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SUSTAINABLE ENERGY LAW

IN LATIN AMERICA

PACE LAW SCHOOL

DOCTOR OF JURIDICAL SCIENCE (S.J.D.) DEGREE

S.J.D. THESIS

BY

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*When you set out on your journey to Ithaca,
pray that the road is long, full of adventure,
full of knowledge.*

— Constantine Cavafy, *Ithaca* (1911)

In 1999, I came to Pace searching *opportunitas* in the full meaning of the word. During the summer of that year, while on medical leave after a near-death airplane crash in the Andes of my native Colombia, Pace Law School appeared featured in the New York Times. The Times article specifically mentioned the Pace Environmental Litigation Clinic’s outstanding representation of public interest groups—primarily Riverkeeper Inc.—with the students working as counsel for the plaintiffs. I was curious about Pace’s environmental law program, and quickly found out that Pace was top-rated in the country and worldwide. So I embarked in the journey: the Masters of Law in Environmental Law (LL.M.); the Pace Environmental Litigation Clinic; the Pace Energy Project; and, finally, the Doctor of Juridical Science (S.J.D.) Degree. One at a time, these opportunities became reality thanks to the help of many individuals at Pace and to my family’s support.

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INTRODUCTION

Without law reform to restructure how energy is produced and distributed and used, there will not be a just society and natural systems will be changed in ways unintended and often detrimental to ecology and human health.

— *Professor Nicholas A. Robinson in*
THE LAW OF ENERGY FOR SUSTAINABLE
DEVELOPMENT (2005)¹

This dissertation addresses legal issues at the intersection of energy and environmental law in Latin America. It is intended for legal and non-legal researchers, scholars and decision-makers in the Latin American region and worldwide, as a contribution to understanding the complexities and particularities involved at the nexus of energy and environmental law in the Latin American context. To achieve these goals, the study analyses the legal principles behind energy and environmental regulation in the region, compares specific energy and environmental laws in various countries of Latin America, and advances several theses as a result of the analysis.

Latin America has been a major energy producing and exporting region, mostly in the form of oil and natural gas.² Not surprisingly, managing the exploitation of hydrocarbon resources has dominated energy legislation in the countries of the region for decades. However, in the last part of the 20th century, particularly after the United Nations Conference on the Human Environment held in Stockholm in 1972 and the

¹ Nicholas A. Robinson, *Introduction*, in IUCN ACADEMY OF ENVIRONMENTAL LAW, THE LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT (Adrian J. Bradbrook, Rosemary Lyster, Richard L. Ottinger & Wang Xi eds., Cambridge University Press 2005) [IUCN, THE LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT], at 2.

² See generally LATIN AMERICAN ENERGY ORGANIZATION, ENERGY REPORT OF LATIN AMERICA AND THE CARIBBEAN 2004 (OLADE 2004) [OLADE, Report 2004] (OLADE's previous annual reports are referred herein as OLADE, Report [year]). See *infra* Appendix & Tables.

United Nations Conference on the Environment and Development (UNCED) in Rio de Janeiro in 1992, concerns over the environmental impacts of energy production and consumption prompted changes in the energy laws.³

At the same time, environmental law emerged as a separate and distinct area of the law, and focused on regulating environmental consequences of energy exploitation and use.⁴ As a result, the countries of the Latin American region have developed a body of environmental law that applies to the energy sector, which is the subject matter of this study. In contrast with environmental law, energy law is still not viewed as a distinct area of the law in the Latin American law tradition. In fact, energy law is not found typically among courses taught in Latin American law schools. Nonetheless, it involves aspects of many traditional law areas, including international law, constitutional law, civil law, property law and administrative law. It also draws from specialized legal areas, such as hydrocarbons law, electricity law and natural resources law.

The thesis' ultimate goal is to serve as a basis for the development of courses or seminars in the law of sustainable energy in Latin American countries. Admittedly, the law of sustainable energy does not exist today, "but it is fast emerging and will of necessity become a recognizable legal discipline."⁵ Sustainable development requires energy services that are protective of health and the environment. The challenge of the coming generations is to integrate energy law and environmental law. While a daunting

³ See generally LATIN AMERICAN ENERGY ORGANIZATION & UNIVERSITY OF CALGARY, ENERGY AND ENVIRONMENTAL LAW IN LATIN AMERICA AND THE CARIBBEAN: LEGISLATIVE INVENTORY AND ANALYSIS (University of Calgary 1998) [OLADE/University of Calgary Study].

⁴ See Lila Katz de Barrera-Hernandez & Alastair R. Lucas, *Environmental Law in Latin America and the Caribbean: Overview and Assessment*, 12 GEO. INT'L ENVTL. L REV. 207, 212

⁵ IUCN ACADEMY OF ENVIRONMENTAL LAW, COMPENDIUM OF SUSTAINABLE ENERGY LAWS (Nicholas A. Robinson, Richard L. Ottinger & Victor M. Tafur eds., Cambridge University Press 2005) [IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS], *Introduction*, at x.

undertaking, “[w]ithout integration of energy law and environmental law, human society cannot meet the goals for sustainable development envisioned at the 1992 UN Conference on Environment and Development in Rio de Janeiro,”⁶ and those adopted to at the 2002 World Summit on Sustainable Development in Johannesburg. Therefore, “[re]formation of energy laws will be an essential element of the transition to attain sustainability within national and global economies.”⁷

Before addressing the challenge of sustainability in the law of energy, however, the genesis of energy law needs to be understood. “As contemporary energy law has developed over the past century in each nation, it has rarely had the occasion to integrate such ecological assessment into its fundamental norms or legal framework,” notes Professor Nicholas A. Robinson.⁸ Energy law has developed through a disjointed body of statutes and treaties.⁹ “Rather than being a refined and integrated field of law, the laws of this sector are characterized by a lack of basic principles or integrative systems.”¹⁰ Moreover, its costs are underwritten by application of public finance laws.¹¹ Professor Robinson characterizes the evolution of energy law in the following words:

It has evolved incrementally over time, in an essentially instrumental manner, reactive to perceived needs to find sources of energy to consume. Energy law facilitates the development of whatever energy system is possible in light of available technology. Its short-term goal is always to supply electricity or such other basis fuel as each society requires. Energy law’s emphasis has been on ensuring an adequate supply of energy, rather

⁶ Nicholas A. Robinson, *Foreword*, in INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE AND NATURAL RESOURCES, ENERGY LAW AND SUSTAINABLE DEVELOPMENT (IUCN 2003) [IUCN, ENERGY LAW AND SUSTAINABLE DEVELOPMENT], at vii.

⁷ *Id.*

⁸ *Id.*

⁹ *Id.*

¹⁰ *Id.*

¹¹ *Id.*

than providing energy systems with an emphasis on maximizing efficiency, respecting ecology or ensuring equity in use among all users.¹²

The problems arising from current patterns of production and consumption of energy need to be considered as well. “Before there can be recognizable field of sustainable energy law, there needs to be a global view of the *energy probématique*.”¹³ The importance of energy for sustainable development can be traced back at least as far as the report from the World Commission on Environment and Development created by the United Nations (the *Brundtland Report*) in 1987.¹⁴ Even so, energy *per se* was not a forefront issue at the Earth Summit in Rio de Janeiro (UNCED) in 1992.¹⁵

In 2000, a definition of sustainable energy was developed in the context of the *World Energy Assessment*: “Energy produced and used in ways that support human development over the long term, in all its social, economic and environmental dimensions is what is meant ... by the term *sustainable energy*.”¹⁶ Eventually, a global concern over energy for sustainable development was recognized, and took preeminence at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002.¹⁷

The WSSD recommended that nations undertake the reform of their energy regimes as a matter of urgency to address poverty alleviation and climate change

¹² *Id.*

¹³ IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5, *Introduction*, at x.

¹⁴ See WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE (Oxford University Press 1987) [*Brundtland Report*].

¹⁵ IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5, *Introduction*, at x; Adrian J. Bradbrook & Ralph D. Wahnschafft, *International Law and Global Sustainable Energy Production and Consumption*, in IUCN, THE LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT, *supra* note 1, at 195.

¹⁶ UNITED NATIONS DEVELOPMENT PROGRAMME ET AL., WORLD ENERGY ASSESSMENT AND THE CHALLENGE OF SUSTAINABILITY 3 (2000) [WORLD ENERGY ASSESSMENT].

¹⁷ See Johannesburg Declaration on Sustainable Development & Plan of Implementation of the World Summit on Sustainable Development, *Report of the World Summit on Sustainable Development*, UN Doc.A/CONF.199/20, Annex (Plan of Implementation) [*Johannesburg Declaration & Johannesburg Plan of Implementation*].

concerns.¹⁸ Nevertheless, “[a]s the first major international soft law instrument to recognize and address energy production and consumption as part of sustainable development, the [Johannesburg] Plan of Implementation is inevitably vague and general in relation to the concrete actions proposed.”¹⁹

An ethical dimension of the *energy probématique* is gaining significance as well.²⁰ From this perspective, “energy must be generated and used in ways that does not compromise ecological integrity.”²¹ Three ethical principles for sustainable energy can be stated, as follows:²² The principle of ecological sustainability (or interspecies justice): Energy must be generated and used in a way that does not compromise the integrity of the Earth’s ecological systems. The principle of social and economic equity (or intragenerational justice): Energy must be available to individuals on an equitable basis and at an adequate level, allowing them to meet their needs. Finally, the principle of responsibility for future generations (or intergenerational justice): Energy must be generated and used in a way that does not compromise the ability of future generations to meet their own needs.

Traditionally, the main legal concerns for energy in the Latin American region and elsewhere address how to ensure a supply, not how to address wasteful use or manage its externalities.²³ A legal framework for sustainable energy needs to address not just supply, but demand and use, as well as externalities of energy. In particular, key

¹⁸ See Robinson, *Foreword*, in IUCN, *ENERGY LAW AND SUSTAINABLE DEVELOPMENT*, *supra* note 6, at vii.

¹⁹ Bradbrook & Wahnschafft, *supra* note 15, at 195.

²⁰ See Klaus Bosselman, *Ethical Implications*, in IUCN, *THE LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT*, *supra* note 1, at 74-92.

²¹ *Id.* at 87.

²² *Id.*

²³ See Robinson, *Foreword*, in IUCN, *ENERGY LAW AND SUSTAINABLE DEVELOPMENT*, *supra* note 6, at vii; IUCN, *COMPENDIUM OF SUSTAINABLE ENERGY LAWS*, *supra* note 5, *Introduction*, at x.

areas at the intersection between energy and environment that must be considered include: access to energy, energy efficiency—including efficiency in energy supply systems and efficiency in energy consumption—, climate change, and trade and investment.²⁴ Energy pricing, mitigation of environmental impacts, consumer information and environmental education and international cooperation need to be addressed as well.²⁵ The interrelationship and integration of these areas is necessary under the concept of sustainable development.²⁶ “At its best, the concept of sustainable development is able to act as the unifying factor, bringing together disparate areas of law. It does not mandate particular legal solutions, but it encourages integration of thinking and approaches.”²⁷

A fundamental step towards sustainable energy law has been the crafting of legal instruments that can be used to implement sustainable energy systems and tackle climate change, affirms Professor Richard L. Ottinger.²⁸ Elements of sustainable energy law include environmental impact assessment, a technique used throughout the Latin American region, but “is admittedly used very inadequately today to guide the planning and implementation of energy supply regimes.”²⁹ Sustainable energy also requires an overall assessment of the energy sector, particularly in connection with climate change effects, as is mandated currently to the signatories of the United Nations Framework

²⁴ See Kui-Nag (Peter) Mak and Friedrich Soltau, *Policy Options*, in IUCN, *THE LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT*, *supra* note 1, at 211; Bradbrook & Wahnschafft, *supra* note 15, at 195.

²⁵ See Bradbrook & Wahnschafft, *supra* note 15, at 181-201.

²⁶ Mak & Soltau, *supra* note 24, at 210.

²⁷ *Id.* See also Nicholas A. Robinson, *Air Pollution Control Laws: Common but Differentiated Responsibilities for Managing the Atmosphere*, in IUCN, *THE LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT*, *supra* note 1, at 124-137.

²⁸ See generally Richard L. Ottinger, *Legal Frameworks for Energy for Sustainable Development*, in IUCN, *THE LAW OF ENERGY FOR SUSTAINABLE DEVELOPMENT*, *supra* note 1, at 103-123.

²⁹ IUCN, *COMPENDIUM OF SUSTAINABLE ENERGY LAWS*, *supra* note 5, *Introduction*, at xi. See also Ottinger, *supra* note 28, at 106-107.

Convention on Climate Change (UNFCCC or *Climate Change Convention*).³⁰

In contrast with the ample legislation on hydrocarbons exploitation and use through Latin America, renewable energy legislation is scant throughout the region. Nevertheless, several Latin American countries have taken interest in developing legislation for biofuels, geothermal, wind, solar and small-scale hydro projects. Other legal instruments and mechanisms dealing with the supply of renewable energy sources, such as mandatory renewable energy targets (also termed Renewable Portfolio Standard or RPS), are vital to ensure energy and environmental sustainability.³¹ The RPS tool seeks to ensure that modern renewables energy sources become an important part of the energy mix by a certain date. Currently, only one countries in the Latin American region is implementing the RPS tool: Brazil.

On the demand side of energy, “[d]emand side management (DSM) and economic and other regulatory means for encouraging and mandating DMS have become a primary focus of sustainable energy laws.”³² DSM targets a double set of short and medium to long-term goals. “On the one hand, it aims at a fast reduction of the direct environmental impacts of energy use by reducing its overall use. On the other hand, it seeks to influence energy planning.”³³ Few legal developments in the region pay attention to the management of demand for energy, even though legal mechanisms to improve the efficiency of energy use are noteworthy. A regulatory forum to adjust pricing of electricity and other sources of energy also needs to be provided to encourage

³⁰ See United Nations Framework Convention on Climate Change, May 9, 1992, U.N. Doc. A/CONF. 151/26; reprinted in 31 I.L.M. 849 (1992) [UNFCCC or *Climate Change Convention*]; Kyoto Protocol to the UNFCCC, December 10, 1997; 37 I.L.M. 22 (1998), available at <http://www.unfccc.int>.

³¹ See Ottinger, *supra* note 28, at 110-111.

³² IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5, *Introduction*, at xi.

³³ OLADE/University of Calgary Study, *supra* note 3, 38. See also Ottinger, *supra* note 28, at 112-113.

sustainability.³⁴ Where restructuring has taken place, regulatory agencies have been entrusted with mandates that include, *inter alia*, setting fair and reasonable prices of electricity and protecting the environment.

The basic question in the dissertation is, therefore, to what degree do the Latin American countries take into account the elements of sustainable energy law? The analysis reveals key issues that will determine whether the legal and institutional systems in the region are appropriate to deal with the challenge of energy and environmental sustainability. The identification of these issues help set the stage for further discussions on law reform necessary to restructure how energy is produced and used in the region.

The dissertation argues that the countries of Latin America have incorporated fundamental concepts of the law of sustainable energy into their legal and institutional frameworks. Nevertheless, the study shows that many flaws exist in the current regimes which need to be promptly addressed. It also reveals that many principles and tools of the law of sustainable energy need to be implemented in the Latin American context.

