil fuel diesel to be sold commercially in the entire country.<sup>44</sup>

On September 23, 2005, the National Council of Energy Policy (*Conselho Nacional de Política Energética*)<sup>45</sup> issued Resolution No. 3 advancing the three-year deadline for the addition of 2 percent of biodiesel to January 1, 2006,<sup>46</sup> and on March 13, 2008, the Council changed the amount of biodiesel to 3 percent, starting on July 1, 2008.<sup>47</sup>

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<sup>38</sup> Lei No. 11.097, de 13 de Janeiro de 2005, art. 2(§ 1).

<sup>39</sup> *Id.*

<sup>40</sup> Lei No. 11.116, de 18 de Maio de 2005, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/ Ato2004-2006/2005/Lei/L11116.htm](http://www.planalto.gov.br/ccivil_03/ Ato2004-2006/2005/Lei/L11116.htm).

<sup>41</sup> *Id.* art. 1.

<sup>42</sup> Article 1(§ 2) of Provisional Measure No. 227 of December 6, 2004, available at the website of SRF at <http://www.receita.fazenda.gov.br/Legislacao/MPs/2004/mp227.htm>, determined that SRF should issue the additional norms in connection with the required Special Registration for biodiesel production and import. On February 22, 2005, SRF issued Normative Instruction No. 516 regulating the issuance of the Special Registration, and on May 18, 2005, Law No. 11.116 was issued. The Normative Instruction is available at the website of the SRF, <http://www.receita.fazenda.gov.br/Legislacao/Ins/2005/in5162005.htm>.

<sup>43</sup> Decreto No. 5.448, de 20 de Maio de 2005, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/ Ato2004-2006/2005/Decreto/D5448.htm](http://www.planalto.gov.br/ccivil_03/ Ato2004-2006/2005/Decreto/D5448.htm).

<sup>44</sup> *Id.* art. 1.

<sup>45</sup> The National Council of Energy Policy was created by Law No. 9.478 of August 6, 1997, art. 2, to advise the President of the Republic on issues related to energy. It is presided over by the Ministry of Mines and Energy and is regulated by Decree No. 3.520 of June 21, 2000.

<sup>46</sup> Resolução No. 3, de 23 de Setembro de 2005, Ministério das Minas e Energia, Conselho Nacional de Política Energética, available at [http://www.mme.gov.br/mme/galerias/arquivos/conselhos\\_comite/CNPE/resolucao\\_2005/Resolucao03.pdf](http://www.mme.gov.br/mme/galerias/arquivos/conselhos_comite/CNPE/resolucao_2005/Resolucao03.pdf).

<sup>47</sup> Resolução No. 2, de 13 de Março de 2008, Ministério das Minas e Energia, Conselho Nacional de Política Energética, available at [http://www.mme.gov.br/mme/galerias/arquivos/conselhos\\_comite/CNPE/](http://www.mme.gov.br/mme/galerias/arquivos/conselhos_comite/CNPE/)

### C. Alternative Sources of Electric Energy

On April 26, 2002, the government issued Law No. 10,438,<sup>48</sup> which was later revised by Law No. 10,762 of November 23, 2003,<sup>49</sup> creating the Incentive Program to Alternative Sources of Electric Energy (*PROINFA – Programa de Incentivo às Fontes Alternativas de Energia Elétrica*),<sup>50</sup> which is coordinated by the Ministry of Mines and Energy.<sup>51</sup>

The program was designed to increase the production of electric energy derived from wind energy (*energia eólica*), small hydroelectric centrals (*pequenas centrais hidrelétricas*), and biomass (*biomassa*)<sup>52</sup> that are produced by independent and autonomous producers.<sup>53</sup> Decree No. 4,541 of December 23, 2002,<sup>54</sup> and Decree No. 5,025 of March 30, 2004,<sup>55</sup> regulate the incentive program.

### D. Environmental Protection

Article 225 of the Brazilian Constitution of 1988 declares that everyone has the right to an ecologically balanced environment, which is considered to be a public good for the people's use and essential for a healthy life.<sup>56</sup> It further determines that the government and the community have a duty to defend and preserve the environment for future and present generations.<sup>57</sup> To this end, it is the responsibility of the government to, among other things, require a prior environmental impact study as provided by law, which must be made public, for the installation of works or activities that may cause significant degradation of the

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[resolucao\\_2008/Resolucao02.pdf](http://resolucao_2008/Resolucao02.pdf). See also Resolução ANP No. 7, de 19 de Março de 2008, available at [http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes\\_anp/2008/mar%C3%A7o/ranp%207%20-%202008.xml?f=templates\\$fn=document-frame.htm\\$3.0\\$g=\\$x=\\$nc=6637](http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes_anp/2008/mar%C3%A7o/ranp%207%20-%202008.xml?f=templates$fn=document-frame.htm$3.0$g=$x=$nc=6637).

<sup>48</sup> Lei No. 10.438, de 26 de Abril de 2002, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/2002/L10438.htm](http://www.planalto.gov.br/ccivil_03/Leis/2002/L10438.htm).

<sup>49</sup> Lei No. 10.762, de 11 de Novembro de 2003, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/2003/L10.762.htm](http://www.planalto.gov.br/ccivil_03/Leis/2003/L10.762.htm).

<sup>50</sup> Lei No. 10.438, de 26 de Abril de 2002, art. 3.

<sup>51</sup> Ministério de Minas e Energia, *PROINFA: Energias Renováveis no Brasil*, available at the website of the Ministry of Mines and Energy, [http://www.mme.gov.br/programas/proinfa/menu/programa/Energias\\_Renovaveis.html](http://www.mme.gov.br/programas/proinfa/menu/programa/Energias_Renovaveis.html) (last visited Jan. 12, 2010).

<sup>52</sup> The Ministry of Mines and Energy defines biomass as any organic material, of animal or vegetable origin, that can be used in the production of energy. Ministério de Minas e Energia, *PROINFA: Tecnologias Contempladas: Biomassa*, available at the website of the Ministry of Mines and Energy, [http://www.mme.gov.br/programas/proinfa/menu/programa/tecnologias\\_contempladas.html](http://www.mme.gov.br/programas/proinfa/menu/programa/tecnologias_contempladas.html) (last visited Jan. 12, 2010).

<sup>53</sup> Ministério de Minas e Energia, *PROINFA: Energias Renováveis no Brasil*, supra note 51.

<sup>54</sup> Decreto No. 4.541, de 23 de Dezembro de 2002, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/decreto/2002/D4541.htm](http://www.planalto.gov.br/ccivil_03/decreto/2002/D4541.htm).

<sup>55</sup> Decreto No. 5.025, de 30 de Março de 2004, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Ato2004-2006/2004/Decreto/D5025.htm](http://www.planalto.gov.br/ccivil_03/Ato2004-2006/2004/Decreto/D5025.htm).

<sup>56</sup> Constituição da República Federativa do Brasil de 1988, art. 225, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Constituicao/Constitui%E7ao.htm](http://www.planalto.gov.br/ccivil_03/Constituicao/Constitui%E7ao.htm).