Notably, these countries have recognized the need to have adequate laws and regulations governing the environmental implications of energy. In particular, the region has made significant progress in embracing international environmental law that requires the adoption of environmentally sound energy regulation. Further, domestic energy legislation has been overhauled, or new laws passed, to include environmental management principles, and specifically-focused environmental legislation has been adopted to addresses the impacts of energy developments.

The study demonstrates, on the other hand, that the Latin American legal regimes

³⁴ See IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5, *Introduction*, at x-xi.

are not totally fit to address the environmental effects of energy activities and require systematic reform to integrate energy sustainability principles. Despite the commitment to sustainable energy practices, these countries have yet not completed the necessary reforms or even adequately implemented the systems in place. In particular, mechanisms for integrating sustainable energy and environmental policy, planning and permitting are still lacking.³⁵ Moreover, there is lack of consistency in the energy laws as well as in the environmental requirements for energy developments. Perhaps more important, environmental compliance and enforcement is weak, which is a major hurdle in order to have sustainable energy practices in Latin America.³⁶

A Note on Organization and Analytical Approach

The dissertation opens with a review of international law principles and instruments related to energy and sustainability, particularly as they apply in the Latin American context. Recognizing the regional and even global nature of environmental effects associated with the energy sector, the countries of Latin America have, to some extent, ratified and implemented key international conventions related to energy and environmental protection. Chapter 1 offers a discussion on those international and regional law instruments and the principles set forth therein. Latin American countries and institutions have also distilled many of the concepts set forth in international and regional environmental conventions and have, to a large degree, adopted them as soft law principles set forth in the form of declarations, resolutions, guidelines and the like, which

³⁵ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 208.

³⁶ See FUNDACIÓN AMBIENTE Y RECURSOS NATURALES, 1ST INTERNATIONAL CONFERENCE ON ENVIRONMENTAL COMPLIANCE AND ENFORCEMENT IN LATIN AMERICA (María Eugenia Di Paola ed., FARN 2002), [Farn, Compliance AND ENFORCEMENT I]; FUNDACIÓN AMBIENTE Y RECURSOS NATURALES, SYMPOSIUM OF JUDGES AND PROSECUTORS OF LATIN AMERICA (María Eugenia Di Paola ed., FARN 2003), [Farn, Compliance AND ENFORCEMENT II].

are also discussed in Chapter 1. Some of those countries have gone further, incorporating certain principles into domestic legislation, as discussed in Chapters 3-11.

Chapter 2 continues with a review of the constitutional and civil law principles that shape energy and environmental legislation. Civil law principles are pertinent for several reasons. First, Latin American countries have legal systems based on the civil law tradition; indeed, civil codification predates constitutional enactments in the region. Further, in civil law systems, traditionally the Civil Code regulates property, including ownership of natural resources, a fact that is key to the study of energy and environment. Today, however, most Latin American countries include energy and environmental principles in their constitutions. Although each country offers a unique perspective, the analysis in Chapter 2 focuses on the common approaches in civil and constitutional law, noting country-to-country variations to the key concepts and principles.

Chapters 3 through 11 undertake a country-by-country analysis of energy and environmental law in several Latin American countries, focusing on the region's larger energy producers and consumers.³⁷ The review of their energy laws encompasses legislation governing oil and gas, electricity, and renewable energy resources.³⁸ Demand side management, efficiency and end-use energy regulation are also explored. This review also explains the energy sector's organization, including restructuring and privatization processes, and the energy authorities and regulatory agencies.

The study of environmental law includes issues of natural resources law and pollution control law for energy activities. In particular, the environmental impact review

³⁷ Specifically, these countries are Argentina, Bolivia, Brazil, Colombia, Ecuador, Mexico, Peru and Venezuela.

³⁸ Only three countries in the region use nuclear energy: Argentina, Brazil and Mexico. This study does not address nuclear energy law in Latin America, except for a few references to electricity from nuclear energy.

process for energy projects and the institutional framework dealing with environmental issues of energy activities are considered. While it is beyond the scope of this work to review levels of compliance with environmental laws in Latin America's energy sector, a brief discussion on environmental law compliance with respect to energy activities is offered at the end of each chapter. In addition, throughout the analysis of each nation's environmental legislation, it is explored whether national laws and policies are accommodating requirements arising out of the international context within which they operate.

The dissertation closes with various conclusions on the environmental legislation governing energy activities in Latin America, highlights the positive and negative aspects of such legislation, and raises the key questions and issues that will determine a more sustainable energy future in the region. These conclusions focus on how these systems operate in practice, how the laws are executed and the real effect they have on the energy sector and environmental quality. The underlying issue is whether the legal and institutional frameworks in the region incorporate the principles of sustainable energy law.

Finally, a brief overview of the energy sector in Latin America appears in the Appendix, with a focus on the region's renewable energy resources and the environmental impacts of energy activities. This overview provides a foundation for understanding the legal issues addressed in the dissertation. Moreover, the organization and orientation of the institutions and legal tools of choice for the implementation of a sustainable energy development strategy in Latin America are likely to vary according to

the most salient energy-related characteristics of each country.³⁹ Thus, the Appendix may be appropriate as background material before focusing on the legal analysis presented or as quick reference for understanding the resources and environmental impacts at stake for each country or the region as a whole.

³⁹ See OLADE/University of Calgary Study, *supra* note 3, at 70.

CHAPTER 1 – INTERNATIONAL AND REGIONAL LAW CONTEXT

The regional and even global nature of environmental effects associated with the energy sector requires action at both the regional and international level.⁴⁰ Latin American countries have recognized this necessity, and have, to some extent, ratified and implemented key multilateral environmental agreements, particularly those dealing with climate change, biodiversity, ecosystems protection and the marine environment.⁴¹ Perhaps more relevant, Latin American countries have distilled many of the values set forth in international and regional environmental conventions and institutions and have, to a large degree, adopted them as soft law principles set forth in the form of declarations, resolutions, guidelines and the like. Some have gone further, incorporating certain principles into domestic legislation, as discussed in Chapters 3–11.

International law addressing energy for sustainable development has evolved slowly, but it is expected to take center stage in the years to come. Professor Jacqueline Lang Weaver has noted that, “[a]s yet, there is little hard law on sustainable development, although there is a large growing body of soft law.”⁴² Hard law consists of binding international commitments such as treaties in force, decisions of international courts, and clear customary international law principles; soft law sources are nonbinding instruments that declare principles and aspirational goals or set voluntary standards.⁴³ The so-called hard law on energy for sustainable development includes treaties such as the United

⁴⁰ See OLADE/University of Calgary Study, *supra* note 3, at 15; Bradbrook & Wahnschafft, *supra* note 15, at 181.

⁴¹ See generally DAVID HUNTER ET AL., INTERNATIONAL ENVIRONMENTAL LAW AND POLICY (Foundation Press 1998); IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5.

⁴² Jacqueline Lang Weaver, *Sustainable Development in the Petroleum Sector*, in IUCN, ENERGY LAW AND SUSTAINABLE DEVELOPMENT, *supra* note 6, at 60.

⁴³ *Id.* See BOSSELMAN ET AL., ENERGY, ECONOMICS AND THE ENVIRONMENT 664 (Foundation Press 2006).

Nations Framework Convention on Climate Change (UNFCCC or *Climate Change Convention*).⁴⁴ But, notes Professor Weaver, unless supplemented by protocols (such as the Kyoto Protocol to the UNFCCC) adopted by the ratifying nations, effective implementation of principles on energy for sustainable development is lacking.⁴⁵

Multiple other instruments of hard or soft international law exist that relate to energy and the environment.⁴⁶ Hard law instruments on the rights of indigenous people and the protection of biodiversity, habitat, and the marine environment deserve particular attention. Professor Weaver has also noted that “[l]ittle hard international law applies to onshore industry. ... Still the hard law of ecosystem protection and pollution control must ultimately be found at the national rather than international level.”⁴⁷ Customary international law, binding on governments and other international law subjects, is also relevant to sustainable energy, “and may be the subject of implementation or elaboration through, for example, national legislation providing for environmental impact assessment of energy projects likely to have international effects.”⁴⁸

Soft law on environmentally sustainable energy includes various declarations at United Nations conferences, United Nations General Assembly Resolutions, and declarations of international bodies and institutions.⁴⁹ It includes the 2000 *Earth Charter*, a “declaration of fundamental principles for guiding a just, sustainable peaceful global

⁴⁴ Weaver, *supra* note 42, at 60; *Climate Change Convention*, *supra* note 30 (discussed *infra* § 1.2).

⁴⁵ Weaver, *supra* note 42, at 60.

⁴⁶ See generally IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5; HUNTER ET AL., *supra* note 41.

⁴⁷ Weaver, *supra* note 42, at 61. See also BOSSELMAN ET AL., *supra* note 43, at 664-665.

⁴⁸ OLADE/University of Calgary Study, *supra* note 3, at 16.

⁴⁹ See generally IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5. See also Bradbrook & Wahnschafft, *supra* note 14, at 181; HUNTER ET AL., *supra* note 41, at 260-266; Weaver, *supra* note 42, at 61.

society,”⁵⁰ adopted by the United Nations Educational Scientific and Cultural Organization (UNESCO) and the International Union for the Conservation of Nature and Natural Resources (IUCN). Other sources of soft law on sustainable development include guidelines and standards of international organizations, such as the United Nations Environmental Programme (UNEP), the International Maritime Organization (IMO), and directives issued by the World Bank and the Inter-American Development Bank (IDB) requiring environmental impact studies and mitigation of environmental harm.⁵¹ “Though in principle unenforceable, this soft law continues to contribute to development of authoritative international customary and treaty law, and to harmonization of domestic energy and environmental legislation.”⁵²

The environmental guidelines of the World Bank and the Inter-American Development Bank exert considerable influence in the Latin American context. They come into play when these lending institutions finance the construction of energy projects, particularly large infrastructure projects, such as oil and gas pipelines and large hydroelectric dams.⁵³ Further, it has been noted that in Latin America, “[i]nternational funding agencies continue to influence national environmental policies, and are themselves influenced by international conventions and trade agreements.”⁵⁴

Some scholars argue that no global soft law sustainable energy principles exist. Adrian J. Bradbrook and Ralph D. Wahnschafft submit, as follows:

In spite of the increased global concern for greater environmental

⁵⁰ See Bosselman, *supra* note 20, at 81 (stating that the *Earth Charter* “is the most suitable document to date to identify the ethics of sustainable development.”). The *Earth Charter’s* text is available at <http://www.earthcharter.org>.

⁵¹ See Weaver, *supra* note 42, at 60.

⁵² OLADE/University of Calgary Study, *supra* note 3, at 16.

⁵³ *Id.*

⁵⁴ *Id.* at 44.

protection and greater integration of environmental concerns into energy sector and economic decision making, and in spite of a considerable potential for international consensus on global policy guidelines in this field, no universal “code of conduct,” “guideline,” “action plan,” or other form of “soft law” has yet been established.⁵⁵

They propose the adoption of a statement of principles on sustainable energy production and consumption that would be applicable to both developed and developing countries.⁵⁶

The proposed statement of principles on sustainable energy include a wide range of objectives and common principles that attempt to deal with the difficult balance between respecting each state’s sovereignty with the need to control transboundary environmental damage.⁵⁷ Proposed principles on efficiency in energy supply systems; efficiency in energy consumption; energy pricing; mitigation of environmental impacts; consumer information and environmental education; policies and strategies for implementation; and, international cooperation, illustrate areas where the development of sustainable energy law principles is most needed.

While the majority of the terms of the proposed statement of principles on sustainable energy contain novel ideas, some of the proposed principles have been influenced by soft law instruments adopted at UNCED in Rio de Janeiro in 1992.⁵⁸ The authors explain that many regard a statement of energy principles as too weak to be effective and would consequently prefer a negotiation of a new convention on energy or a new energy protocol to the UNFCCC, but “it is submitted that such a binding treaty would as a practical matter be impossible to achieve in the short to medium term. This

⁵⁵ Bradbrook & Wahnschafft, *supra* note 15, at 181.

⁵⁶ *Id.* at 182.

⁵⁷ *Id.* at 182-201.

⁵⁸ *Id.* at 195.

would need to be left to a third stage of international law development.”⁵⁹ Indeed, “[t]he purpose of such a statement on sustainable energy principles is to reinforce established principles and develop new ones. This way existing international law, whether ‘hard’ or ‘soft,’ can be taken a step further to the next level.”⁶⁰

At the regional level, Latin American countries have highly significant legal instruments and mechanisms, particularly dealing with the recognition and protection of human rights and the free trade of goods and services, which may influence the way energy and environmental laws are adopted and applied. The principal regional law instrument concerning human rights is the *American Human Rights Convention* and its protocols, which have been developed under the auspices of the Organization of American States.⁶¹ The bodies of the Inter-American system of human rights are the Inter-American Commission on Human Rights and the Inter-American Court of Human Rights, both of which have addressed the connection between human rights and environmental protection. In particular, the Commission has considered human rights abuses in connection with oil exploitations in Colombia and Ecuador.

Regarding trade and investment, there are several systems operating in the region, which include: the Central American Free Trade Agreement (CAFTA); the Caribbean Community (*Caricom*), the Andean Community (*Comunidad Andina*), and the Southern Common Market (*Mercosur*).⁶² The North American Free Trade Agreement (NAFTA) applies in a single Latin American country (Mexico), but serves as an important

⁵⁹ *Id.* at 196. See also Bosselman, *supra* note 20, at 92.

⁶⁰ See Bosselman, *supra* note 20, at 92.

⁶¹ American Convention on Human Rights, November 22, 1969, O.A.S.T.S. No. 36, O.A.S. Off.Rec. O.E.A./Ser. L/V/II.23 Doc. 21 Rev. 6 (1979) [*American Human Rights Convention*].

⁶² See generally INTEGRACIÓN ECONÓMICA Y MEDIO AMBIENTE EN AMERICA LATINA (Gabriel Real Ferrer ed., Mc Graw Hill 2000) [INTEGRACIÓN ECONÓMICA].

benchmark concerning energy and environmental provisions. To date, however, these agreements have not been a major force promoting sustainable energy. Nevertheless, increasing energy trade in the region creates opportunities within these systems as key regulatory forums to encourage energy and environmental sustainability.

1.1 THE HUMAN RIGHT TO ENVIRONMENTAL QUALITY

The concept of a fundamental environmental right originated at the United Nations Conference on the Human Environment held in Stockholm in 1972.⁶³ The *Stockholm Declaration* recognized that “[m]an has the fundamental right to freedom and equality in satisfactory living conditions, in an environment whose quality allows him to live with dignity and well-being; and he [she] bears a solemn responsibility to protect and improve the environment for present and future generations.”⁶⁴ The *Stockholm Declaration* is “unquestionably the instrument most important to international environmental law, even though it does not enjoy the status of a treaty.”⁶⁵

Although the *Stockholm Declaration* is a global instrument, it has been recognized as the most influential international legal instrument in the Latin American region. A report by the UNEP has stated: “the [Stockholm] Declaration should be considered the general instrument with the most forceful impact on, and applicability to, environmental law in Latin America.”⁶⁶ Further, it is undoubtedly the instrument having

⁶³ See Stockholm Declaration of the United Nations Conference on the Human Environment, June 16, 1972, *Report of the U.N. Conference on the Human Environment, Stockholm, 5-16 June 1972*, U.N.Doc.A/CONF.48/14/Rev. 1 at 3 (1973), U.N. Doc. A/CONF.48/14 at 2-65, and Corr. 1 (1972) [*Stockholm Declaration*]. See also Universal Declaration of Human Rights, December 10, 1948, G.A. Res. 217A, U.N.GAOR, 3rd Sess., Pt.1, Resolutions, at 71, U.N. Doc. A/810, arts. 1, & 25 [*Universal Declaration of Human Rights*]; Convention for the Protection of the World Cultural and Natural Heritage, November 16, 1972, 1037 U.N.T.S. 151, 27 U.S.T. 37.

⁶⁴ *Stockholm Declaration*, *supra* note 63, Principle 1.

⁶⁵ UNITED NATIONS ENVIRONMENTAL PROGRAMME, THE CURRENT STATE OF INTERNATIONAL ENVIRONMENTAL LAW IN LATIN AMERICA 18 (UNEP 1993) [UNEP, LATIN AMERICA].

⁶⁶ *Id.*

most influenced the writing of constitutional provisions affording environmental protection in the Latin American countries, as will be developed in Chapter 2.

Furthermore, the UNEP report indicated, “[w]orld recognition of the [Stockholm] Declaration has made it irrefutable written evidence of the customary legal force of its principles.”⁶⁷ However, Professor Ramón Martín Mateo takes the position that the principles set forth in the *Stockholm Declaration*, while incorporated in many constitutional regimes, have not fully evolved into a fundamental environmental rights regime.⁶⁸ In any case, the influence of the *Stockholm Declaration* is such that it can be regarded as having started a new era for environmental law in the region.⁶⁹

1.2 ENERGY FOR SUSTAINABLE DEVELOPMENT AND CLIMATE CHANGE

United Nations’ soft law instruments influencing energy and environmental legislation in Latin America include the following: the *World Charter for Nature*, adopted by the General Assembly in 1982;⁷⁰ the *Rio Declaration* and *Agenda 21*, outcomes of the United Nations Conference on the Environment and Development (UNCED) held in Rio de Janeiro in 1992;⁷¹ the *Johannesburg Declaration on Sustainable Development* and the *Plan of Implementation of the World Summit on Sustainable Development*, adopted at the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002.⁷²

⁶⁷ *Id.* at 18. See also John Lee, *The Underlying Legal Theory to Support a Well-Defined Human Right to a Healthy Environment as a Principle of Customary International Law*, 25 COLUM. J. ENVTL. L. 283 (2000).

⁶⁸ RAMÓN MARTÍN MATEO, *TRATADO DE DERECHO AMBIENTAL*, Tomo IV, at 48-49 (Edisofer 2003).

⁶⁹ See Daniel A. Sabsay, *Constitution and Environment in Sustainable Development*, in FARN, COMPLIANCE AND ENFORCEMENT I, *supra* note 36, at 34-35.

⁷⁰ World Charter for Nature, October 28, 1982, G.A. Res. 37/7 (Annex), U.N. GAOR, 37th Sess., Supp. No. 51, at 17, U.N. Doc. A/37/51 [*World Charter for Nature*].

⁷¹ See Rio Declaration on Environment and Development, June 13, 1992, U.N.Doc. A/CONF. 151/26 (vol. I) (1992) [*Rio Declaration*], Principles 1 and 8; Agenda 21, June 13, 1992, U.N. Doc. A/CONF. 151/26 (vols. I, II and III) (1992) [*Agenda 21*].

⁷² See *Johannesburg Declaration & Johannesburg Plan of Implementation*, *supra* note 17.

In general, the countries of Latin America are signatories to United Nations' instruments and conventions related to the environment and development.⁷³ Most Latin American countries, however, abstained from executing the 1982 *World Charter for Nature*, "an international document detailing the obligations of states and various other authorities, groups and individuals."⁷⁴ The abstaining countries noted that "they encountered difficulty in understanding why the drafting of the charter had taken place outside the intergovernmental process."⁷⁵ Therefore, such countries do not consider the text binding, and treat it merely as a general indication of intentions to be taken into account if such guidelines are compatible with domestic legislation and international obligations assumed.⁷⁶

Probably because the conference took place in the region and focused on sustainable development, the countries of Latin America executed and have been largely influenced by the instruments developed at the UNCED in Rio de Janeiro. The *Rio Declaration*, building on the progress achieved since the *Stockholm Declaration*, proclaimed that "environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it."⁷⁷ It calls for the states to "enact effective environmental legislation."⁷⁸ The *Rio Declaration* also calls for a precautionary approach "where there are threats of serious or irreversible damage."⁷⁹

As noted above, the UNCED also adopted *Agenda 21*—a global program of

⁷³ UNEP, LATIN AMERICA, *supra* note 65, at 13 & 18.

⁷⁴ *Id.*; Sabsay, *supra* note 69, at 35.

⁷⁵ UNEP, LATIN AMERICA, *supra*, note 65, at 20 & 22 (noting that the abstaining countries include: Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, Guyana, Paraguay, Peru, Suriname, Trinidad and Tobago and Venezuela).

⁷⁶ *Id.* at 23.

⁷⁷ *Rio Declaration*, *supra* note 71, Principle 4.

⁷⁸ *Id.* Principle 11.

⁷⁹ *Id.* Principle 15.

action for achieving these principles—but failed to develop a program for sustainable energy.⁸⁰ In his account of the debate that took place “behind the scenes” during the crafting of *Agenda 21*, Professor Robinson explains this situation as follows: “Disputes over fuels, especially between oil exporting and importing nations, made it difficult at UNCED to negotiate a comprehensive or meaningful chapter in Agenda 21 regarding energy.”⁸¹

Professor Robinson notes, nonetheless, that *Agenda 21* does draw attention to energy issues: “In addressing unsustainable patterns of production and consumption, the need to avoid wasting energy resources and the need to adopt more efficient systems was stressed.”⁸² He also states that *Agenda 21*, in the section on protection of the atmosphere (Section II, Chapter 9), encourages what he calls “making the energy transition.”⁸³ In Professor Robinson’s words,

Energy is essential to economic and social development and improved quality of life. But current practices of production, transmission, distribution and consumption cannot sustainably meet increased needs. Controlling emissions of greenhouse gases will require greater efficiency, and increasing reliance on new and renewable energy resources. All energy use needs to respect the atmosphere, human health and the environment as a whole.⁸⁴

Following the UNCED, a Latin American common approach to sustainable development was laid out in the Summit of the Americas on Sustainable Development

⁸⁰ See IUCN, COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5, *Introduction*, at x; *Agenda 21*, *supra* note 71. See also Bradbrook & Wahnschafft, *supra* note 15, at 195.

⁸¹ AGENDA 21: EARTH’S ACTION PLAN–ANNOTATED xxxiv (Nicholas A. Robinson ed., Oceana Publications 1993).

⁸² *Id.*

⁸³ *Id.* at xlviii.

⁸⁴ *Id.* at il.

held in Santa Cruz, Bolivia, in December of 1996.⁸⁵ The *Declaration of Santa Cruz de la Sierra* reads as follows: “We reaffirm that human beings are entitled to a healthy and productive life in harmony with nature and, as such, are the focus of sustainable development concerns. Development strategies need to include sustainability as an essential requirement for the balanced, interdependent and integral attainment of economic, social, and environmental goals.”⁸⁶

As stated earlier, hard law instruments on energy and the environment include United Nations sponsored conventions, such as the *Climate Change Convention* (UNFCCC).⁸⁷ The *Climate Change Convention* opened for signature in 1992, coinciding with the UNCED, and entered into force in 1994. The Latin American countries are parties to the convention, having ratified it between 1993 and 1998. The UNFCCC contains important requirements for a thorough assessment of the energy sectors by the parties to the convention and for the promotion of sustainable energy systems. In words of Professors Lakshman Guruswamy et al:

The short negotiation period [of the UNFCCC], combined both with the enormous economic stakes and a substantial amount of uncertainty [at the time], resulted in the adoption of only cautious controls in the final revision of the treaty. The Climate Change Convention, however, is not an empty framework convention whose substantive details entirely await further elaboration. Instead, it is a framework convention with a number of built-in requirements. First, developed countries must strive to reduce their overall emissions of greenhouse gases to 1990 levels by the year 2000... Second, developed countries have a general commitment to make financial

⁸⁵ See generally COMISION DE MEDIO AMBIENTE Y DESARROLLO EN AMERICA LATINA Y EL CARIBE, AMANECER EN LOS ANDES 75 (CAF, IDB & UNDP 1996) [DAWN IN THE ANDES REPORT].

⁸⁶ OLADE/University of Calgary Study, *supra* note 3, at 51 (citing to “Conference on Sustainable Development, *Declaration of Santa Cruz de la Sierra*, Santa Cruz de la Sierra, Bolivia, December 7, 1996”).

⁸⁷ See *Climate Change Convention*, *supra* note 30.

and technological transfers to developing countries. Third, all parties—both developed and developing countries—must create inventories of GHGs [greenhouse gases], as well as national mitigation and adaptation programs.⁸⁸

It is clear that the first of such requirements (reducing overall emissions of greenhouse gases to 1990 levels by the year 2000) was not timely met, and that progress with regards to the second requirement (financial and technological transfers to developing countries) have been *de minimus*. However, both developed and developing countries have accomplished significant progress in relation to the third requirement (the elaboration inventories of GHGs and the preparation of national mitigation and adaptation programs).

Specifically, under the UNFCCC, all parties must undertake certain reporting requirements. All parties must “[d]evelop, periodically update, publish and make available ... national inventories of anthropogenic emissions by sources,” communicate these to the Conference of the Parties, and produce a general description of steps taken or envisaged to implement the convention.⁸⁹ These national reports pursuant to the UNFCCC, with greenhouse gas inventories and the measures undertaken to tackle GHG emissions, constitute a first attempt to measure worldwide carbon dioxide emissions from the energy sector under unified parameters.

The countries of Latin America have overwhelmingly ratified or acceded to the UNFCCC’s Kyoto Protocol—whereby mandatory limitation on GHG emissions are imposed on industrialized countries—which was adopted in 1997 and entered into force

⁸⁸ GURUSWAMY ET AL., INTERNATIONAL ENVIRONMENTAL LAW 1094 (West 1999).

⁸⁹ See *Climate Change Convention*, *supra* note 30, arts. 4(1) (a), 10, and 12(1) (a) (b).

in 2005.⁹⁰ While most of the attention in relation to the climate change regime has been on the mandatory reduction targets solely for industrialized countries (those listed in Annex I, and, therefore, referred to as “Annex I countries”), the costs of implementing its provisions, and the opportunities offered by flexible mechanisms adopted therein—emissions trading, the Clean Development Mechanism (CDM), and Joint Implementation—the Latin American countries need to strive to reduce their energy-related GHG emissions, particularly by encouraging energy efficiency and modern renewable energy. Certainly, the *Climate Change Convention* and the Kyoto Protocol require that Latin American countries assess GHG emissions and impacts, and take measures to prevent and mitigate climate change impacts originating in the energy sector.

Parallel to the UNFCCC process, the UNCED’s inertia continued under the Commission on Sustainable Development (CSD), which is a Commission of United Nations member countries created in December 1992 to ensure effective follow-up of the UNCED. The CSD is charged with monitoring and reporting on implementation of the UNCED agreements at the local, national, regional and international levels. Specifically, the CSD is the entity that follows implementation of *Agenda 21*. The Commission takes decisions by consensus of the participating countries, which typically includes the Latin American countries, following the United Nations decision-making system.

In 2001, the Commission, at its ninth session (CSD-9), considered the topics of energy, atmosphere, and transportation in relation to sustainability goals. The Commission’s decision on energy concluded that the key issues of energy for sustainable development include, among others, access to energy, energy efficiency, renewable

⁹⁰ See UNFCCC Secretariat’s web site at <http://www.unfccc.int>.

energy, advanced fossil fuel technologies, and rural energy.⁹¹ Significantly, CSD-9 determined that, “[a]ccess to energy is crucial to economic and social development and the eradication of poverty. Improving accessibility of energy implies finding ways and means by which energy services can be delivered reliably, affordably and in an economically viable, socially acceptable and environmentally sound manner.”⁹²

Ten years after the Rio Conference, at the United Nations World Summit on Sustainable Development (WSSD) in 2002, the countries of Latin America—presenting themselves as a united block—committed themselves to the *Johannesburg Declaration* and the *Johannesburg Plan of Implementation* for “undertaking concrete action and measures” in realizing the fundamental principles agreed upon in prior global instruments relating to the environment.⁹³ Further, in Johannesburg, the countries of Latin America presented a regional initiative on sustainable development. The initiative “is targeted towards the adoption of concrete actions in different areas of sustainable development” and “envisages the development of actions among countries in the region that may foster South-South cooperation.”⁹⁴

With respect to energy for sustainable development, the WSSD synthesized the consensus reached at CSD-9 and other United Nations instruments, particularly the UNFCCC.⁹⁵ Bradbrook and Wahnschafft argue that the *Johannesburg Johannesburg Plan of Implementation* “gives new hope to the development of international law in this

⁹¹ See Decision of the Commission on Sustainable Development Ninth Session (CSD-9), *Report on the Ninth Session*, U.N.doc. E/CN.17/2001/19 - E/2001/29, Decision 9/1, Energy for Sustainable Development, [CSD-9, Energy for Sustainable Development].

⁹² *Id.* ¶ 12.

⁹³ *Johannesburg Declaration & Johannesburg Plan of Implementation* *supra* note 17, ¶ 2.

⁹⁴ *Id.* ¶¶ 73 & 74.

⁹⁵ *Id.* ¶ 20.

area [the law of sustainable energy] in the future.”⁹⁶ The authors caution, however, that “[a]s the first major international soft law instrument to recognize and address energy production and consumption as part of sustainable development, the Plan of Implementation is inevitably vague and general in relation to the concrete actions proposed.”⁹⁷ The authors believe that the next stage forward will be the development of nonbinding statements of energy principles which were outlined earlier in this chapter.

1.3 THE RIGHTS TO HEALTH AND ACCESS TO ENERGY

The right to health, grounded in international law that preceded the emergence of environmental international law, plays an important role in the Latin American constitutional and domestic law context, in some countries more than in others, as discussed in subsequent chapters. Certainly, the recognition of the right to health preceded the basic global instruments on the environment urging the adoption of environmental rights.⁹⁸ At the international level, the right to health was recognized as early as 1946, when the World Health Organization was established.⁹⁹ The Constitution of the World Health Organization states that the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being.¹⁰⁰ The *Universal Declaration of Human Rights*, adopted two years later, provides that all people have a right to a standard

⁹⁶ Bradbrook & Wahnschafft, *supra* note 15, at 195.

⁹⁷ *Id.*

⁹⁸ See *Universal Declaration of Human Rights*, *supra* note 63, Article 26; MARTÍN MATEO, *supra* note 68, at 120.

⁹⁹ WORLD HEALTH ORGANIZATION, HEALTH IN SUSTAINABLE DEVELOPMENT PLANNING: THE ROLE OF INDICATORS 16 (World Health Organization 2002) (Document WHO/HDE/HID/02.11).