<sup>57</sup> *Id.*

environment;<sup>58</sup> and to control the production, commercialization, and employment of techniques, methods, and substances that carry a risk to life, the quality of life, and the environment.<sup>59</sup>

In 1990, Law No. 8,028<sup>60</sup> amended Law No. 6,938 of August 31, 1981,<sup>61</sup> to conform it to the Brazilian Constitution of 1988. Article 1 of Law No. 6,938 established the National Environmental Policy (*Política Nacional de Meio Ambiente*) and the National System of the Environment (*SISNAMA – Sistema Nacional do Meio Ambiente*), and created the National Council of the Environment (*CONAMA - Conselho Nacional do Meio Ambiente*).<sup>62</sup>

The objective of the National Environmental Policy is the preservation, improvement, and recuperation of environmental qualities proper to life, and to guarantee the necessary conditions for the social and economic development of the country, its national security interests, and the protection of the dignity of human life, in accordance with the principles listed in the law.<sup>63</sup>

The System is composed of organs and entities of the federal government (*União*), States, Federal District, Territories, and Municipalities, as well as the foundations created by the government (*Poder Público*), which are responsible for the protection and improvement of environmental quality.<sup>64</sup>

The purpose of the National Council of the Environment is to advise, study, and propose to the Council of Government (*Conselho de Governo*)<sup>65</sup> directives for government policies for the environment and natural resources,<sup>66</sup> and to establish, according to the proposals made by the Brazilian Institute of the Environment and Renewable Natural Resources (*IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis*),<sup>67</sup> norms and criteria for the

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<sup>58</sup> *Id.* art. 225(§ 1)(IV).

<sup>59</sup> *Id.* art. 225(§ 1)(V).

<sup>60</sup> Lei No. 8.028, de 12 de Abril de 1990, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/L8028.htm](http://www.planalto.gov.br/ccivil_03/Leis/L8028.htm).

<sup>61</sup> Lei No. 6.938, de 31 de Agosto de 1981, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/L6938.htm](http://www.planalto.gov.br/ccivil_03/Leis/L6938.htm).

<sup>62</sup> *Id.* art. 6(II).

<sup>63</sup> *Id.* art. 2.

<sup>64</sup> *Id.* art. 6.

<sup>65</sup> The Council of Government is defined by Article 6(I) of Law No. 6,938 of August 31, 1981, as modified by Law No. 8,028 of April 12, 1990, as a superior organ, which is part of the National System of the Environment, with the function of advising the President of the Republic on the preparation of national policies for the environment and environmental resources.

<sup>66</sup> *Id.* art. 6(II).

<sup>67</sup> The Brazilian Institute of the Environment and Renewable Natural Resources was created by Law No. 7.735 of February 22, 1989, as modified by Law No. 11.516 of August 28, 2007, as a federal agency subordinated to the Ministry of Environment, for the purpose of exercising the environmental police power (art. 2(1)); and to execute actions in connection with the national policies for the environment that are related to the federal powers regarding environmental licensing, environmental quality control, authorization for the use of natural resources, and the inspection, monitoring, and control of the environment, in accordance with the directives issued by the Ministry

licensing of activities offering effective or potential risk of polluting the environment, to be issued by the federal government (*União*), States, Federal District, and Municipalities under the supervision of the Institute.<sup>68</sup>

Law No. 6,938 is regulated by Decree No. 99,274 of June 6, 1990, which further details the execution of the National Environmental Policy,<sup>69</sup> the organizational structure of the National System of the Environment,<sup>70</sup> and the composition<sup>71</sup> and competency<sup>72</sup> of the National Council of the Environment.

On February 12, 1998, the government issued Law No. 9,605 defining the crimes against the environment; the punishment for such crimes, which can be in the form of incarceration for a certain period of time and the payment of a fine, or the payment of a fine only; and the necessary procedures to be followed for the application of the law.<sup>73</sup>

In cases involving crimes against the environment, several provisions of the Brazilian Penal Code,<sup>74</sup> as well as the procedures determined by the Code of Criminal Procedure,<sup>75</sup> are also applicable.

In 2008, Decree No. 6,514<sup>76</sup> was enacted establishing the conduct that is considered an infraction against the environment and the pertinent administrative sanctions imposed for the practice of such conduct.<sup>77</sup>

Aligned with Constitutional principles that call for the protection of the environment, on August 2, 2004, ANP issued Administrative Act (*Portaria*) No. 160,<sup>78</sup> which approved ANP's

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of the Environment (art. 2(II)). Law No. 7.735 of February 22, 1989, as modified by Law No. 11.516 of August 28, 2007, is available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/LEIS/L7735.htm#art2](http://www.planalto.gov.br/ccivil_03/LEIS/L7735.htm#art2).

<sup>68</sup> Decreto No. 99.274, de 6 de Junho de 1990, art. 7(I), available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/decreto/Antigos/D99274.htm](http://www.planalto.gov.br/ccivil_03/decreto/Antigos/D99274.htm).

<sup>69</sup> *Id.* art. 1.

<sup>70</sup> *Id.* art. 3.

<sup>71</sup> *Id.* art. 4.

<sup>72</sup> *Id.* art. 7.

<sup>73</sup> Lei No. 9.605, de 12 de Fevereiro de 1998, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/L9605.htm](http://www.planalto.gov.br/ccivil_03/Leis/L9605.htm).

<sup>74</sup> Código Penal, Decreto-Lei No. 2.848, de 7 de Dezembro de 1940, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Decreto-Lei/Del2848.htm](http://www.planalto.gov.br/ccivil_03/Decreto-Lei/Del2848.htm).

<sup>75</sup> Código de Processo Penal, Decreto-Lei No. 3.689, de 3 de Outubro de 1941, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Decreto-Lei/Del3689.htm](http://www.planalto.gov.br/ccivil_03/Decreto-Lei/Del3689.htm).

<sup>76</sup> Decreto No. 6.514, de 22 de Julho de 2008, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/ Ato2007-2010/2008/Decreto/D6514.htm#art153](http://www.planalto.gov.br/ccivil_03/ Ato2007-2010/2008/Decreto/D6514.htm#art153).

<sup>77</sup> Decree No. 6.514 revoked Decree No. 3.179 of September 21, 1999, which specified the administrative sanctions applicable to conduct considered to be an infraction to the environment.

bylaws and created CMA (*CMA - Coordenadoria de Meio Ambiente*), an administrative unit subordinated to ANP's Superintendence of Planning, Research and Statistics (*SPP – Superintendência de Planejamento, Pesquisa e Estatística*)<sup>79</sup> responsible for coordinating the actions involving environmental aspects and operational security that are directly related to ANP's actions.<sup>80</sup>

Law No. 11,097 of January 13, 2005, also amended Article 8 of Law No. 9,478 of August 5, 1997,<sup>81</sup> which regulates the petroleum industry, to include the enforcement of good practices for the conservation and rational use of petroleum, natural gas, biofuels and environmental protection in connection with these activities.<sup>82</sup>

#### **IV. International Agreements**

##### **A. Generally**

In recent years, Brazil has signed agreements<sup>83</sup> in the area of renewable sources of energy with Chile, China, Costa Rica, Ecuador, El Salvador, Germany,<sup>84</sup> Guyana, Haiti, Honduras, India, Indonesia, Jamaica, The Netherlands, Panama, Peru, Senegal, Spain, the United States, Uruguay, Venezuela, and Vietnam. The agreements encompass the development and use of renewable and self-sustained forms of clean energy, and call for cooperation between the countries to achieve solutions to energy problems and a clean environment.<sup>85</sup>

##### **B. Brazil and the United States**

In 2003, the Brazilian Ministry of Mines and Energy and the Department of Energy of the United States of America signed a Memorandum of Understanding (MOU) for the establishment of a mechanism for consultations on energy cooperation.<sup>86</sup>

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<sup>78</sup> Portaria No. 160, de 2 de Agosto de 2004, available at the website of ANP, [http://nxt.anp.gov.br/nxt/gateway.dll/leg/folder\\_portarias\\_anp/portarias\\_anp\\_admin/2004/agosto/panp%20160%20-%202004.xml#anexoII\\_art32](http://nxt.anp.gov.br/nxt/gateway.dll/leg/folder_portarias_anp/portarias_anp_admin/2004/agosto/panp%20160%20-%202004.xml#anexoII_art32).

<sup>79</sup> *Id.* art. 2(7).