¹⁰⁰ See International Covenant on Economic, Social and Cultural Rights, December 16, 1966) 993 U.N.T.S. 3 (entered into force on January 3, 1976), art. 12 (“The right of everyone to the enjoyment of the highest attainable standard of physical and mental health.”). See also Convention on the Rights of the Child, 20 November, 1989, G.A.Res. 44/25 (Annex), U.N. GAOR, 44th Sess., Supp. No. 49, at 166, U.N.Doc. A/RES/44/49 (1990), art. 24.

of living adequate for their health and well-being.¹⁰¹

In recent decades, the protection of health and the environment have developed hand-in-hand. In 1987, the report of the World Commission on the Environment and Development created by the United Nations (the *Brundtland Report*) stressed the connection between health, development, and environment, when it considered population, energy and urban issues, especially in developing countries.¹⁰² The *Brundtland Report* said, “[i]n the developing world, the critical problems of ill health are closely related to environmental conditions and development problems.”¹⁰³

Subsequently, the Rio Conference (UNCED) in 1992 emphasized health as a fundamental principle of human development in the *Rio Declaration*, stating that, “[h]uman beings ... are entitled to a healthy and productive life in harmony with nature.”¹⁰⁴ The *Rio Declaration* also called for a precautionary approach “where there are threats of serious or irreversible damage,”¹⁰⁵ as noted earlier. This approach is vitally important for the prevention of health and environmental problems.¹⁰⁶ *Agenda 21*, the blueprint for action adopted at the UNCED, gave further relevance to the issue, devoting an entire chapter to programs for “Protecting and Promoting Human Health.”¹⁰⁷ More recently, the *Johannesburg Plan of Implementation* developed an entire section on implementation of the health programs outlined in *Agenda 21*.¹⁰⁸

The interlinkages between energy, health, and the environment are well

¹⁰¹ See *Universal Declaration of Human Rights*, *supra* note 63, art. 25.

¹⁰² See *Brundtland Report*, *supra* note 14, Chapters 4, 7 and 9.

¹⁰³ *Id.* at 109.

¹⁰⁴ *Rio Declaration*, *supra* note 71, Principle 1.

¹⁰⁵ *Id.* Principle 15.

¹⁰⁶ See Marie-Claire Cordonier Segger & Markus W. Gehring, *Precaution, Health and the World Trade Organization: Moving Toward Sustainable Development*, 29 QUEEN'S L.J. 133.

¹⁰⁷ *Agenda 21*, *supra* note 71.

¹⁰⁸ *Johannesburg Declaration & Johannesburg Plan of Implementation* *supra* note 17, ¶¶ 53-57.

established and underpin sustainable development.¹⁰⁹ It is clear that “health is both an indicator of as well as a resource for sustainable development.”¹¹⁰ The World Health Organization clearly explains this interrelation and the difference in approaches between the health and environment movements:

There is thus growing recognition that economic development, management of the environment and protection of public health must be addressed together in an integrated way. While the environmental movement has highlighted the aspect of sustainability, the health movement has laid special stress on the issues of social justice, equity and human development. Not only are healthy people needed to ensure development, but also health is not possible without development.¹¹¹

Providing modern energy services with polluting fuels results in adverse environmental and health impacts at the household level, the workplace scale, in community life, on a regional basis, and even on a global scale.¹¹² When energy is provided with firewood, as largely occurs at present in Latin America, “there is a very direct link between energy and women’s health. Most of the burdens placed by energy scarcity are borne by women.”¹¹³ Thus, energy services are part of the solution and, at the same time, at the heart of the problem when dealing with health and environmental rights.

The enjoyment of essential public services is necessary to attain a healthy human environment and to guarantee adequate health. Specifically, access to energy is instrumental for the provision of clean drinking water, sanitation, and basic health services. As stated by Kui-Nag Mak and Friedrich Soltau, “[w]hile the relevant human

¹⁰⁹ See United Nations, WEHAB Working Group, *A Framework for Action on Health and the Environment* (2002).

¹¹⁰ *Id.* See also MARTÍN MATEO, *supra* note 68, at 119-122.

¹¹¹ WORLD HEALTH ORGANIZATION, *supra* note 99, at 16.

¹¹² See WORLD ENERGY ASSESSMENT, *supra* note 16, Chapter 3.

¹¹³ *Id.* at 49.

rights instruments do not contain a right of access to energy, the argument for access could be framed in the wider context of socio-economic rights.”¹¹⁴ Moreover, they argue that “[t]he benefits of access [to energy]—as measured in the effects on human health (respiratory illnesses and fires) and the environment (deforestation avoided)—warrant the extension of access at affordable rates.”¹¹⁵

The energy-poverty nexus adds an important element to the argument in favor of environmental protection and a right of access to energy.¹¹⁶ This nexus was highlighted in the *World Energy Assessment*, in the following words: “The energy dimension of poverty—energy may be defined as the absence of sufficient choice in accessing adequate, affordable, reliable, high-quality safe, and environmentally benign energy services to support economic and human development.”¹¹⁷ Consequently, “[a] direct improvement in energy services would allow the poor to enjoy both short-term and long-term advances in living standards.”¹¹⁸ Moreover, extending access to affordable modern energy services—including electricity services—for poor households is one of the most practicable ways of supporting their welfare, notes a World Bank-sponsored report.¹¹⁹

The eradication of poverty, the provision of clean drinking water and adequate sanitation, and environmental sustainability, among others, were primary concerns of the United Nations *Millennium Development Declaration*—the U.N. General Assembly Resolution 55/2—and were subsequently incorporated into the *Johannesburg Plan of*

¹¹⁴ Mak & Soltau, *supra* note 24, at 216.

¹¹⁵ *Id.*

¹¹⁶ See WORLD ENERGY ASSESSMENT, *supra* note 16, Chapter 2. See also *Rio Declaration*, *supra* note 71, Principle 5.

¹¹⁷ See WORLD ENERGY ASSESSMENT, *supra* note 16, at 44.

¹¹⁸ *Id.* at 40.

¹¹⁹ JOHN E. BESANT-JONES, REFORMING POWER MARKETS IN DEVELOPING COUNTRIES: WHAT HAVE WE LEARNED? (World Bank, Energy and Mining Board, Discussion Paper No. 19, September 2006), at 92.

Implementation.¹²⁰ The *Millennium Development Declaration* took the shape of eight *Millennium Development Goals*, which are providing countries around the world specific development goals, a framework for development, and time-bound targets by which progress can be measured.

The *Johannesburg Plan of Implementation* acknowledges that adequate energy systems are essential for providing clean drinking water, sanitation, health services, and healthy human conditions.¹²¹ It gives foremost attention to poverty eradication, regarding it, “the greatest challenge facing the world today.” The *Johannesburg Plan of Implementation* provides among the actions for implementation the need to, “[d]eliver basic health services for all and reduce environmental health threats, taking into account the special needs of children and the linkages between poverty, health and environment, with provision of financial resources, technical assistance and knowledge transfer to developing countries and countries with economies in transition.”¹²² Furthermore, it requires efforts to “[i]ncrease access to sanitation to improve human health and reduce infant and child mortality, prioritizing water and sanitation in national sustainable development strategies and poverty reduction strategies where they exist.”¹²³

Notably, one of the specific goals adopted in the *Johannesburg Plan of Implementation*, which would require providing access to clean energy services, is the provision of clean drinking water and adequate sanitation.¹²⁴ This goal “is necessary to

¹²⁰ See United Nations Millennium Development Goals, U.N. General Assembly Res. 55/2 [*United Nations Millennium Declaration*].

¹²¹ *Johannesburg Plan of Implementation*, *supra* note 17, ¶¶ 8, 9 & 10,

¹²² *Id.* ¶ 7 (f).

¹²³ *Id.* ¶ 7 (m).

¹²⁴ *Id.*

protect human health and the environment.”¹²⁵ In this respect, the representatives of the States assembled in Johannesburg agreed to halve, by the year 2015, the proportion of people who are unable to reach or to afford safe drinking water and the proportion of people who do not have access to basic sanitation.¹²⁶

In 2006, the United Nations published a Millennium Development Goal Report which “shows that some progress *has* been made” to meet these goals.¹²⁷ On the other hand, it also shows that “there is still a long way to go to keep our promises to current and future generations.”¹²⁸ With regards to energy and environmental sustainability, the report highlights that energy use has become more efficient in most regions, though carbon dioxide emissions continue to rise globally.¹²⁹ In the Latin American region, for instance, energy efficiency has improved slightly, which has helped keep the rate of increase of carbon dioxide emissions, which are associated with global climate change, slightly lower than the overall growth of energy consumption.¹³⁰ Nonetheless, due to population and economic growth, overall carbon dioxide emissions continue to rise.

The worldwide target to halve by 2015 the proportion of people without sustainable access to safe drinking water is “in sight, but coverage remains spotty in rural areas.”¹³¹ In Latin America most countries have coverage ranging between 91-100 percent, except Peru and Venezuela where the range is between 76-90 percent. The target to halve the proportion of people without basic sanitation, on the other hand, seems

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ UNITED NATIONS, THE MILLENNIUM DEVELOPMENT GOAL REPORT 2006 (United Nations 2006), at 3 (emphasis in the original).

¹²⁸ *Id.* at 3.

¹²⁹ *Id.* at 17.

¹³⁰ *Id.* at 17-18.

¹³¹ *Id.* at 19.

unreachable worldwide. “With half of developing country populations still lacking basic sanitation, the world is unlikely to reach its target,” notes the United Nation’s report.¹³² Nonetheless, it is quite probable that the Latin American region reaches this target.¹³³

1.4 PROTECTION OF HABITAT AND BIODIVERSITY

In connection with the protection of habitat and biodiversity the countries of Latin America have adopted two main international instruments that may affect the approval and environmental management of energy developments: the Convention on Wetlands of International Importance Especially as Waterflow Habitat (*Ramsar Convention*) signed in Ramsar in 1971,¹³⁴ and the United Nations Convention on Biological Diversity (*Biological Diversity Convention*) signed in Rio de Janeiro in 1992.¹³⁵ While the purpose and goal of these conventions is different, in essence both conventions provide guiding principles and tools for protecting ecologically-sensitive or otherwise valuable environmental resources.

The *Ramsar Convention* was the first international environmental treaty which focused on a single ecosystem: the convention is intended to protect wetlands.¹³⁶ This term is broadly defined therein and “includes diverse habitats ranging from mangrove swamps, peat bog and coastal beaches, to tidal flats, mountain lakes, tropical river systems and even coral reefs.”¹³⁷ The starting point of *Ramsar’s* protection is the “listing” of protected resources. However, the “listing” of resources does not necessarily

¹³² *Id.*

¹³³ *Id.*

¹³⁴ See Convention on Wetlands of International Importance Especially as Waterflow Habitat, 1971, T.I.A.S. No. 1108, 996 U.N.T.S. 245 (entered into force on December 21, 1975).

¹³⁵ See United Nations Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 (1992) (entered into force on December 29, 1993) [*Biological Diversity Convention*].

¹³⁶ See HUNTER ET AL., *supra* note 41, at 1058.

¹³⁷ *Id.* at 1058.

imply that they are off-limits to energy developments. Further, “[t]he convention does not specify whether Parties should only list sites already protected by domestic legislation or if Parties should also list unprotected sites.”¹³⁸

Some countries, including Chile, take the position that only sites already domestically protected should be included in the list because designation under *Ramsar* heightens the national commitment to conserve a resource and provides extra safeguards to its protected status.¹³⁹ Others believe that resources without domestic legally-protected status should be listed because formal *Ramsar* recognition may secure national attention. In Peru, for instance, important *Ramsar* sites have not been afforded domestic legal protection.¹⁴⁰ In any event, countries should implement the *Ramsar Convention* at the domestic level in order to secure legal protection of these significant ecosystems, particularly in connection with oil and gas developments or the construction and operation of large hydroelectric dams.

The *Biological Diversity Convention* stresses *in-situ* conservation—that is, biodiversity in its natural setting—as the primary means of protecting biodiversity and ecologic resources.¹⁴¹ In this regard, the convention includes a number of important mandates, including the establishment of protected areas and the management biological resources within and without such protected areas.¹⁴² This convention also encourages the implementation of environmental impact assessment procedures for proposed projects that are likely to have significant adverse impacts on biological diversity.¹⁴³ In addition,

¹³⁸ *Id.* at 1060.

¹³⁹ *Id.*

¹⁴⁰ See *infra* Chapter 10 § 10.11.

¹⁴¹ GURUSWAMY ET AL., *supra* note 88, at 102.

¹⁴² See *Biological Diversity Convention*, *supra* note 135, art. 8

¹⁴³ *Id.* art. 14.

ratifying parties must incorporate sustainable development principles into their national decision-making processes in order to protect traditional cultural uses of biological resources and encourage cooperation between public and private actors.¹⁴⁴

The mandates of the *Biological Diversity Convention*, however, are qualified with general language that weakens its provisions. As stated by Professor Guruswamy, “these critical provisions remain qualified with the phrase ‘as far as possible and as appropriate,’ except for the simple duty to create ‘national strategies, plans and programmes’ which receives the arguably less evasive clause ‘in accordance with its [a specific nation’s] particular conditions and capabilities.’”¹⁴⁵ As with the *Ramsar Convention*, implementation of the *Biological Diversity Convention* at the domestic level is essential to afford the means for the protection of biological resources that could be affected by the energy activities.

1.5 PROTECTION OF THE MARINE ENVIRONMENT

In general, the countries of Latin America have ratified and implemented global treaties for the protection of the hydrosphere. International law for the protection of the marine environment in relation to energy activities includes treaties such as the 1969 Convention on Civil Liability for Oil Pollution Damage (*Civil Liability Convention*);¹⁴⁶ the 1972 London Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matters (*London Anti-Dumping Convention*);¹⁴⁷ the Protocol of 1978

¹⁴⁴ *Id.* art. 10. See also Lee P. Breckenridge, *Protection of Biological and Cultural Diversity: Emerging Recognition of Local Community Rights in Ecosystems Under International Environmental Law*, 59 TENN. L. REV. 735 (1992).

¹⁴⁵ GURUSWAMY ET AL., *supra* note 88, at 103.

¹⁴⁶ International Convention on Civil Liability for Oil Pollution Damage, November 29, 1969, 973 U.N.T.S. 3 (amended by 1976 and 1992 Protocols to that Convention) [*Civil Liability Convention*].

¹⁴⁷ Convention of the Prevention of Marine Pollution by Dumping of Wastes and Other Matters, December 29, 1969, 1046 U.N.T.S. 120 [*London Anti-dumping Convention*].

to the International Convention for the Prevention of Pollution from Ships (originally subscribed in February of 1973, also known as MARPOL 73/78);¹⁴⁸ and the 1982 United Nations Convention on the Law (*Law of the Sea Convention*).¹⁴⁹ These conventions are “designed to protect the marine environment from pollution, reflecting the international interest in the oceans as a shared resource essential to navigability and commerce.”¹⁵⁰ But, “[w]hile of great importance, most oil pollution originates on land where most facilities and almost all the use occur.”¹⁵¹

1.6 RIGHTS OF INDIGENOUS PEOPLE

The *Rio Declaration, Agenda 21* and the *Biological Diversity Convention*, among other United Nations environmental agreements, have been instrumental for encouraging the recognition of the rights of indigenous peoples.¹⁵² But these and other major United Nations instruments do not explicitly protect indigenous people.¹⁵³ To solve this issue, the United Nations has continued to seek additional instruments and authorities to protect the rights of indigenous people. In particular, the United Nations Working Group on Indigenous Populations has been working on a Declaration on the Rights of Indigenous Peoples for over two decades.¹⁵⁴

¹⁴⁸ See Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, February 17, 1973, I.M.C.O. Doc. TSPP/CONF/11, 1341 U.N.T.S. 3 [MARPOL 73/78].

¹⁴⁹ United Nations Convention on the Law of the Sea, December 10, 1982, U.N. Doc. A/CONF.62/122 (entered into force November 16, 1994) [*Law of the Sea Convention*].

¹⁵⁰ Weaver, *supra* note 42, at 60.

¹⁵¹ *Id.* at 61.

¹⁵² See *Rio Declaration*, Principle 22, *supra* note 71; *Agenda 21*, Chapter 26, *supra* note 71; *Biological Diversity Convention*, *supra* note 135, art. 3.

¹⁵³ HUNTER ET AL., *supra* note 41, at 1340 (see also discussion on “Defining ‘Indigenous Peoples’” at 1335).

¹⁵⁴ See Declaration of Principles on the Rights of Indigenous Peoples, adopted by representatives of indigenous peoples and organizations meeting in Geneva (July 1985), as affirmed and amended by representatives of indigenous peoples and organizations meeting in Geneva (July 1987), reprinted in UN Doc. ECN.4/Sub. 2/1987/22; Draft Declaration on the Rights of Indigenous Peoples as Agreed Upon by the Members of the Working Group on Indigenous Peoples at its Eleventh Session, August 23, 1993, UN Doc. E/CN. 4/Sub. 2/1999/29. See also BOSSELMAN ET AL., *supra* note 43, at 660-664.

The rights of indigenous people, however, have gained “hard law” recognition under the *Convention No. 169 of the International Labour Organization Concerning Indigenous and Tribal People in Independent Countries*, concluded at Geneva on June 27, 1989 (hereinafter *Indigenous People Convention*).¹⁵⁵ Significantly, the International Labour Organization’s *Indigenous People Convention* has been ratified by most Latin American countries during 1990-2002: Argentina (2000), Bolivia (1991) Brazil (2002), Colombia (1991) Ecuador (1998), Mexico (1990), Peru, 1994, and Venezuela (2002). The Convention establishes that indigenous people shall participate in the formulation, implementation and evaluation of plans and programs for national and regional development that may affect them directly.¹⁵⁶

The International Labour Organization’s *Indigenous People Convention* indicates that in cases in which the State retains the ownership of mineral or subsurface resources or rights to other resources pertaining to lands otherwise controlled or inhabited by indigenous people, governments need to establish or maintain procedures through which they consult indigenous peoples.¹⁵⁷ These procedures should be developed with a view to ascertaining whether and to what degree indigenous interests would be prejudiced before the government undertakes or permits any programs for the exploration or exploitation of such resources pertaining to their lands. Further, under the *Indigenous People Convention*, the indigenous people concerned, “shall wherever possible participate in the benefits of such activities, and shall receive fair compensation for any damages which

¹⁵⁵ See International Labour Organization Convention No.169 Concerning Indigenous and Tribal People in Independent Countries, June 27, 1989, arts. 7 & 13; *Reprinted in* 28 I.L.M. 1382 (1989) [*Indigenous People Convention*]. See also HUNTER ET AL., *supra* note 41, at 1338-1340.

¹⁵⁶ *Indigenous People Convention*, *supra* note 155, arts. 6, 7 & 9.

¹⁵⁷ *Id.* art 15 (2).

they may sustain as a result of such activities.”¹⁵⁸

In Latin America, indigenous people’s rights have gained attention because the Amazon contains significant oil and natural gas reserves, particularly along the portion of the rainforest that abuts the eastern slopes of the Andes Mountains and the Amazon region.¹⁵⁹ These areas are recognized as the ancestral lands of many groups of indigenous people. As a result, many oil and gas developments in these territories have tested the boundaries between indigenous people’s rights and those of the oil developers and the governments authorizing those developments. The same is true for the construction and operation of large dams in the Amazon.

In the regional law context, the Inter-American Human Rights system has been influential in the recognition and protection of the rights of indigenous people. Moreover, an important venue for claims involving the rights of indigenous people in connection with energy developments have been the Commission and the Court of Human Rights of the Inter-American system. This topic is addressed in the next section, and in subsequent chapters, discussing on enforcement of these rights in the Latin American jurisdictions.

1.7 HUMAN RIGHTS AND THE ENVIRONMENT

In the Inter-American legal context the most influential instrument dealing with environmental law is the *American Human Rights Convention*.¹⁶⁰ This convention, dated November 22, 1969, was developed under the auspices of the Organization of American States, and entered into force on July 18, 1978. Specifically, the Additional Protocol to the American Convention on Human Rights in the Area of Economic Social and Cultural

¹⁵⁸ *Id.*

¹⁵⁹ See BOSSELMAN ET AL., *supra* note 43, at 649.

¹⁶⁰ See *American Human Rights Convention*, *supra* note 61. See also Protocol of Amendment to the Charter the Organization of American States, February 27, 1967 [*Protocol of Buenos Aires*], arts. 29-50.

Rights, also known as the *Protocol of San Salvador*, subscribed on November 17, 1988, defines the right to a healthy environment.¹⁶¹

Article 11 of the *Protocol of San Salvador*, titled “Right to a Healthy Environment” states, “[e]very person has the right to live in a healthy environment and to enjoy essential public services; the contracting States commit themselves to promoting the protection, preservation and improvement of the environment.”¹⁶² In addition to the significance of granting environmental rights and a general mandate to protect the environment, it is worth noting that this provision links environmental rights to basic public services which include access to energy services. Nevertheless, some take the position that, as an environmental right, Article 11 of the Protocol is rather weak, since it requires States essentially to do more than “what they feel able to do, in light of the available resources, to promote a healthy environment. To a considerable extent, therefore, baring in mind the generally poor economic conditions prevailing in much of Latin America and the Caribbean, this is a recipe for inaction to protect the environment.”¹⁶³ In any event, the *Protocol of San Salvador* awaits ratification by a few member countries before it enters into full force.¹⁶⁴

While the Inter-American legal system does not currently enforce the right to a healthy environment *per se*, its bodies may adjudicate regional environmental disputes connected to human rights violations. The bodies of the Inter-American system of human rights are the Inter-American Commission on Human Rights and the Inter-American

¹⁶¹ Additional Protocol to the American Convention on Human Rights in the Area of Economic Social and Cultural Rights, November 17, 1988 [*Protocol of San Salvador*].

¹⁶² *Id.* art. 11 (3) (4). See also Sabsay, *supra* note 69, at 36; HUNTER ET AL., *supra* note 41, at 1317-1318.

¹⁶³ HUNTER ET AL., *supra* note 41, at 1317 (excerpt of article *Environmental Rights in Existing Human Right Treaties* by Robin Churchill).

¹⁶⁴ For status of ratification see Organization of American States’s web site at <http://www.oas.org>.

Court of Human Rights.¹⁶⁵ The Commission, in charge of promoting respect for human rights within the Organization of American States, was made an official organ of the organization in 1970 pursuant to the Protocol of Amendment to the Charter the Organization of American States, known as the *Protocol of Buenos Aires*.¹⁶⁶ The *American Convention on Human Rights* also declares the Commission as its main body. Therefore, “the Commission assumes a dual role: it remains an official organ of the OAS [Organization of American States] (and consequently has authority over all the members of the OAS), yet at the same time it is also a body of the Convention, and as such its competence only extends to those states which ratify the Convention.”¹⁶⁷

Unlike the Commission, the Court derives its authority solely from the *American Convention on Human Rights*, and, consequently, its authority is strictly limited to the members that are parties to the Convention. The Court has both an advisory and a contentious jurisdiction.¹⁶⁸ The Court’s contentious jurisdiction is limited to member countries that have officially recognized the authority of the court.¹⁶⁹ Whereas citizens can directly petition the Commission to investigate cases, only member countries and the Commission can submit a case to the Court.

In any case, both the Commission and the Court adjudicate violations of human rights as defined in the *American Convention on Human Rights*. “The primary difference between the two bodies is that the Court has the authority to make judgments that are

¹⁶⁵ See generally Inara K. Scott, *The Inter-American System of Human Rights: An Effective Means of Environmental Protection?* 19 VA. ENVTL. L.J. 197, 200 (2000).

¹⁶⁶ See *Protocol of Buenos Aires*, *supra* note 160.

¹⁶⁷ Scott, *supra* note 165, at 205.

¹⁶⁸ *Id.* at 205-206 (“Its judgment, which may include reparations for the victim, is binding on the parties involved. The Court can also issue temporary injunctions to correct a violation or prevent future harms.”).

¹⁶⁹ *Id.* at 206.

binding on member states, while the Commission can only publish recommendations.”¹⁷⁰

As noted above, the *American Human Rights Convention* currently does not specifically recognize the right to a healthy environment. However, the Commission and the Court of the Inter-American system have addressed environmental degradation on several occasions, as has the European Court of Human Rights. Under both systems, only in exceptional circumstances would the protection of the environment entail the protection of a fundamental human right.¹⁷¹

The European Court of Human Rights has taken this approach in *López Ostra v. Spain*, when interpreting Article 8 of the *European Human Rights Convention*, which recognizes the right to respect for private and family life.¹⁷² The case involved a waste-treatment plant, which had been built with a state subsidy on municipal land a few meters away from Ms. López Ostra’s home. The European Court of Human Rights held that the severe environmental degradation resulting from the waste-treatment plant interfered with the enjoyment of the plaintiff’s home, private life, and family life.¹⁷³

The ruling in *López Ostra v. Spain* recognized that, “[n]aturally, severe environmental pollution may affect individuals’ well-being and prevent them from enjoying their homes in such a way as to affect their private and family life adversely, without, however, seriously endangering their health.”¹⁷⁴ The court declared a breach of Article 8 of the *European Human Rights Convention*. For the first time, this court

¹⁷⁰ *Id.* at 201.

¹⁷¹ See GUILLERMO ESCOBAR ROCA, LA ORDENACIÓN CONSTITUCIONAL DEL MEDIO AMBIENTE 29-33 (Dykinson 1995).

¹⁷² See *López Ostra v. Spain*, A303-C Eur. Ct. H.R. (1994), available at <http://www.echr.coe.int/>. See Convention for the Protection of Human Rights and Fundamental Freedoms, November 4, 1950 [*European Human Rights Convention*], available at <http://www.echr.coe.int/>.

¹⁷³ See *López Ostra v. Spain*, *supra* note 172, ¶ 50. See also BLANCA LOZANO CUTANDA, DERECHO AMBIENTAL ADMINISTRATIVO 70 (Dykinson 2003).

¹⁷⁴ *López Ostra v. Spain*, *supra* note 172, ¶ 50.

condemned a government, in this case Spain, to pay damages for such violation.¹⁷⁵

Turning back to the Inter-American human rights system, in 1985, the Commission acted on a petition brought by the Yanomami, an indigenous population in northern Brazil.¹⁷⁶ The Yanomami faced a number of threats to health and life after the government began constructing a major road through their lands. The Commission found that the building of the highway resulted in violations of the right to life, liberty, and personal security; the right to residence and movement; and the right to the preservation of health and wellbeing, even though many of the actual harms were committed by independent actors, and not the Brazilian government.¹⁷⁷

Although this decision associated environmental harm with the right to life and health, it did not openly conclude that the Yanomami had a right to a healthy environment. Nor did it discuss the extent of the environmental harm that had taken place, or the potential long-term effects upon these people. Instead, the report addressed specific threats to life that had occurred since the construction of the highway, recommended the establishment of protected boundaries for Yanomami lands, and emphasized the responsibility of member states to protect the cultural heritage and identity of indigenous people. The report did not mention the connection between environmental harm and the violations of human rights, and left the Yanomami people uncompensated for the harm committed to them.

In 1996, the Commission revisited the issue of environmental protection in

¹⁷⁵ *Id. Accord* Guerra, et al., v. Italy, Eur. Ct. H.R. (1998); *Hatton and Others v. United Kingdom*, Eur. Ct. H.R. (2001) (available at <http://www.echr.coe.int/>). See LOZANO CUTANDA, *supra* note 173, at 70; HUNTER ET AL., *supra* note 41, at 1321-1323.

¹⁷⁶ See Case 7615, Inter-Am. C.H.R. 24, OEA/Ser. L./V./II.66, doc. 10 rev. 1 (1985) [Inter-Am. C.H.R., *Yanomami Case*]. See also Scott, *supra* note 165, at 214; HUNTER ET AL., *supra* note 41, at 1342-1347.

¹⁷⁷ See Scott, *supra* note 165, at 215.

connection to human right abuses. The Commission's 1996 report on the situation of human rights in Ecuador "demonstrates how the Inter-American system has recognized and enforced regional developments in environmental rights."¹⁷⁸ In this report, the Commission responded to a petition by the Huarorani people, alleging that oil concessions in their native lands violated essential human rights.¹⁷⁹ Unlike the *Yanomami* case, which focused mostly on threats to human health, the report on the situation in Ecuador described in detail the environmental effects of oil development. It describes pollution of waterways, the release of toxins, and the by-products of oil development, along with the effects of these by-products on the indigenous people.

The Commission's report on Ecuador noted that "[t]he norms of the Inter-American human rights system neither prevent nor discourage development; rather, they require that such activities take place under conditions of respect for the rights of affected individuals. The American Convention establishes the rights to life and physical integrity as fundamental and nonderogable."¹⁸⁰ Moreover, in a discussion of relevant domestic law, the Commission emphasized Ecuador's public commitment to the protection of environmental rights and its failure to enforce those rights. The Commission noted that the Constitution of Ecuador guaranteed "the right to live in an environment free of contamination," and that Ecuador has signed numerous international agreements, including the *Stockholm Declaration* and the *Protocol of San Salvador*, which recognize the responsibility of the state to protect the environment and work with other nations to

¹⁷⁸ *Id.*

¹⁷⁹ See Inter-Am. C.H.R., OEA/Ser. L./V./II.96, doc. 10 rev. 1 (1997), at 88 [Inter-Am. C.H.R., *Huarorani Case*].