<sup>80</sup> Resolução de Diretoria No. 372, de 24 de Agosto de 2004, available at the website of ANP, [http://rd.anp.gov.br/NXT/gateway.dll/atas/2004/reuni%C3%A3o%20n%C2%BA%20315%20-%2024.08.2004/rd372%2Br315%2B2004.xml?f=templates\\$fn=document-frame.htm\\$3.0\\$g=\\$x](http://rd.anp.gov.br/NXT/gateway.dll/atas/2004/reuni%C3%A3o%20n%C2%BA%20315%20-%2024.08.2004/rd372%2Br315%2B2004.xml?f=templates$fn=document-frame.htm$3.0$g=$x).

<sup>81</sup> Lei No. 9.478, de 6 de Agosto de 1997, available at the website of the Brazilian Presidency, [http://www.planalto.gov.br/ccivil\\_03/Leis/L9478.htm](http://www.planalto.gov.br/ccivil_03/Leis/L9478.htm).

<sup>82</sup> *Id.* art. 8(IX).

<sup>83</sup> The agreements referred to in the text include Memoranda of Understanding, Protocols of Intentions, Declarations, Complementary Adjustments, and Action Plans.

<sup>84</sup> The agreement with Germany is the only exception regarding recentness of the agreements, as it was signed on August 29, 1989.

<sup>85</sup> The agreements are available at the website of the Ministry of Foreign Affairs, <http://www2.mre.gov.br/dai/bilaterais.htm> (last visited Feb. 18, 2010).

<sup>86</sup> Memorando de Entendimento entre o Ministério de Minas e Energia da República Federativa do Brasil e o Departamento de Energia dos Estados Unidos da América para o Estabelecimento de Mecanismo de Consultas

The MOU aims, inter alia, at the exchange of ideas and information regarding energy efficiency, carbon sequestration technology, technologies for sustainable development and renewable energy technologies, including biodiesel, biomass, and systems for the distribution of energy.<sup>87</sup>

On March 9, 2007, Brazil and the United States signed another MOU designed to advance cooperation on biofuels.<sup>88</sup> The agreement involves cooperation on the development and deployment of biofuels through a pre-determined approach;<sup>89</sup> advancing research and development of next generation biofuel technology;<sup>90</sup> working jointly to bring the benefits of biofuels to select third countries through feasibility studies and technical assistance aimed at stimulating private sector investment in biofuels,<sup>91</sup> and expanding the biofuels marketplace through cooperation on the establishment of uniform standards and codes.<sup>92</sup>

#### IV. Recent Developments

##### A. Alternative Energy

In 2007, a proposed law was introduced in Congress creating a National Policy for Alternative Energy (*Política Nacional de Energias Alternativas*).<sup>93</sup> According to the proposal, the policy establishes the principles and national directives for the amplification, development, and dissemination of alternative sources of energy as an alternative to the use of fossil fuel through incentives for the technological development of such forms of energy, and aims to consolidate a clean energy matrix.<sup>94</sup> To support the policy, the proposal also provides financial and economic mechanisms, as well as tax incentives.<sup>95</sup>

On April 4, 2007, the proposal was attached to Proposed Law No. 630/2003 (*Projeto de Lei 630/2003*),<sup>96</sup> which creates a special fund to finance research and to encourage the

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sobre Cooperação na Área de Energia, available at the website of the Ministry of Foreign Affairs, [http://www2.mre.gov.br/dai/b\\_eua\\_328\\_5114.htm](http://www2.mre.gov.br/dai/b_eua_328_5114.htm).

<sup>87</sup> *Id.*

<sup>88</sup> Memorando de Entendimento entre o Governo da República Federativa do Brasil e o Governo dos Estados Unidos da América para Avançar a Cooperação em Biocombustíveis, available at the website of the Ministry of Foreign Affairs, [http://www2.mre.gov.br/dai/b\\_eua\\_332\\_5915.htm](http://www2.mre.gov.br/dai/b_eua_332_5915.htm).

<sup>89</sup> *Id.*

<sup>90</sup> *Id.*

<sup>91</sup> *Id.*

<sup>92</sup> *Id.*

<sup>93</sup> Projeto de Lei No. 523/2007, available at the website of the Brazilian Chamber of Deputies, <http://www.camara.gov.br/sileg/integras/444681.pdf>.

<sup>94</sup> *Id.*

<sup>95</sup> *Id.*

<sup>96</sup> Projeto de Lei No. 630/2003, available at the website of the Brazilian Chamber of Deputies, <http://www.camara.gov.br/sileg/integras/122715.pdf>.

production of electric and thermal energies using sunlight and wind. The proposals are currently under analysis by a special commission created for this purpose at the Brazilian Chamber of Deputies.<sup>97</sup>

In addition, a proposal calling for the gradual substitution of fuel derived from petroleum for fuel produced from biomass<sup>98</sup> is currently being discussed in the National Congress.

## B. Rubber Asphalt

On December 24, 2008, the National Agency of Petroleum issued Resolution No. 39,<sup>99</sup> which was the first national regulation regarding the use of useless rubber tires, that are grinded and mixed with asphalt, giving origin to a product called rubber asphalt (*asfalto borracha*),<sup>100</sup> a product considered to be superior in quality when compared to regular asphalt that provides a more environmentally friendly destination for used tires.<sup>101</sup> Rubber asphalt was patented by the United States in the sixties and Brazil has been researching the product for at least ten years.<sup>102</sup> Although the cost of processing rubber increases the price of the asphalt between 20 and 25 percent, in the long run, research has shown that the maintenance costs of highways paved with the product is reduced.<sup>103</sup>

Resolution No. 39 was issued in compliance with a determination made by the National Council of the Environment (CONAMA) in Resolution No. 258 of August 26, 1999, that the producers and importers of rubber tires are required to collect and provide an environmentally safe destination for used and useless tires.<sup>104</sup>

## V. Concluding Remarks

The challenge to find alternative sources of energy is no longer only an economic one. Many environmental changes and numerous ecological disasters fairly announced in the media impose a change in the way that mankind deals with the environment. Fossil fuels are considered to be the main villains responsible for the harm done to the environment. Global warming, destruction of the ozone layer, and thawing of the North Pole, just to name a few, are

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<sup>97</sup> *Id.*

<sup>98</sup> Projeto de Lei No. 1609/2007, available at the website of the Brazilian Chamber of Deputies, <http://www.camara.gov.br/sileg/integras/483241.pdf>.

<sup>99</sup> Resolução No. 39, de 24 de Dezembro de 2008, Ministério das Minas e Energia, Agência Nacional do Petróleo, Gás Natural e Biocombustíveis, available at [http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes\\_anp/2008/dezembro/ranp%2039%20-%202008.xml?f=templates\\$fn=document-frame.htm\\$3.0\\$g=\\$x=\\$nc=6488](http://nxt.anp.gov.br/NXT/gateway.dll/leg/resolucoes_anp/2008/dezembro/ranp%2039%20-%202008.xml?f=templates$fn=document-frame.htm$3.0$g=$x=$nc=6488).

<sup>100</sup> *Id.*

<sup>101</sup> *Especificação do Asfalto Borracha*, Ministério das Minas e Energia, Agência Nacional do Petróleo, Gás Natural e Biocombustíveis, [http://www.anp.gov.br/petro/asfalto\\_borracha.asp](http://www.anp.gov.br/petro/asfalto_borracha.asp).

<sup>102</sup> *Id.*

<sup>103</sup> *Id.*

<sup>104</sup> Resolução No. 258, de 26 de Agosto de 1999, Ministério do Meio Ambiente, Conselho Nacional do Meio Ambiente, available at <http://www.mma.gov.br/port/conama/legiabre.cfm?codlegi=258>.

the examples given by scientists to show that something needs to be done while there is still time.

In Brazil, several government programs pioneering the new and challenging task of finding new sources of energy, which have to be sustainable, renewable, and ultimately much friendlier to the environment, became not only a matter of economic strategy, but also a way to address social and environmental problems.

The early experience with alternative sources of energy granted Brazil a substantial advantage, both economic and legislative, when compared to other countries facing the same challenges.

Currently, ethanol produced from sugar cane is being treated as the great hope to reduce pollution and oil dependency. The question is whether Brazil, and the many different governments betting on this product, will be able to develop a technology that is sufficiently anchored in a body of law that will provide the people with a safer and cleaner way of life.

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**ISRAEL**

**LAWS GOVERNING RENEWABLE SOURCES OF ENERGY &  
ENVIRONMENTAL PROTECTION**

*Executive Summary*

*Israel recognizes the importance of developing renewable sources of energy. Solar thermal energy for home use is routinely available, and the law requires all new buildings to be equipped with solar collectors. Other types of renewable energy sources are also used. Israel is a party to two bi-national international agreements with the United States and with Spain for cooperation with regards to renewable energy. In spite of a government decision calling for the building and operation of electricity installations and power stations for the production of energy sources from renewable sources, the percentage of electricity manufactured by these methods is still very small. Several bills submitted in recent years on this subject have not yet passed.*

**I. Introduction**

Israel is one of the few countries in the Middle East that does not have natural energy resources. It must therefore import fuel for domestic consumption. The development of renewable energy is expected to reduce the amount of fuel that needs to be imported and save Israel foreign currency. In addition, the use of renewable energy is expected to prevent the air pollution that results from the burning of fuel, and to address the concern that natural energy resources will deplete.<sup>1</sup>

Out of the 334 companies active in environmental technology (“Cleantech”) in 2008, 105 concentrate on renewable energy.<sup>2</sup> According to information published in January 2007, only 0.09% of the total electricity produced in Israel is manufactured from sources of renewable energy. Most such energy is produced in several principal projects and the rest in a large number of small projects.

Most of the use of renewable energy in Israel is based on the following:

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<sup>1</sup> YANIV RONEN, *Production of Electricity from Renewable Energy in Israel, 1-2*, The Knesset (Parliament) Center For Research And Information, Jan. 15, 2007, The Knesset website at <http://www.knesset.gov.il/mmm/data/docs/m01650.doc> (last visited March 12, 2009).

<sup>2</sup> YANIV RONEN, *Environmental Technologies (Cleantech) in Israel 4*, The Knesset (Parliament) Center For Research And Information, Jan. 17, 2008 The Knesset website at <http://www.knesset.gov.il/mmm/data/docs/m02173.doc> (Last visited March 12, 2009).

### A. Solar Energy

Israel uses solar thermal energy for home use, derived from the use of solar boilers. An ecologic house that retrieves its energy from the sun was constructed in the Negev desert location of *Sde Boker* and serves as a center for solar energy use.

### B. Wind Energy

Wind Energy is energy that is manufactured by using kinetic energy for operating other mechanical systems that are used for the production of electricity.<sup>3</sup> Electricity from wind is produced in the Golan Heights by two companies.<sup>4</sup>

### C. Hydropower

Electricity from hydropower is manufactured at several locations in northern Israel.<sup>5</sup>

### D. Bioenergy

Bioenergy is usually derived from the burning of organic materials. In Israel the manufacturing of energy from trash is conducted in three locations.<sup>6</sup>

### E. Biogas

The production of energy by utilizing the biogas process is proportionally limited.<sup>7</sup>

## II. Governmental Activities

On November 4, 2002, the Israeli Government adopted a decision to encourage the building and operation of electric installations and power stations for the production of electricity based on renewable energy sources by individual electricity providers and the General Electric Company. The decision provided that beginning in 2016, up to 5% of the electricity provided to customers will be derived from renewable energy installations. The decision designated 2007 as

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<sup>3</sup> For information on the location of wind turbines for electricity production in Israel see the Ministry of Environmental Protection at [http://www.sviva.gov.il/bin/en.jsp?enPage=BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^11120&enZone=renewable\\_energy](http://www.sviva.gov.il/bin/en.jsp?enPage=BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^11120&enZone=renewable_energy) (last visited March 12, 2009).

<sup>4</sup> *Supra* note 2.

<sup>5</sup> For information on Hydropower in Israel see the Ministry of Environmental Protection at [http://www.sviva.gov.il/bin/en.jsp?enPage=BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^11123&enZone=renewable\\_energy](http://www.sviva.gov.il/bin/en.jsp?enPage=BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^11123&enZone=renewable_energy) (last visited April 16, 2009); see also YANIV RONEN, *Production of Electricity from Renewable Energy in Israel*, *supra* note 1.

<sup>6</sup> On Bioenergy, see the Ministry of Environmental Protection website at [http://www.sviva.gov.il/bin/en.jsp?enPage=BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^13087&enZone=renewable\\_energy](http://www.sviva.gov.il/bin/en.jsp?enPage=BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^13087&enZone=renewable_energy) (last visited March 12, 2009).

<sup>7</sup> On Biogas see the Ministry of Environmental Protection website at [http://www.sviva.gov.il/bin/en.jsp?enPage=BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^11256&enZone=renewable\\_energy](http://www.sviva.gov.il/bin/en.jsp?enPage=BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^11256&enZone=renewable_energy) (last visited March 13, 2009).

an interim goal year; from thereon, up to 2% of such electricity would be derived from renewable energy installations.<sup>8</sup> This goal was not achieved; in 2007 only 0.09% of the total electricity manufactured in Israel was derived from sources of renewable energy.<sup>9</sup>

### III. Relevant Domestic Legislation

By law, all new buildings must be equipped with solar collectors for water heating. The specific requirements are provided by the Planning and Construction (Request for Permit, its Conditions and Fees) Regulations, 5730-1970, as amended. These regulations require;

- that the solar collector will not be visually harmful;
- that the solar collector will be white in color, unless otherwise determined by the local committee;
- that all collectors on a building will be centered in an architecturally suitable construction; and,
- that a backup installation will be added to the solar system for cases when the solar heating is not sufficient.<sup>10</sup>

The requirement to install solar collectors for water heating does not apply to high rise buildings and to buildings (or parts of buildings) that are designed for industry, vocations or hospitals. An exemption from the above requirements may be granted by a local committee, based on the impracticability of obtaining solar energy from a building that is placed in the shade, or based on the fact the installation of a solar system will create unreasonable architectural harm.<sup>11</sup>

A special budget was allocated in 2007 for the financing of the installation of solar collectors in accordance with the Public Housing Tenant's Law, 5758-1998.<sup>12</sup> In accordance with the Public Housing Tenant's Rights (Priority in Installation of Solar Collectors) Regulations, 5768-2008, large families will enjoy priority in receiving solar collectors. The allocation of subsidies also depends on family income.<sup>13</sup>

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<sup>8</sup> Decision No. 2664 of the Ministerial Committee for Social and Economic Matters (The Socio-Economic Cabinet), Nov. 4, 2002, as cited in YANIV RONEN, *Environmental Technologies (Cleantech) in Israel*, p. 7, ft. 22, *supra* note 2.

<sup>9</sup> *Id.* ft. 23.

<sup>10</sup> Planning and Construction (Request for Permit, its Conditions and Fees) Regulations, 5730-1970, §1.09, as amended in 2007; For an up-to-date version *see* the Nevo Legal Database at [www.nevo.co.il](http://www.nevo.co.il) (by subscription, last visited March 13, 2009).

<sup>11</sup> *Id.*

<sup>12</sup> Public Housing Tenant's Law, 5758-1998, SH No. 1677 p. 278.

<sup>13</sup> Public Housing Tenant's Rights Regulations (Priority in Installation of Solar Collectors) 5768-2008, KOVETZ HATAKANOT (hereafter KT) No. 6642 p. 405.