¹⁸⁰ *Id.* See HUNTER ET AL., *supra* note 41, at 1350-1351.

develop plans for sustainable development.¹⁸¹ By entering into these agreements and adopting these constitutional and legal provisions, the Commission found that Ecuador had “set forth [a] legal framework of state and individual responsibility for violations of norms to protect the environment.”¹⁸²

Beyond Ecuador’s legal commitments, the Commission also found a connection between the right to life and the right to a healthy environment in the Inter-American system, stating that, “the realization of the right to life, and to physical security and integrity is necessarily related to and in some ways dependent upon one’s physical environment. Accordingly, where environmental contamination and degradation pose a persistent threat to human life and health, the foregoing rights are implicated.”¹⁸³ The Commission added, “[s]evere environmental pollution may pose a threat to human life and health, and in the appropriate case give rise to an obligation on the part of a state to take reasonable measures to prevent such risk, or the necessary measures to respond when persons have suffered injury.”¹⁸⁴

The Commission recommended that Ecuador implement measures to allow citizen participation in environmental decision-making, and to ensure adequate judicial remedies for claims concerning the right to life and to live in an environment free from contamination.¹⁸⁵ Even though this report of the Commission was more comprehensive and elaborate with regards to environmental protection than the case involving the Yanomami, the Huarorani people were not successful in getting a decision on the merits

¹⁸¹ See Inter-Am. C.H.R., *Huarorani Case*, *supra* note 179, at 88.

¹⁸² *Id.*

¹⁸³ *Id.* See Scott, *supra* note 165, at 224.

¹⁸⁴ See Inter-Am. C.H.R., *Huarorani Case*, *supra* note 179, at 88.

¹⁸⁵ *Id.* See also Maxi Lyons, *A Case Study in Multinational Corporate Accountability: Ecuador's Indigenous Peoples Struggle for Redress*, 32 DENV. J. INT'L L. & POL'Y 701 (2004).

requiring the government to put a stop on energy developments in their lands.¹⁸⁶

More recently, in a case referred by the Commission to the Court, the Court held, in a decision dated August 31, 2001, that the government of Nicaragua violated the rights of the Awas Tingni community when it granted logging concessions to a private company on the community's traditional lands without consulting with the community or obtaining its consent.¹⁸⁷ This landmark ruling means the Inter-American system serves as a venue in which indigenous people can enforce their rights, particularly their rights to prior consultation regarding exploitation of natural resources and to environmental protection.

1.8 STANDARDS FROM INTERNATIONAL LENDING INSTITUTIONS

Many large scale energy facilities and related infrastructure in Latin America receive financing by the World Bank and the Inter-American Development Bank. Thus, these institutions' guidelines, policies, and standards on environmental performance in connection with energy projects are particularly relevant in the Latin American context. Moreover, these standards are themselves influenced by international law instruments, and exert significant influence on national environmental laws and policies.

In 2001, the World Bank consolidated its approach to environmental protection into a single document titled *Making Sustainable Commitments: An Environment Strategy for the World Bank*.¹⁸⁸ The environment strategy outlines how the World Bank works with client countries to address environmental issues and to integrate principles of

¹⁸⁶ See HUNTER ET AL., *supra* note 41, at 1347-1351.

¹⁸⁷ Inter-Am. Court of H.R., *Mayagna (Sumo) Awas Tingni Community v. Nicaragua*, decision dated August 31, 2001, available at <http://www.oas.org>. See also Scott, *supra* note 165, at 224; Lyons, *supra* note 185, at 701.

¹⁸⁸ See WORLD BANK, MAKING SUSTAINABLE COMMITMENTS: AN ENVIRONMENT STRATEGY FOR THE WORLD BANK (World Bank 2001) [WORLD BANK, ENVIRONMENT STRATEGY].

environmental sustainability into its projects. Focused regional environmental strategies, including a specifically-tailored strategy for Latin America and the Caribbean, are set forth as well.¹⁸⁹

More practical, the operations of the World Bank are guided by a comprehensive set of standards and procedures, dealing with the bank's core development objectives and goals, the instruments for pursuing them, and specific requirements for the financed operations. This guidance is set forth in the bank's operational manual. The core of this guidance lies in the so-called "Operational Policies".¹⁹⁰ Within the overall set of Operational Policies, the World Bank has identified ten key policies that are critical to ensuring that potentially adverse environmental and social consequences are identified, minimized, and mitigated, which are known as the "Safeguard Policies". Environmental assessment is one of the ten Safeguard Policies of the World Bank. Environmental assessment is used to examine the environmental risks and benefits associated with the Bank's lending operations and for the purpose of improving decision making so that project options under consideration are environmentally sound and sustainable.¹⁹¹

In addition, the World Bank has several strategy documents for the energy sector.¹⁹² In connection with the oil and gas sector, the World Bank conducted a review

¹⁸⁹ WORLD BANK, ENVIRONMENT STRATEGY, *supra* note 188, at 106-112 (Annex A).

¹⁹⁰ *Id.* The Operational Policies are short statements that follow from the Bank's Articles of Agreement, its general conditions, and from policies specifically approved by the Board.

¹⁹¹ World Bank, Environmental Assessment Procedures: Operational Policy (OP)/Bank Procedure (BP) 4.01 [World Bank, Environmental Assessment Procedures]. This policy is considered to be the umbrella policy for the Bank's "safeguard policies" which among others include: Natural Habitats (OD 4.04); International Waterways (OP 7.50); Indigenous People (OD 4.20); Involuntary Resettlement (OD 4.30).

¹⁹² See e.g., WORLD BANK, FUEL FOR THOUGHT: AN ENVIRONMENTAL STRATEGY FOR THE ENERGY SECTOR, VOLUME 1 (World Bank 2000) (Report Number 20740) [WORLD BANK, ENVIRONMENTAL STRATEGY FOR THE ENERGY SECTOR]; The WORLD BANK GROUP'S ENERGY PROGRAM: POVERTY REDUCTION, SUSTAINABILITY AND SELECTIVITY (World Bank 2001) (Report Number 20740) [WORLD BANK, ENVIRONMENTAL STRATEGY FOR THE ENERGY SECTOR].

of its role in financing oil and gas and mining projects in developing countries.¹⁹³

The analysis was to determine whether resource extraction could be compatible with sustainable development and poverty alleviation. “The report concluded that the Bank had too often supported projects that had neither effect, and recommended that the Bank phase out its investments in oil and coal by the year 2008.”¹⁹⁴ The World Bank rejected the phase-out, but pledged that it would no longer fund projects without environmental and social safeguards. Further, “[t]he Bank rejected the recommendation to support only projects where local communities have given their informed voluntary consent. Instead, the Bank will require informed consultation, greater disclosure of project effects, and mechanisms to assure direct benefits to local communities, such as revenue sharing.”¹⁹⁵

The significance of these policies and standards in Latin America is illustrated by the construction and operation of the 3,200 megawatt-Yacyreta hydroelectric dam on the Paraná River, evenly co-owned by the governments of Argentina and Paraguay, which became fully operational in 1998.¹⁹⁶ The World Bank, the main lending institution for the project, requires that the reservoir level be kept significantly below its capacity (at the “76-meter level”) due to environmental and social concerns.¹⁹⁷ As a result, Yacyreta runs at 60 percent of its intended generating output in order to protect important natural resources and avoid further resettlement of indigenous people. This project also shows that environmental and social issues must be identified and addressed early on in the process in order to avoid unnecessary expense and delay.

¹⁹³ See BOSSELMAN ET AL., *supra* note 43, at 510.

¹⁹⁴ *Id.*

¹⁹⁵ *Id.*

¹⁹⁶ See World Bank, News Release No: 2000/179/LAC, *World Bank Discusses Report Of Advisory Panel On Yacyreta Hydro-Electric Project*, January 14, 2000, available at <http://www.worldbank.org>.

¹⁹⁷ *Id.*

The Inter-American Development Bank (IDB) also provides financing for many energy projects in the region and has developed its own energy and environmental policies and standards.¹⁹⁸ Nonetheless, the environmental standards of the Inter-American Development Bank (adopted in 1979) and the energy sector strategy (adopted in 2000) require major improvements, so they meet or exceed those of the World Bank.¹⁹⁹ Primary areas of concern are: lack of sustainability considerations in oil and gas upstream infrastructure planning and weak participation of civil society in project development.²⁰⁰

The IDB's strategies and standards have played a significant role in tailoring the environmental review and assessment of the natural gas developments in Peru's large Camisea fields, however. The IDB report summarizing performance of environmental and social commitments in the Camisea Project was released in December 2004.²⁰¹ The report explains the IDB's special approach to this project: "The IDB's support for Camisea represents a special approach toward private sector projects that responds adequately to legitimate environmental concerns and challenges, appropriately distributes economic benefits, projects social diversity and helps ensure long-term and sustainable development."²⁰² Notably, the IDB actually leveraged its relatively small contribution (8 percent of the total project cost) to achieve environmental standards for the entire project. It remains to be seen whether these commitments and standards are complied with as the

¹⁹⁸ See Inter-American Development Bank, Operational Policies in Environmental Management, Reference Document GP-73-3 (May 1979) [IDB, Operational Policies—Environment]. See also Jaime Millan, Inter-American Development Bank, *Energy Sector Strategy* (2000), available at <http://www.iadb.org>.

¹⁹⁹ IDB weight overhaul of its environmental policy, ECOAMÉRICAS, September 2005, Vol. 7, No. 11, at 1.

²⁰⁰ *Id.* See also Inter-American Development Bank, Blue Ribbon Panel on the Environment, Report of Recommendations (February 2005), available at <http://www.iadb.org>.

²⁰¹ Inter-American Development Bank, Report Summarizing Performance of Environmental and Social Commitments in the Camisea Project (December 2004) [IDB, Environmental/Social Report Camisea].

²⁰² *Id.* Executive Summary, at iv & 33.

project is actually carried out.

It has been suggested that some of these standards and guidelines can be used effectively as private law when host countries or lending institutions require energy developers to enter into agreements committing to follow such guidance or standards set forth in these documents.²⁰³ There may be shortcomings in using these standards, however, and particular problems have been noted in dealing with oil pollution in Latin America through codes of conduct.²⁰⁴ Indeed, “[m]any multinational oil companies have tried to develop codes of conduct for their operations in fragile environments like the Amazon.”²⁰⁵ For instance, a U.S.-based oil company doing business in Ecuador committed to using its code of conduct as a legal standard, which was implemented through its petroleum contact with Ecuador. Reportedly, government officials and local communities did not know what phrases such as “international standards” or “best practices” meant in terms of actual standards which were to be used.²⁰⁶

Much has been said and done on the topic of codes of conduct in the energy field. “Indeed, so many international codes dealing with environmental and sustainable development issues have now been developed that some companies and countries are suffering ‘code fatigue’ in attempting to track and compare all the codes.”²⁰⁷ In any event, codes of conduct and private environmental obligations require additional safeguards, including clearly identifying the standards and the source of the standards, as

²⁰³ See Weaver, *supra* note 42, at 60-61.

²⁰⁴ Weaver, *supra* note 42, at 64-65. See also Santiago A. Cueto, *Oil’s Not Well in Latin America: Curing the Shortcomings of the Current International Environmental Law Regime in Dealing with Industrial Oil Pollution in Latin America Through Codes of Conduct*, 11 FLA. J. INT’L L. 585 (1997); James L. McCulloch & Christina Maria Abascal Deboben, *The Foreign Corrupt Practices Act and Other Legal Considerations Relevant to the Oil and Gas Industry in Latin America*, 77 TUL. L. REV. 1075 (2003).

²⁰⁵ See BOSSELMAN ET AL., *supra* note 43, at 650.

²⁰⁶ *Id.* See Weaver, *supra* note 42, at 64-65.

²⁰⁷ See Weaver, *supra* note 42, at 64. See also BOSSELMAN ET AL., *supra* note 43, at 672.

well as requiring compliance with these standards, verifying compliance, and making the reports on compliance available to public.²⁰⁸

1.9 REGIONAL TRADE AGREEMENTS

The emergence of regional trade agreements has spurred trade in energy, including oil, natural gas, and electricity, throughout the region.²⁰⁹ The law of trade and investment, therefore, is also becoming of increasing relevance to an understanding of energy law at the regional level.²¹⁰ The relationship between trade/investment regimes—whether the World Trade Organization (WTO), regional or bilateral trade pacts—, and the various multilateral environmental agreements, however, is “somewhat obscure,” to say the least.²¹¹ Further, the relationship between the trade/investment and climate change regimes has not been sufficiently explored.²¹² The WSSD’s *Johannesburg Plan of Implementation*, seeking to strike a balance between trade/investment and multilateral environmental agreements, calls for “mutual supportiveness between the multilateral trading system and multilateral environmental agreements, consistent with sustainable development goals ... recognizing the importance of maintaining the integrity of both sets of instruments.”²¹³

There are several trade systems operating in the region (in addition to the WTO regime): the North American Free Trade Agreement (NAFTA); the Central American Free Trade Agreement (CAFTA), the Southern Common Market (*Mercosur*), and the

²⁰⁸ See BOSSELMAN ET AL., *supra* note 43, at 650.

²⁰⁹ See OLADE ET AL., A REVIEW OF THE POWER SECTOR IN LATIN AMERICA AND THE CARIBBEAN, (OLADE 2005) [OLADE, POWER SECTOR], at 49-50.

²¹⁰ See Mak & Soltau, *supra* note 24, at 211-214.

²¹¹ *Id.* at 213.

²¹² *Id.* at 214.

²¹³ *Johannesburg Plan of Implementation*, *supra* note 17, ¶ 98; Mak & Soltau, *supra* note 24, at 214.

Andean Community (*Comunidad Andina*).²¹⁴ The NAFTA only includes one country in the region, Mexico.²¹⁵ CAFTA is the trade/investment agreement including Costa Rica, the Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua and the United States.²¹⁶ More broadly, Central America and the Caribbean have developed the Central American Integration Subsystem (*Subsistema de Integración Económica Centroamericana*) and the Caribbean Community (*Caricom*).

The *Mercosur* is the trade pact for the south cone countries.²¹⁷ The *Comunidad Andina* is the integration system including the Andean countries of Bolivia, Colombia, Ecuador and Peru.²¹⁸ The negotiations for a hemispheric single trade agreement or Free Trade Area of the Americas (FTAA), which began in the Summit of the Americas held in December 1994 in Miami, essentially stalled in 2004. In contrast, several bilateral trade agreements have been negotiated, particularly between the United States and regional countries, such as the Chile-United States free-trade pact ratified in 2003.²¹⁹

CAFTA and NAFTA

The CAFTA, signed in August 2004, is designed to eliminate tariffs and trade barriers and expand services between the member countries. The agreement became effective in 2006 and immediately eliminated tariffs on many exports of consumer and industrial products, phasing out the rest over 10 years. CAFTA's energy-related trade includes a variety of products used in energy production and distribution, including fuels,

²¹⁴ See generally INTEGRACIÓN ECONÓMICA, *supra* note 62, at 58.

²¹⁵ NAFTA's text is available at <http://www.mac.doc.gov/nafta/naftatext.html>.

²¹⁶ CAFTA's text is available at <http://ita.doc.gov/cafta/index.asp>. It has yet to win approval in Costa Rica.

²¹⁷ *Mercosur's* text is available at <http://www.mercosur.int>. Members states include: Argentina, Brazil, Uruguay and Paraguay. Venezuela acceded to the system in 2006.

²¹⁸ The Andean Community's texts are available at <http://www.comunidadandina.org>. Venezuela withdrew its membership in 2006. In 2006, Chile was granted Associate Membership status. (Chile was a founding member of the Andean Pact, but later withdrew).