#### **IV. Legislative Measures for Environmental Protection Related to Renewable Energy Sources**

The Energy Sources Law, 5760-1989<sup>14</sup> regulates “utilization of energy sources, their allocation in accordance with the different market needs, and their efficient and economic usage.”<sup>15</sup> The law defines “energy sources” as materials “that may be used as a source for production of energy, including electricity, and nuclear energy, solar energy, wave and wind energy and geo-thermal energy.”<sup>16</sup>

The law authorizes the Minister of Energy and Infrastructure to pass regulations regarding:<sup>17</sup>

- Ways of guaranteeing the economical and efficient utilization of energy sources;
- Ways of guaranteeing the economical and efficient use of energy;
- Implementation of international agreements in the area of energy and energy sources search;
- Regulation of energy sources use in time of emergency;
- Methods for the preparation of plans for the building or expansion of nuclear power plants for production of electricity;
- Encouragement of research and development in the area of energy sources and their utilization; and,
- Centralization of information and information exchange in the area of energy and collaboration between those who deal with energy, energy sources search and implementing energy plans.

Various regulations were passed based on the above authorization, to guarantee the efficient use of energy. One example of this is the Energy Sources (Conducting a Review for Identification of Potential Preservation of Energy), 5753-1993.<sup>18</sup> This regulation requires factories which use a defined minimum amount of annual energy to conduct a review once every five years.

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<sup>14</sup> The Energy Sources Law, 5760-1989, SEFER HAHUKIM (hereafter SH) No. 1296 p. 28.

<sup>15</sup> §2. Translation by author.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* §3.

<sup>18</sup> Energy Sources (Conducting a Review for Identification of Potential Preservation of Energy), 5753-1993, KT No. 5542 p. 1099.

## V. International Agreement & Treaties

### A. United States - Israel

On February 26, 2009, the United States and Israel signed an agreement of cooperation with regard to renewable energy. The agreement was announced at the opening of the 2nd Eilat-Eilat International Renewable Energy Conference.<sup>19</sup> The U.S.-Israel Energy Cooperation Act is aimed at creating a renewable energy storage initiative to reduce the world's oil dependence. “The Cooperation Act will fund eligible joint ventures between U.S. and Israeli businesses. Two million dollars, or \$1 million from each country, has already been allocated for this year with a significant increase expected in future years.”<sup>20</sup>

According to Jonathan Shrier, Acting Assistant Secretary at the Office of Policy and International Affairs of the United States Department of Energy, U.S.-Israel cooperation in renewable energy has been underway, and two companies have already received approval accordingly. The first company is *Seambiotic*, described as the first company in the world utilizing flue gas from coal burning power stations for algae cultivation, and the second is *Better Place*, a “venture-backed company aiming to reduce global dependency on oil through the creation of an electric car network with a swappable battery.”<sup>21</sup>

### B. Spain - Israel

The Agreement between the State of Israel and the Kingdom of Spain for Cooperation in the Field of Energy was signed in Jerusalem on November 9, 1993, and entered into force on February 6, 1995.<sup>22</sup> According to the agreement, the parties would “undertake a Joint Programme [sic] of Cooperation in the fields of energy research, development and demonstration.”<sup>23</sup> The joint program would initially focus on residential, agricultural, high temperature solar thermal, photovoltaic, cogeneration and desalination technologies.<sup>24</sup>

The Agreement provides for the establishment of a joint committee comprised of two representatives from each country. The committee is tasked with implementation of the Agreement. The Agreement expressly clarifies that it would not prejudice the rights and

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<sup>19</sup> Eilat-Eilat International Renewable Energy Conference website at <http://www.eilatenergy.com/> (last visited March 25, 2009).

<sup>20</sup> U.S., Israel sign agreement of cooperation in renewable energy (26 Feb 2009), Israel Ministry of Foreign Affairs website at <http://www.mfa.gov.il/MFA/Israel%20beyond%20politics/US-Israel%20sign%20agreement%20of%20cooperation%2026-Feb-2009.htm>

<sup>21</sup> *Id.*

<sup>22</sup> Agreement between the State of Israel and the Kingdom of Spain for Cooperation in the Field of Energy, *Kitvei Amana (Treaties)* 53, 1.

<sup>23</sup> Art. 1.

<sup>24</sup> Art. 3.

obligations of the parties regarding third party agreements.<sup>25</sup> In the absence of special notice by either party, the agreement is automatically renewed every five years.<sup>26</sup>

## VI. Recent Developments/Initiatives

Three private bills were submitted to the Knesset (Parliament) since 2005. The latest, Incorporation of Renewable Energy Sources in the Electricity Production System, 5766-2006, was submitted on July 10, 2006. This bill recognizes the need to encourage the use of renewable energy technologies. The bills submitted focused on several central principles, which included the need to provide clear goals, the need to provide an economic incentive for the production of renewable energy, the need to have a control and enforcement mechanism for achievement of goals, and the need to regulate the production by small manufacturers by allowing the consumer, who is also a producer to deduct his production from the use.<sup>27</sup> None of the bills passed.

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<sup>25</sup> *Id.* art. 4.

<sup>26</sup> *Id.* art. 6.

<sup>27</sup> Incorporation of Renewable Energy Sources in the Electricity Production System Bill, 5766-2006, the Knesset website at [www.knesset.gov.il](http://www.knesset.gov.il) (last visited March 13, 2009).

**LAW LIBRARY OF CONGRESS**

**INDIA**

**LAWS GOVERNING RENEWABLE SOURCES OF ENERGY &  
ENVIRONMENTAL PROTECTION**

*Executive Summary*

*India appears set to meet the Kyoto Protocol's mandatory limitations on GHG emissions and is embarking on a program to switch to a clean renewable energy supply in order to sustain its development and economic growth. To this end, India has entered into bilateral and multi-lateral international agreements to obtain technological assistance. India is the first country to establish a new Ministry of New and Renewable Energy Sources, which would concentrate on the manufacture of renewable energy and the enactment of an appropriate law.*

**I. Introduction**

Renewable energy is the key to development in the 21<sup>st</sup> century. "There is a growing consensus that in order to meet the challenges of our time of increasing global energy demand, global warming and rising energy prices, the world needs a massive scale-up of clean renewable energy (RE) within a short period of time. This massive increase requires mobilization of human, technological and financial capacities on a global scale."<sup>1</sup> India meets its energy needs largely from non-renewable sources and to a lesser extent from renewable sources. At present, out of a total installed capacity of approximately 102,000 MW India's energy sources are 60% coal-based, 25% hydro, and the balance gas and nuclear based. Power shortages are estimated at about 11% of total energy and 15% of peak capacity requirements. These shortages are likely to increase in the coming years.<sup>2</sup>

India imports 75% of its oil requirements and because of development, its petroleum import bill increases each year while its proven oil reserve is only 0.5% of world reserves.<sup>3</sup> India relies primarily on coal energy to produce electricity, due to large deposits of coal, which may be available for a longer period of time, with hydro-power use second, followed by natural gas.<sup>4</sup> The industrial and domestic demand for energy, however, outstrips such supplies from known reserves. Moreover, the consumption of non-renewable fuels such as coal is not

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<sup>1</sup> [http://www.irena.org/downloads/Role\\_IRENA\\_IO.pdf](http://www.irena.org/downloads/Role_IRENA_IO.pdf).

<sup>2</sup> *Solar Thermal Power in India*, <http://www.ecoworld.com/fuels/solar-thermal-power-in-india.html> (last visited September 5, 2009).

<sup>3</sup> *Renewable Energy Law For India*, <http://relaw.wisein.org/whyrelaw.htm> (last visited August 25, 2009).

<sup>4</sup> *Overview of Renewable Energy Potential of India*, <http://www.geni.org/globalenergy/library/energytrends/currentusage/renewable/Renewable-Energy-Potential-for-India.pdf> (last visited September 9, 2009).

consistent with India's compliance with the United Nations Convention on controlling emissions and climate change.

As a result of the Indian government's concern over the likelihood of a slowdown in its economic development, the country must obtain and create supplies of eco-friendly and environmentally safe renewable energy. In their quest for the development of energy, the global slowdown may have compelled some countries to put aside ecological concerns regarding the development of renewable sources of energy. India however, has not abandoned its search to develop renewable sources of energy. It considers renewable sources of energy vital to the continuation of its economic growth and environmental progress. As of July 31, 2009, India had achieved grid-interactive renewable power of 14914 MW, which included 10464 MW of wind power.<sup>5</sup>

As it has large supply of renewable energy resources, India has been the first country to establish a ministry whose sole purpose is the development of renewable energy programs. This ministry, called the Ministry of New and Renewable Energy Sources (MNES)<sup>6</sup> operates through the Indian Renewable Energy Development Agency Limited (IREDA). According to the ministry's estimates, a potential of 50,000 MW of power capacity could have been available from new and renewable energy sources, but has not been aggressively tapped, due to the relatively high cost of its development. Nevertheless, the development of renewable energy sources is now part of India's strategy for expanding its energy supply and for meeting the decentralized energy needs of the rural sector.<sup>7</sup>

## II. National Policy

India has adopted an integrated energy policy that enables it to fuel economic growth and meet the larger human development goals by choosing fuels that are socially and economically desirable. The policy envisages an energy mix that focuses on augmenting the domestic energy resource base and increasing efficiency, while strategizing India's stakes in energy assets overseas.<sup>8</sup>

The Prime Minister of India has announced a goal of 10% share for RE or 10,000 MW in India's power generation capacity to be added during the period up to 2012. The government's 2008 National Action Plan for Climate Change (NAPCC)<sup>9</sup> envisages the use of several measures, designed to not only address global warming but to also increase the share of renewable energy in the total electricity consumption of the country. Therefore, as a part of the national action plan, the Indian government has required the power utilities to purchase 5% of

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<sup>5</sup> New & Renewable Energy, Government of India, Ministry of New and Renewable Energy website, <http://mnes.nic.in/achievements.htm> (last visited September 10, 2009).

<sup>6</sup> *Id.*

<sup>7</sup> Solar Thermal Power in India, *supra* note 1.

<sup>8</sup> India Adopts Integrated Energy Policy to Sustain Its Economic Growth, <http://www.andhranews.net/Business/2009/January/12-India-adopts-integrated-83619.asp> (last visited March 11, 2009).

<sup>9</sup> The National Action Plan On Climate Change, Government of India website, *available at* <http://pmindia.nic.in/Pg01-52.pdf> (last visited Sept. 21, 2009).

their grid purchase from renewable energy.<sup>10</sup> The NAPCC has set the target of 5% as the renewable energy purchase for FY 2009-10, an increase over the current level, which is approximately 3.5%.<sup>11</sup> Further, the NAPCC also intends that the 5% target will increase by 1% for each of the next 10 years. This would mean that NAPCC envisages renewable energy as constituting approximately 15% of the energy mix of India.

The MNES now continues to support the implementation of a large broad-spectrum program. This program covers the entire range of new and renewable energies in the previously announced goal of 10% share for RE in the power generation capacity to be added during the period up to 2012 as the demand for energy increases.<sup>12</sup>

A comprehensive RE policy for all-round development of the sector, encompassing all the key aspects, has been formulated by MNES. This policy envisages the following broad objectives in its draft policy:

- Meeting the minimum energy needs through RE;
- Providing decentralized energy supply in agriculture, industry, commercial and household sectors in rural and urban areas; and
- Providing grid quality power.<sup>13</sup>

In matters relating to industrial planning for RE projects, the MNES is promoting medium, small, mini and micro enterprises for manufacturing and servicing of various types of RE systems and devices.<sup>14</sup> Industrial clearances are not required for establishing an RE industry and no clearance is required from Central Electricity Authority (CEA) for power generation projects costing up to INR 1 billion (approximately \$US20,820 million).<sup>15</sup> A five-year tax holiday is allowed for RE power generation projects. Soft loans are also available through IREDA for manufacturing RE equipment. The ministry allows power projects to be imported, and private companies can engage in such enterprises as licensees or as generating companies. Customs duty concessions are available for RE spares and equipment, including those for machinery required for renovation and modernization.

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<sup>10</sup> *India Obligates Power Utilities to Buy Energy Produced From Renewable Sources*, <http://redgreenandblue.org/2009/01/03/india-obligates-power-utilities-to-buy-energy-produced-from-renewable-sources/> (last visited September 12, 2009).

<sup>11</sup> Report on 'Conceptual Framework for REC Mechanism in India', [http://mnes.nic.in/pdf/MNRE\\_REC\\_Report.pdf](http://mnes.nic.in/pdf/MNRE_REC_Report.pdf) (last visited September 3, 2009).

<sup>12</sup> Biomass-Energy Toolbox, <http://www.nri.org/projects/biomass/homepage.htm> (last visited September 3, 2009).

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

<sup>15</sup> 1 INR = US\$0.02.

### III. Programs: State Governments

The Government of India (GOI) has provided support measures to states to increase their renewable energy contributions and has issued policy guidelines for state governments to establish and maintain policies to promote renewable power projects. The State of Karnataka has set itself a target of generating 5,450 MW of renewable energy resources in the state by 2012, and 11,700 MW by 2018.<sup>16</sup> The Maharashtra State is one of the lead states in promoting wind power generation.

#### A. Solar Energy

Being a tropical country, India has great potential for the development of solar energy in areas where approximately 45% of primarily rural households do not have access to electricity.<sup>17</sup> In recognition of this fact, the European Union is planning to invest EUR300 million (approximately \$405 million USD)<sup>18</sup> from the European Investment Bank in renewable energy projects in India.<sup>19</sup> The States of Rajasthan and Gujarat are expected to lead the country in the production of solar energy by 2017. Tariff finalization is expected to be completed shortly for the generation of 110 MW of renewable solar energy in Rajasthan. An ambitious plan to tap the power of the sun to generate clean electricity will be implemented in India at the expense of the rich nations.<sup>20</sup>

#### B. Wind Energy

The Indian Wind Energy Association (IWEA) was established in 2002 as a not-for-profit organization under the Societies Registration Act.<sup>21</sup> With more than 300 members, the association is dedicated to the promotion and development of wind power in India. The association is also a member of several international and national industry bodies such as the World Wind Energy Association and the European Wind Energy Association.<sup>22</sup> At present, India is deemed a major player in terms of wind power in the world.

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<sup>16</sup> *Solar Thermal Power in India*, *supra* note 7.

<sup>17</sup> Report, *Enormous Potential for Solar Energy in India*, <http://www.geni.org/globalenergy/library/technical-articles/generation/solar/renewableenergyfocus.com/enormous-potential-for-solar-energy-in-india-report/index.shtml> (last visited September 9, 2009).

<sup>18</sup> 1 EUR = 1.35163 USD.

<sup>19</sup> *EU To Fund Renewable Energy Projects in India*, <http://www.geni.org/globalenergy/library/technical-articles/finance/mcclatchy-tribune/eu-to-fund-renewable-energy-projects-in-india/index.shtml> (last visited September 9, 2009).

<sup>20</sup> *India Sets Out Ambitious Solar Power Plan to Be Paid For By Rich Nations*, <http://www.guardian.co.uk/environment/2009/aug/04/india-solar-power> (last visited October 1, 2009).

<sup>21</sup> The Societies Registration Act, No. 21 of 1860.

<sup>22</sup> Indian Wind Energy Association, <http://www.inwea.org/aboutinwea.htm> (last visited April 20, 2009).