²¹⁹ As of 2006, the U.S. is negotiating bilateral trade agreements with Colombia, Ecuador and Peru. See

generators, electrical machinery and batteries. CAFTA does not include a chapter specifically dealing with energy, although it includes a chapter on environmental protection.²²⁰ NAFTA includes chapters specifically addressing both energy trade and environmental protection. In addition, NAFTA is complemented by a side-agreement on environmental cooperation that includes institutional support under the Commission for Environmental Cooperation (CEC).²²¹

The CAFTA includes environmental protection measures that largely reflect the Chile–United States free trade pact ratified in 2003, featuring an environmental chapter and an environmental cooperation accord. CAFTA goes beyond the Chile–United States pact in some ways—for instance, by including a citizen-complaint process similar to the one created under the environmental side-agreement to NAFTA—.²²² CAFTA also allows sanctions of up to 15 million U.S. dollars on member nations that fail to enforce their environmental laws. But it does not create an effective mechanism for significantly expanding enforcement or an institutional mechanism for technical cooperation and monitoring environmental performance, like the Commission for Environmental Cooperation (CEC), created under NAFTA’s environmental side agreement.

Neither the CAFTA nor the NAFTA regimes address the environmental implications of energy-related trade. Moreover, these agreements fail to provide mandatory environmental protection in energy operations connected with trade in energy. The Central American Commission on Environment and Development, an initiative to harmonize environmental regulations within the subregion, has made some progress but

Green issues at stake in U.S.-Andean trade talks, ECOAMÉRICAS, July 2004, Vol. 6. No. 9, at 1 & 9.

²²⁰ See CAFTA’s Chapter 17.

²²¹ See NAFTA’s Chapters 6 & 11; North American Agreement on Environmental Cooperation (1993).

²²² *How green are Cafta’s environmental provisions?*, ECOAMÉRICAS, March 2004, Vol. 6. No. 5, at 1 & 9.

has not advanced to the point of having reached consensus on any harmonizing initiative.²²³ The same is true in the Andean Community system and in the Southern Common Market system, where initiatives to harmonize environmental regulations and policies are still in early stages of implementation, as discussed below.²²⁴

The Southern Common Market (Mercosur)

The Southern Common Market (*Mercosur*), established by the Treaty of Asuncion in 1991, has a mandate to establish an integrated market with due regard to the “conservation of the environment.”²²⁵ *Mercosur* seeks the coordination of economic and sectoral policies among member countries and the harmonization of legislation, as appropriate, to advance the integration process.²²⁶ *Mercosur*’s commitment to sustainable development and to the implementation of international and domestic environmental law was stressed by the member countries in the Declaration of Canela (*Declaración de Canela*).²²⁷

Mercosur has two main decision-making organs that can issue norms which take the form of decision or resolutions.²²⁸ The Council of the Common Market (*Consejo del Mercado Común*), is the highest body in charge of guiding the process of market integration. The Council is formed by the Ministers of Foreign Affairs and Finance and issues norms that are termed decisions. The Group of the Common Market (*Grupo Mercado Común*) is the executive body, responsible for establishing action plans and

²²³ See Central American Commission on Environment and Development’s website at <http://www.ccad.ws>.

²²⁴ See Victor M. Tafur, *International Environmental Harmonization - Emergence and Development of the Andean Community*, 12-2 PACE INT’L L. REV., 283 (2000).

²²⁵ See “Tratado de Asunción, 26 de marzo de 1991,” [Treaty of Asuncion]; SECRETARÍA DE MERCOSUR, MEDIO AMBIENTE EN EL MERCOSUR (2006) [Mercosur, Medio Ambiente], at 5.

²²⁶ See Treaty of Asuncion, *supra* note 225, art. 1

²²⁷ See Mercosur, Medio Ambiente, *supra* note 225, at 13-14.

²²⁸ See “Protocolo Adicional al Tratado de Asunción Sobre la Estructura Institucional de Mercosur, Protocolo de Ouro Preto, 19 de diciembre de 1994,” available at <http://www.mercosur.int>.

negotiating free trade accord with other parties. This body is composed of representative of the Ministries that make part in the Council and can also adopt norms which take the form of resolutions.

With respect to environmental protection, a permanent working group on environmental issues was established in 1995.²²⁹ In June 1995, the environmental ministers of *Mercosur* stressed priority areas for action, which were memorialized in the Declaration of Taranco (*Declaración de Taranco*).²³⁰ A formal permanent meeting of ministers of the environment was created in 2003.²³¹ This meeting prepares environmental decision to be presented to the Council of *Mercosur*.²³²

Both decision-making bodies of *Mercosur*, the Council and the Group, have issued directives relating to energy and environmental policy that generally seek environmentally-sound energy trade within the block. As early as 1993, *Mercosur's* Group adopted its Directive on Energy Policy. This directive sets forth a ambitious strategy on energy policy that includes three main components. First, the integration of energy markets with free trade for sales and purchases of energy and the transportation of energy products. Second, the optimization of the production and use of energy resources; the promotion of rational energy use and conservation; the promotion of the production and use of renewable energy resources that are environmentally sustainable. Third, the harmonization of environmental laws and the development of legal and institutional frameworks that would encourage the mitigation of adverse environmental impacts resulting from the production, transportation, storage and use of energy, as well as the

²²⁹ See “Resolución GMC No. 20/95,” (Mercosur); “Resolución GMC No. 38/95,” (Mercosur).

²³⁰ See Mercosur, Medio Ambiente, *supra* note 225, at 14-15.

²³¹ “Decisión CMC No. 19/03,” (Mercosur).

²³² *Id.* art. 1.

incorporation of the environmental cost of energy.²³³

In 1994, *Mercosur's* Basic Directive on Environmental Policy adopted several environmental principles related to the market integration process.²³⁴ This directive also calls for the harmonization of environmental legislation, but notes that harmonization does not mean the establishment of a single body of legislation. Instead, a comparative analysis of the environmental laws “as applied” must be conducted, with the goal of ensuring fair competitiveness throughout the member states.²³⁵ Other principles of *Mercosur's* environmental strategy include: the promotion of sustainable development; the conservation and rational use of the natural resources, the mandatory use of environmental assessment and environmental licensing; the minimization of pollution and polluting activities; and, the strengthening of institutional capacity for environmental sustainability.²³⁶

In 2001, the Council of *Mercosur* adopted the Environmental Framework Accord on the Environment, which came into effect in 2004 after ratification by the member states.²³⁷ This is currently *Mercosur's* main directive on the environment. The directive reaffirms the principles set forth in the *Rio Declaration*, and provides a set of principles to govern environmental cooperation between member States.²³⁸ Further, the 2001 directive identifies specific areas where cooperation must be pursued and certain goal to accomplish that are generally linked to sustainable development, and incorporates *Mercosur's* dispute resolution system to environmental matters. Other environmental

²³³ “Resolución GMC No. 57/93,” art. 1, Annex ¶¶ 2, 3, 7, 9 & 10 (Mercosur).

²³⁴ “Resolución GMC No. 10/94,” Annex (Mercosur).

²³⁵ *Id.* Annex ¶ 1.

²³⁶ *Id.* Annex ¶¶ 2-11 (Mercosur).

²³⁷ “Decisión CMC No. 02/01,” (Mercosur); Mercosur, Medio Ambiente, *supra* note 225, at 10.

²³⁸ “Decisión CMC No. 02/01,” (Mercosur), arts. 1-5, 6-8 & Annex.

directives adopted by the Council of *Mercosur* deal with the following areas: transportation of hazardous products within the *Mercosur* area;²³⁹ multi-mode transportation within *Mercosur*;²⁴⁰ the imposition of sanctions for violations to the directive on the transportation of hazardous products;²⁴¹ cooperation and coordination with regards to security in the *Mercosur* area (which includes environmental crimes);²⁴² and, environmental emergencies.²⁴³

Andean Community

The Andean Community (*Comunidad Andina*) evolved from the so-called Andean Pact (*Pacto Andino*), created in 1969 under the Cartagena Agreement (*Acuerdo de Cartagena*), to a more comprehensive integration system after its restructuring in 1996, pursuant to the Trujillo Protocol (*Protocolo de Trujillo*) and Sucre Protocol (*Protocol de Sucre*).²⁴⁴ The Trujillo Protocol was signed in March 1996; the Sucre Protocol was signed in June 1997. After its revamping in 1996, the Andean Community seeks “to promote the balanced and harmonious development of Member Countries.”

The Andean Community’s purpose is three-dimensional: a single Andean market, a development strategy and a strategy for social cohesion. As such, there are four key areas of action, including trade integration, sustainable development, common foreign policy and political/social cooperation. To establish the regulatory framework in the areas, the Andean Community’s decision-making body is the Andean Council of Foreign Ministers, which issues binding decisions and non-binding declarations. The decisions of

²³⁹ “Decisión CMC No. 02/94,” (Mercosur); “Decisión CMC No. 14/94,” (Mercosur).

²⁴⁰ “Decisión CMC No. 15/94,” (Mercosur).

²⁴¹ “Decisión CMC No. 08/97,” (Mercosur).

²⁴² “Decisiones CMC No. 22-23/99,” (Mercosur); “Decisiones CMC No. 10-13/00,” (Mercosur).

²⁴³ “Decisión CMC No. 14/04,” (Mercosur).

²⁴⁴ See Tafur, *supra* note 224, at 285-290; “Decisión 406 de 1997,” art. 1 (Comunidad Andina).

the Council, therefore, make the Andean Community Law.

While the Andean Community member countries have made progress to integrate as a trading block, so far they have failed to establish a regulatory framework geared towards sustainability in the subregion. Indeed, one of the main objectives of the Andean Community is the harmonization of environmental and development policies and norms to pursue sustainable development. To date, harmonization efforts have produced a single regional biodiversity strategy: the common regime on access to genetic resources, in recognition of the valuable genetic resources in the Andean sub-region is one of the areas with the wealthiest biological diversity.

The body of Andean Community laws on environmental matters comprises the following areas: Creation of the Andean Community's Council of Environmental and Sustainable Development Ministers;²⁴⁵ Regional Strategy for the Prevention of Disasters;²⁴⁶ Regional Biodiversity Strategy;²⁴⁷ Registration and Control of Chemical Insecticides for Agricultural Use;²⁴⁸ Creation of the Andean Committee of Environmental Authorities;²⁴⁹ Common Regimes on Access to Genetic Resources;²⁵⁰ Common Regime Regarding New Plant Varieties;²⁵¹ and, Andean System on Agriculture.²⁵²

Communitary programs, in early stages of development, continue in the following areas: sustainable agriculture; environmental management; climate change; and trade in

²⁴⁵ "Decisión 596 de 2004," (Comunidad Andina).

²⁴⁶ "Decisión 591 de 2004," (Comunidad Andina).

²⁴⁷ "Decisión 523 de 2002," (Comunidad Andina).

²⁴⁸ "Decisión 436 de 1998," (Comunidad Andina).

²⁴⁹ "Decisión 435 de 1998," (Comunidad Andina).

²⁵⁰ "Decisión 391 de 1996," (Comunidad Andina).

²⁵¹ "Decisión 345 de 1993," (Comunidad Andina).

²⁵² "Decisión 182 de 1983," (Comunidad Andina).

relation to sustainable development. The Paracas Declaration (*Declaración de Paracas*), signed in Paracas, Peru, on April 1, 2005, is the main community policy document on sustainable development.²⁵³ The declaration entrusted the Andean Committee of Environmental Authorities with the review and evaluation of an Andean plan to follow-up on the WSSD documents, and with the preparation and implementation of the Andean Environmental Agenda 2006-2010 (*Agenda Ambiental Andina 2006-2007*), which was adopted in September 2006.²⁵⁴ There are no community norms on the environment, other than the common regime on access to genetic resources, as noted above.

As for energy, the first step towards energy integration was the adoption of a general legal framework for subregional interconnection of electric power systems and intra-community exchange of electricity.²⁵⁵ By March 2003, the electric systems of Colombia and Ecuador had been interconnected, and by 2005 the entire subregion had been interconnected.²⁵⁶ Despite being a major producing and exporting region of hydrocarbons, there is no legal framework for subregional gas interconnection and intra-community gas exchange. Nevertheless, the community's Energy Action Plan, adopted in June 2003, calls for the promotion of natural gas interconnections and harmonized regulatory frameworks for oil and natural gas. The Andean Energy Action Plan also calls for cooperation for the promotion of alternative energy sources in the subregion and to link access to energy services with the formulating and execution of the Andean social agenda. The use of renewable energy sources as means to provide as access to basic services is considered vital in antipoverty and rural Andean programs.

²⁵³ The Paracas Declaration is *available at* <http://www.comunidadandina.org>.

²⁵⁴ See "Comunidad Andina, Secretaría General, *Agenda Ambiental Andina 2006-2007*," (2006).

²⁵⁵ See "Decisión 536 de 2002", (Comunidad Andina).

²⁵⁶ See OLADE, Report 2004, Regional Overview, *supra* note 2.

Towards a Regional Energy Accord?

Despite increasing environmental policies and rules in the regional free trade agreements, such as *Mercosur* and the *Comunidad Andina*, there is a need for stronger regional legislation on sustainable energy. To start, the adverse environmental effects from increasing regional trade must be considered. The lack of adequate environmental protection measures in regional trade agreements causes concern because they fail to anticipate increasing environmental degradation caused by the trade-related development fostered by the agreements. The underlying concern is that trade/investment provisions may undercut environmental norms and policies. Further, trade and investment protection measures contained in these trade systems may create disincentives to enact or enforce environmental provisions. Thus, the trade agreements may limit the ability to regulate environmental protection in the energy sector or undermine efforts to enact tough environmental measures, in particular to the oil and gas sector.

A Latin American regional agreement on energy, along the lines of the Energy Charter Treaty, which relates largely to energy trade and investment, is worth considering to foster energy integration, environmental harmonization, and sustainability. The Energy Charter Treaty was developed on the basis of the Energy Charter Declaration of 1991. The Energy Charter Treaty²⁵⁷ and its Protocol on Energy Efficiency and Related Environmental Aspects were signed in December 1994 and entered into legal force in April 1998.²⁵⁸ As of 2006, the Treaty has been signed, or acceded to, by fifty-one states

²⁵⁷ See Energy Charter Treaty, Dec. 17, 1994, *reprinted in* 33 I.L.M. 366 (1995), *available at* <http://www.encharter.org>. See also COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5, at 173.

²⁵⁸ See Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects, Dec. 17, 1994 (as amended on April 24, 1998), *available at* <http://www.encharter.org>.

plus the European Union, including countries from Europe as well Russia, Japan and Australia.

The fundamental aim of the Energy Charter Treaty is to establish rules on energy-related investments and trade to be observed by all participating countries. The Treaty's provisions focus on five broad areas: the protection and promotion of foreign energy investments (based on the extension of national treatment or most-favored nation treatment); free trade in energy materials, products and energy-related equipment, based on the WTOrganization rules; freedom of energy transit through pipelines and grids; reducing the negative environmental impact of the energy cycle through improving energy efficiency; and mechanisms for the resolution of State-to-State or Investor-to-State disputes.

Article 19 (Environmental Aspects) of the Energy Charter Treaty, requires each contracting party to pursue sustainable development taking into account obligations under multilateral environmental agreements and to “strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside the Area from all operations within the Energy Cycle in its Area taking proper account for safety. In doing so each Contracting Party shall act in a Cost-Effective manner.”