#### IV. International Agreements & Treaties

##### A. IRENA

In 2007, Germany proposed the creation of the International Renewable Energy Agency (IRENA). The organization has the goal of promoting renewable energy resources at the global level and cooperation in terms of technology transfer and joint research. IRENA is not associated with the United Nations, the International Atomic Energy Agency (IAEA), or the International Energy Agency (IEA). It is envisioned to operate as an independent international agency. With India joining it as the 77<sup>th</sup> nation this year, the number of people worldwide living in member states through their representatives to the promotion of renewable energy has risen to over 2.5 billion.<sup>23</sup>

IRENA promotes the use of renewable energy, and provides advice and assistance to its members upon request to improve pertinent knowledge and technology transfer. It provides a complete range of services to its member governments in facilitating the use of renewable energy and, unlike the International Energy Agency which is linked to the Organization for Economic Cooperation and Development (OECD); even developing countries can become members. Overall, IRENA strives to promote a collective learning process that includes the involvement of all international organizations in the mutual exchange of experience and information on renewable energy activities and the development of specific formats for IRENA's support to other international organizations.

##### B. India-U.S. 123 Civil Nuclear Agreement

Unable to meet the demand for electricity and to avoid the burning of fossil fuel, India sought the cooperation of the United States in the development and generation of nuclear energy. In 2008, the United States and India entered into the Civilian Nuclear Agreement.<sup>24</sup> As a result of this agreement, India will be able to produce nuclear energy without burning fossil fuels and will avoid contributing to pollution. Since any means of producing electricity involves some waste and environmental hazard, the nuclear industry is unique in that it is the only energy-producing industry that has taken full responsibility for the disposal of all its wastes and meets the full cost of doing so. Moreover, nuclear energy does not contribute to global warming.

Increased share of nuclear power in the Indian energy mix will diminish the country's reliance on fossil fuels and reduce carbon emissions from India. Further, it will enable India to meet energy security challenges and sustain a healthy environment, thus ensuring the continuance of its economic growth rate. In a brief summary on June 30, 2008, the Indian Prime

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<sup>23</sup> *India Joins International Renewable Energy Agency*, <http://www2.dw-world.de/southasia/germany/print/1.235026.1.html> (last visited September 16, 2009).

<sup>24</sup> *President Bush Signs U.S.-India Civil Nuclear Agreement*, <http://www.america.gov/st/washfile-english/2006/December/20061218155402idybeekcm0.1876795.html>. See also *US-INDIA: '123' Nuclear Agreement Completed*, <http://ipsnews.net/news.asp?idnews=38700> (last visited September 8, 2009).

Minister released the National Action Plan on Climate Change, which focuses attention on eight priorities of National Mission, with the first among them being “Solar Energy.”<sup>25</sup>

In 2000, India and the United States, in a joint statement, agreed to share a relationship with a common and deep commitment to engage in their common goal to cooperate in energy and environment issues.<sup>26</sup>

## V. Relevant Domestic Legislation

### A. Energy Conservation Act 2001

Demands for electricity and fossil fuels have increased substantially due to a growing preference for commercial energy. The Indian government promoted the idea of efficient use and conservation of energy when it enacted the Energy Conservation Act, 2001.<sup>27</sup> It was hoped that energy efficiency would reduce consumption. The Act created the Bureau of Energy Efficiency,<sup>28</sup> which was to manage and supervise conservation of energy. The Act has no provisions for planning the generation of renewable energy.

### B. Electricity Act 2003

In 2003, India enacted the Electricity Act, 2003.<sup>29</sup> The preamble of the Electricity Act describes its objective as follows:

“An Act to consolidate the laws relating to generation, transmission, distribution...use of electricity and...measures conducive to development of electricity industry, promoting competition...constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto.”

Apparently, this Act, too, did not deal with renewable energy.

## VI. Recent Developments

The World Institute for Sustainable Energy (WISE), based in India, declared 2007 as the “Year of Renewable Energy.”<sup>30</sup> This organization realized that India, with 17% of the world

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<sup>25</sup> *National Action Plan on Climate Change Launched: Solar Energy to Change the Fact of India*, <http://ecoworldly.com/2008/06/30/national-action-plan-on-climate-change-launched-solar-to-change-the-face-of-india/> (last visited October 1, 2009).

<sup>26</sup> Joint Statement on Cooperation in Energy and Environment between India and the United States, <http://www.nlsenlaw.org/energy/articles/joint-statement-on-cooperation-in-energy-and-environment-between-india-and-the-united-states/> (last visited September 3, 2009).

<sup>27</sup> No. 52 of 2001.

<sup>28</sup> *Id.* §3.

<sup>29</sup> No. 38 of 2003.

population and without oil and gas resources, could not continue to depend on the import of fossil fuels to feed its developing industry. As a result, it submitted a draft of a statute to the Indian government for enactment by the Indian Parliament.<sup>31</sup> This draft is now being considered by the Parliament.

The draft law proposes to increase the target for electricity generation from renewable sources to 10 % by 2010, and 20 % by 2020 of the total electricity generated. The following are additional advanced provisions relating to renewable energy which are contained in the draft:

- Solar water heating to be made mandatory throughout the urban areas by 2012, implemented in a phased-in manner.
- A time-bound program of demonstration of solar rooftop lighting system in 10,000 government buildings by 2010, also incorporating building integrated photo-voltaics.
- Conversion of fossil fuel based industrial heating to solar thermal heating using new solar concentrator technology or its hybrids.
- Provisions for small biomass based energy systems for rural areas.
- Indigenous development of small wind power systems up to 25 KW (and hybrids) for stand-alone applications.
- Widespread application of co-generation concepts (heat and power) for lighting, heating and cooling.

## **I. Concluding Remarks**

India can ill afford to ignore development and transition to use of renewable energy, especially if the country is to sustain its development. With a commitment to adherence to UNFCCC and the avoidance of GHG emissions, India is moving forward towards realization of the goal development and use renewable energy by enacting the proposed law.

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<sup>30</sup> *Renewable Energy Act: To Meet India's Future Needs*, <http://www.merineews.com/catFull.jsp?articleID=126343> (last visited October 1, 2009).

<sup>31</sup> *Id.*

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SOUTH AFRICA

LAWS GOVERNING RENEWABLE SOURCES OF ENERGY &  
ENVIRONMENTAL PROTECTION

*Executive Summary*

*South Africa does not have a legal framework specifically designed to govern renewable energy sources. Its laws however, by incorporating key definitions and concepts do provide sufficient basis for developing a legal regime for regulating renewable energy in the future as their generation and use expands.*

**I. Introduction**

At present, renewable energy<sup>1</sup> sources supply only about 10% of South Africa's energy demand.<sup>2</sup> While biomass accounts for most of the renewable energy generated in South Africa, hydro-electricity accounts for less than 1% of its energy sources.<sup>3</sup> Approximately 90% of South Africa's energy is generated from fossil fuels; of this 75% is coal based.<sup>4</sup>

The Department of Minerals and Energy of South Africa, the government branch with the mandate to, among other things, regulate matters relating to energy, published a White Paper on Energy Policy in which it established South Africa's vision, policy and principles for expanding the generation and use of renewable energy sources. In this policy document South Africa acknowledged that the shift from fuel based energy supply to renewable energy is important for its economy. As South Africa is a major exporter of coal and its energy supply is to a major extent fuel based, the growing constraints on emission could affect the South African economy. South Africa is one of the countries with the highest carbon dioxide emissions per capita in the world, and these constraints may affect its ability to generate foreign currency.<sup>5</sup>

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<sup>1</sup> According to the White Paper on Renewable Energy, renewable energy sources include sun, wind, biomass, water (hydro), waves, tides, ocean current, geothermal, and any other natural phenomena which are cyclical and non-depleteable (Department of Minerals and Energy, N513/2004, Government Gazette 26169 May 2004, available at <http://www.info.gov.za/view/DownloadFileAction?id=68765> (official source) (last visited Mar. 19, 2009)).

<sup>2</sup> R. STEIN AND K.B. OMIKIRE, ENERGY, in THE LAW OF SOUTH AFRICA 24 (2<sup>nd</sup> ed., LexisNexis Butterworths 2005).

<sup>3</sup> *Id.*

<sup>4</sup> White Paper on the Renewable Energy Policy of the Republic of South Africa, Department of Minerals and Energy, N513/2004, Government Gazette 26169 May 2004 at 3, available at <http://www.info.gov.za/view/DownloadFileAction?id=68765> (official source)(last visited Mar. 19, 2009).

<sup>5</sup> *Id.*

The White Paper on Renewable Energy establishes a target for South Africa to increase its production of electricity from renewable sources by 10,000 GWH (4% its current consumption) by 2013.<sup>6</sup>

While South Africa does not have any legislation particularly designed to govern renewable energy sources, several South African laws make direct or indirect reference to this.

## II. Relevant Domestic Legislation

### A. The Constitution

The South African Constitution provides the foundation for the development of laws that will promote as well as regulate sources of renewable energy. The Constitution specifically states:

Everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.<sup>7</sup>

The obligation placed on the state under this provision is not only a minimum requirement to take preventive measures to protect the environment from becoming harmful to the health and wellbeing of citizens. This provision requires the state to also take legislative initiative to promote “ecologically sustainable development” which also includes promotion of renewable energy.

### B. National Environmental Management Act<sup>8</sup>

The National Environmental Management Act defines the term “sustainable development” and identifies the development of renewable energy sources as one of the means to be considered for achieving it. The Act defines “sustainable development” as “the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.”<sup>9</sup> It also provides a list of factors that must be taken into consideration to ensure sustainable development, among which is ensuring that:

- a. the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;
- b. the development use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardized; and

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<sup>6</sup> *Id.*

<sup>7</sup> §24, S. AFR. CONST., 1996, available at the South African government portal, <http://www.info.gov.za/documents/constitution/index.htm> (official source) (last visited May 12, 2009).

<sup>8</sup> NATIONAL ENVIRONMENTAL MANAGEMENT ACT 107 OF 1998, available at the South African government portal, <http://www.info.gov.za/view/DownloadFileAction?id=70641> (official source) (last visited April 6, 2009).

<sup>9</sup> *Id.* §1(1) (xxix).

- c. A risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions.<sup>10</sup>

### C. National Water Act<sup>11</sup>

The National Water Act places all of South Africa's water resources under the trust of the government, specifically the Ministry of Water Affairs and Forestry.<sup>12</sup> The Act imposes a mandate on the government to ensure that "water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner."<sup>13</sup>

The Act defines "use of water" and identifies uses for which obtaining licensing are necessary. The definition of water use incorporates "engaging in a controlled activity"<sup>14</sup> including a "power generation activity which alters the flow regime of a water resource." Thus the use of water for generating hydro-electric power requires licensing.<sup>15</sup>

The authority vested with the power of issuing licenses may require that an assessment be made by a "competent person of the likely effect of the proposed license [application] on the resource quality" and that an independent review of the assessment is made. This is in addition to requiring the payment of application fees, requiring the provision of information regarding intended use and requiring that certain forms are followed in the application process.<sup>16</sup> The authority may also conduct its own investigation on the "likely effect of the proposed license on the protection, use, development, conservation, management and control of the water resource."<sup>17</sup> It may also impose that an assessment on a proposed application comply with the requirements of §26 of the Environmental Conservation Act.<sup>18</sup>

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<sup>10</sup> *Id.* §2(4) (a).

<sup>11</sup> NATIONAL WATER ACT 36 OF 1998, available at the South African government portal, <http://www.info.gov.za/view/DownloadFileAction?id=70693> (official source) (last visited April 6, 2009).

<sup>12</sup> *Id.* §3.

<sup>13</sup> *Id.*

<sup>14</sup> *Id.* §21. Other uses of water include "taking water from a water resource; storing water; impeding or diverting the flow of water in a watercourse; engaging in a stream flow reduction activity contemplated in section; discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit; disposing of waste in a manner which may detrimentally impact on a water resource; disposing in any manner of water which contains waste from or which has been heated in. any industrial or power generation process; altering the bed, banks, course or characteristics of a watercourse; removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and using water for recreational purposes."

<sup>15</sup> Uses of water as stipulated in Schedule I, as a continuation of a lawful use or use under special authorization. (*Id.* §22(a)).

<sup>16</sup> *Id.* §41.

<sup>17</sup> *Id.*

<sup>18</sup> ENVIRONMENTAL CONSERVATION ACT 73 OF 1989, available at <http://www.acts.co.za/enviro> (unofficial source) (last visited April 7, 2009).

#### D. National Energy Act<sup>19</sup>

The National Energy Act, while providing a definition of renewable energy and has provisions that would make the promotion of renewable energy possible, appears to postpone the task of actually providing a road map to its achievement. The introduction summary of the Act provides that the Act is intended, among other things, to ensure the availability of energy sources in sustainable quantities. This summary even goes as far as stating that it is intended to ensure “increased generation and consumption of renewable energies.” Renewable energy is defined as “energy generated from natural non-depleting resources including solar energy, wind energy, biomass energy, biological waste energy, hydro energy, geothermal energy and ocean and tidal energy.”<sup>20</sup> The Act does not however, directly refer to renewable energy in its list of objectives, although there are provisions that might be applicable to the promotion of renewable energy.<sup>21</sup> The Act in its final provisions provides the Minister of Minerals and Energy with the authority to address matters pertaining to renewable energy by issuing of a series of regulations. The Minister of Minerals and Energy is granted limited authority for to issue regulations regarding various matters including regulations regarding:

1. minimum contributions to national energy supply from renewable energy sources;
2. the nature of the sources that may be used for renewable energy contributions to the national energy supply; and
3. measures and incentives designed to promote the production, consumption, investment, research and development of renewable energy.

The National Energy Act establishes the South African National Energy Development Institute, a juristic person, with the function of promoting energy efficiency through taking energy efficiency measures as directed by the Minister of Minerals and Energy, to increase energy efficiency, take measures to increase the GDP per unit of energy, and take steps to optimize the use of non-renewable sources of energy.<sup>22</sup> The Institute also has a mandate to promote energy research and development by taking measures that range from providing grants to opening facilities for the collection and dissemination of information on research. The Institute may also register patent and intellectual property (IP) resulting from its activities in its own name and to issue licensing for the use of its patents and IP.<sup>23</sup>

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<sup>19</sup> NATIONAL ENERGY ACT NO. 34 OF 2008, available at the South African government portal, <http://www.info.gov.za/view/DownloadFileAction?id=92826> (official source) (last visited April 6, 2009).

<sup>20</sup> *Id.*

<sup>21</sup> These include the promotion of diversity of supply of energy and its sources, promotion of energy research, and addressing safety, health and environment issues with regard to energy. *Id.* §2.

<sup>22</sup> *Id.* §7.

<sup>23</sup> *Id.*

### III. International Agreements and Treaties

South Africa has ratified both the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The United Nations Framework Convention is designed to encourage countries to reduce the source of green house gases, with the objective of controlling green house gas concentrations in the atmosphere at a level that would not have a detrimental effect on world climate.<sup>24</sup> South Africa has also ratified the Kyoto Protocol, which sets relatively more stringent mechanisms for selected developed nations (South Africa is not one of the selected countries) to reduce green house gas emissions by August of 2012.<sup>25</sup>

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<sup>24</sup> See UNFCCC portal at <http://maindb.unfccc.int/public/country.pl?country=ZA> (last visited Apr. 12, 2009).

<sup>25</sup> *Id.*