Scholars generally agree that “[a]lthough the Energy Charter may be considered the first major investment treaty to include explicit environmental provisions, the environmental provisions are written to avoid any real substantive obligation ... Even the environmental impact assessment provision is written to limit any binding effect.”²⁵⁹ Further, the Energy Charter Treaty excluded the environmental provisions from the

²⁵⁹ HUNTER ET AL., *supra* note 41, at 1300.

normal dispute resolutions provisions of the Energy Charter Treaty system. As noted by Professors Bosselman,

Such vagueness still allows for a priority of economic concerns over environmental concerns, and thus does not even meet the minimum standards for sustainable development. The Protocol could, therefore, have been expected to give some further guidance. Instead, the Protocol provides a menu of good practices that may be good enough for states with transitional economies, but merely reflect OECD practices. It certainly does not add to the understanding of sustainable development and its importance for energy law and policy.²⁶⁰

Furthermore, it has been noted that, whereas the Energy Charter Treaty is a legally-binding multilateral instrument, the Protocol on Energy Efficiency is mostly a declaration of political intent to promote energy cooperation.

Despite its flaws, the Energy Charter Treaty is perhaps the most advanced regional—if not international—agreement concerning energy-related trade and investment and the environmental effects of its production and consumption. Therefore, it is still the benchmark in these areas and provides a useful model for the region. Several options could be considered, including: incorporating and implementing its principles into the existing systems in place; joining the Energy Charter Treaty; and, establishing a specific Latin American Energy Charter, which could be pursued under the auspices of the Latin American Energy Organization (OLADE).

²⁶⁰ See Bosselman, *supra* note 20, at 91-92. See also Mak & Soltau, *supra* note 24, at 217.

CHAPTER 2 – CONSTITUTIONAL AND CIVIL LAW CONTEXT

This chapter addresses the basic constitutional and civil law principles related to energy and environmental legislation in the countries of Latin America. While each Latin American country offers a unique perspective, the analysis that follows focuses on the common approaches, noting country-to-country variations to the key concepts and principles. Constitutional issues related to energy and environmental regulations are also discussed in subsequent chapters, in a country-specific basis.

Constitutional law defines ownership over natural resources, the rights of individuals and collectivities, as well as economic principles and the distribution of power, thus providing the basis for environmental and energy regulation. Civil law, grounded on the civil code, traditionally regulates property issues, including regimes on the use of natural resources, as well as civil liability, among other matters. Notably, civil codification and civilian principles predate constitutional enactments in the region.

Latin American constitutions and civil codes typically declare common ownership of all natural and energy resources. This principle is grounded in Roman law and the civil law tradition. Moreover, Roman law and civil law concepts appear in constitutional provisions, energy and environmental laws, and are regularly mentioned by the courts and decision-makers dealing with energy and environmental issues. Therefore, a brief introduction to Roman law principles and to the origin of modern civil law concepts in relation to natural and energy resources is useful in comprehending energy and environmental legislation in Latin America. The rest of the chapter discusses constitutional rights, such as the rights to environmental quality, to health, to essential public service and to access information, as well as the means to enforce these rights.

2.1 ROMAN LAW AND CIVIL LAW BACKGROUND

Roman Law Background

Civil law jurisdictions in the region have indelible vestiges of Roman law and, significantly, are still influenced by Roman legal concepts.²⁶¹ The key point, for purposes of this discussion, is that Roman property was not fully privatized. Roman law recognized state and communal ownership, derived from pre-state or natural law.²⁶² Four categories of *res* (things) not privately owned were elaborated: *res communes*, *res publicae*, *res universitatis* and *res nullius*.

Res communes were common property or no one's property.²⁶³ The best approach to understanding this notion is to conceive of *res communes* as "vested in no-one at all."²⁶⁴ Roman actions were available to protect access to and use of *res communes*, which is the origin of the public interest actions discussed *infra* in section 2.6.²⁶⁵ *Res publicae* or *loca publica*, meaning state property, included rivers and harbors.²⁶⁶ The use of *res publicae* was granted to all citizens, but formal property was vested in the State or in communal bodies.²⁶⁷ *Res universitatis* were things vested in the citizen-body, and included the built environment rather than natural resources.²⁶⁸ *Res nullius* were things

²⁶¹ This section is based on an unpublished manuscript by the author for his Master in Environmental Law degree (LL.M.), titled *Property and Environmental Conservation in Civil Law Jurisdictions*.

²⁶² See Joshua Getzler, *Roman Ideas of Landownership*, in LAND LAW 86 (1998).

²⁶³ *Id.* (noting these are: "The things which are naturally everybody's are air, flowing water, the sea and the sea-shore (*Gaius Institutes* 2.1)."). Getzler also points out that English law has no direct parallel to *res communes*. *Id.*

²⁶⁴ *Id.* at 87 ("This *res communes* can be seen as a type of common usufruct.").

²⁶⁵ *Id.*

²⁶⁶ *Id.*

²⁶⁷ *Id.* at 88 ("So every body shares the right to fish in them" (*Inst.*2.1.2).").

²⁶⁸ *Id.* See also PLANIOL, *TRAITÉ ÉLÉMENTAIRE DE DROIT CIVIL*, Vol.1, Part 2, (Louisiana State Law Institute, 1959), at 800. The term *res fisci* or *res fiscales*, was used for state property which resembles that of the individual. *Id.* at 808.

unowned, but which could be reduced to private control or possession.²⁶⁹ *Res nullius* consisted of wild animals, birds and fish—all the natural creatures of the land, the air and the sea. A person who captured something *res nullius* became its owner.²⁷⁰ These Roman concepts are valid in today's civil law jurisdictions. Indeed, “things that pertain to the environment are either privately owned, publicly-held [*res communes*, *res publicae* and *res universitatis*] or *res nullius*.”²⁷¹

Roman law is the source for other key concepts in the civil law tradition. Particularly important, “Roman jurisprudence invented many of the key concepts describing landownership that operate in the legal world today.”²⁷² For instance, the three elements of the right of ownership are *usus*, *fructus*, and *abusus*; respectively, these terms mean the rights to use, to take profits, and to change or alienate the thing. *Dominium* was the absolute ownership, meaning the “absolute” right to claim title over a thing.²⁷³ Later civil law scholars developed the concept of *dominium* as *ius utendi, fruendi, abutendi*, which is still today the basic definition of property in the Civil law tradition.²⁷⁴

Background on Civil Law Principles

The starting point for modern civil law principles is the French Revolution of 1879, which gave rise to the enactment of a codification of civil law.²⁷⁵ More precisely, the constitutional enactment that was passed following the revolution provided for the

²⁶⁹ See Getzler, *supra* note 262 at 89.

²⁷⁰ *Id.* at 88. Another example of *res nullius* is abandoned property.

²⁷¹ FUNDACIÓN AMBIENTE Y RECURSOS NATURALES, INDICADORES SOBRE JUSTICIA Y AMBIENTE (FARN 2006), at 34 [FARN, JUSTICE AND ENVIRONMENT].

²⁷² See Getzler, *supra* note 262, at 81.

²⁷³ *Id.* at 82-83 (“Centuries later, *dominium* evolved into a mystical idea connoting complete and unchanged domination and control of the land and other objects that were within one’s property.”).

²⁷⁴ See Robert Feenstra, *Dominium and ius in re aliena: The Origins of a Civil Law distinction in NEW PERSPECTIVES IN THE ROMAN LAW OF PROPERTY* (1989), at 112.

²⁷⁵ See generally ANDREW WEST, ET AL., *THE FRENCH LEGAL SYSTEM* 17 & 153 (Butterworths, 2nd ed, 1998).

drafting of a civil code. However, not until Napoleon took a personal stake in the process was the civil enactment completed. In 1804 a *Code Civil* was passed. This document was characterized by the brevity and generality of its provisions. The *Code Civil* later became known as the *Code Napoléon*, “and rightly so, for Napoleon had been actively involved in seeing through its implementation.”²⁷⁶ Notably, the *Code Civil* distinguished between the public and private domain, and enumerated the categories of property composing the public domain.²⁷⁷

In the 19th Century, however, the counter-notion of the Gendarme State rejected the idea of public ownership.²⁷⁸ Liberal thinking at the time argued that the State did not have ownership and was simply a guardian of public property.²⁷⁹ Advocates of this view argued that the public bodies did not own property because they lacked the prerogatives of the right of property that had been recognized since ancient Rome: *usus*, *fructus*, and *abusus*.²⁸⁰ This way of thinking was abandoned, thanks to the important influence of Maurice Hauriou.²⁸¹ Hauriou convinced civil law scholars that the State had all the rights involved in the notion of property, explaining that “the veritable cause of a thing forming part of the public domain was its mere dedication to a public service.”²⁸² In doing so, the civil law tradition preserved the basic notions of property law embedded in Roman law and in the *Code Civil*, which were subsequently built-in the Latin American legal tradition.

²⁷⁶ *Id.* at 21.

²⁷⁷ PLANIOL, *supra* note 268, at 812.

²⁷⁸ See Juan Carlos Henao, *Collective Rights and Collective Actions: Samples of European and Latin American Contributions* 9 (October 2003) (unpublished manuscript on file with author); JAIME VIDAL PERDOMO, DERECHO ADMINISTRATIVO 330-333 (Ed. Temis, 8th ed, 1985); Sabsay, *supra* note 69, at 36.

²⁷⁹ Henao, *supra* note 278, at 9.

²⁸⁰ *Id.* at 10; VIDAL PERDOMO, *supra* note 278, at 333.

²⁸¹ Henao, *supra* note 278, at 9. See also VIDAL PERDOMO, *supra* note 278, at 333.

²⁸² PLANIOL, *supra* note 268, at 812.

The *Code Civil* also lays the foundation of civil liability, which is either contractual (related to contractual obligations) or extra-contractual (related to all non-contractual liability).²⁸³ In general, Latin American legislations resort to the application of *Code Civil* principles to address issues of non-contractual civil liability, which is the type of civil liability that generally encompasses environmental liability.²⁸⁴ The standard of care and measure of non-contractual civil liability (not involving governmental officials and bodies) follow the rules applicable to the particular situation and persons set forth in the Civil Code and, in some instances, will imply application of strict or absolute liability principles.²⁸⁵ “Civil liability may, in some cases, be extended to technical and professional personnel who may be held jointly and severally liable with the owners and operators for any damages.”²⁸⁶ The civil law rule is to grant standing to sue only to those persons with a legitimate interest in the civil liability action, i.e., directly affected in their property or person. Liability rules for actions and omissions involving governmental officials and bodies evolved under a separate and distinct area of the law: Administrative law.²⁸⁷

Throughout the Latin American region, both natural persons and legal entities (also termed “fictitious persons”) are liable under civil law. In contrast, “[a]s a general rule, under civil law systems that follow the Romano-Germanic tradition, criminal law applies only to natural persons and not to artificial or fictitious persons as may be the case

²⁸³ MAZEAUD ET AL., *LECCIONES DE DERECHO CIVIL* (EJEA, 1978) [Mazeud, Civil Law Treatise], Part II, Vol. II at 4-27. See generally MAZEAUD ET AL., *TRATADO DE LA RESPONSABILIDAD CIVIL* (COLMEX, 1945) [Mazeud, Civil Liability Treatise].

²⁸⁴ See OLADE/University of Calgary Study, *supra* note 3, at 104.

²⁸⁵ *Id.* The 1804 *Code Civil*’s rules on non-contractual civil liability were contained in just five provision (arts. 1382-1386). See Mazeud, Civil Liability Treatise, *supra* note 283, Vol. I, Preface at XII; See Mazeud, Civil Law Treatise, *supra* note 283, Part II, Vol. I, at 16.

²⁸⁶ Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 243.

²⁸⁷ See VIDAL PERDOMO, *supra* note 278, at 363-371.

in common law jurisdictions.”²⁸⁸ Criminal liability, which requires *mens rea*, however, may be imposed on directors and officers of corporate entities.

These civil and criminal liability principles affect enforcement. In civil law systems, enforcement jurisdiction is divided in judicial and administrative. Civil law offenses are defined as criminal, civil or administrative from the outset, and their application follows distinct and separate paths.²⁸⁹ Liability of governmental officials and bodies follow strict liability rules and are dealt with entirely within the administrative law court system (*jurisdicción contencioso administrativa*). Criminal and civil liability (not involving governmental officials and bodies) fall within the general judicial system.²⁹⁰

2.2 COLLECTIVE RIGHTS, ENERGY AND THE ENVIRONMENT

Collective Rights: The Notion

The notion of collective rights is fundamental to understand energy and environmental legislation in the Latin American region. A collective right—also termed “diffuse” right—means a specific constitutional right that is granted to a social group, rather than to an individual.²⁹¹ An individual directly affected may seek the protection of a collective right, but his claim is valid and effective only if the individual is a member of the social group that has been awarded legal protection. Then, “[e]ven though the right does not belong exclusively to the individual, he [or she] does have a right to protect it [on behalf of the group].”²⁹² It is important to underscore that collective rights have existed since ancient times – elaborated by the Romans as discussed above – and received

²⁸⁸ Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 241.

²⁸⁹ *Id.* at 242.

²⁹⁰ *Id.* See VIDAL PERDOMO, *supra* note 278, at 363-371. See generally JUAN CARLOS HENAO, EL DAÑO (Universidad Externado de Colombia, 2003).

²⁹¹ Henao, *supra* note 278, at 8; FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 2.

²⁹² *Id.*

constitutional recognition in Latin American countries during the last decades. Thus, the modern collective rights are vestiges of the Roman law concept of *res communes*, those things belonging to all the people.²⁹³

Collective rights are what modern constitutional law calls “third-generation rights” or “subjective public rights.”²⁹⁴ According to Professor Daniel A. Sabsay, each stage in the evolution of constitutional law has been characterized by the recognition of a generation of rights.²⁹⁵ A first generation of rights and liberties appeared with the American and French Revolutions in 1776 and 1789, respectively. A second generation of rights followed the recognition of “social rights” in the Mexican Revolution of 1917, the Russian Revolution of 1919, and in European Constitutions in the 1920s and 1930s.

Collective rights appeared in the latter part of the 20th Century with the recognition of wider social and economic interests, the rights of the consumer, the rights of indigenous people, and the encouragement of democratic participation in public affairs by regular citizens and non-governmental organizations.²⁹⁶ Collective rights now coexist and interplay with the two previous groups of rights, individual and social. Professor Martín Mateo contends that in order for the notion of collective rights to develop completely greater access to the courts to enforce their recognition is necessary.²⁹⁷

²⁹³ See M. Stuart Madden, Mary J. Davis & Victor M. Tafur, *Comparative Colombian and United States Law of Civil Actions for Mass Injury*, Paper delivered at the Sixth World Conference on Injury Prevention and Control (World Health Organization), May 15, 2002, Montreal, Quebec, Canada (Unpublished).

²⁹⁴ See Sabsay, *supra* note 69, at 37; OSCAR DARÍO AMAYA NAVAS, *LA CONSTITUCIÓN ECOLÓGICA DE COLOMBIA: ANÁLISIS COMPARATIVO CON EL SISTEMA CONSTITUCIONAL LATINOAMERICANO* 163 (Universidad Externado de Colombia 2002); INTEGRACIÓN ECONÓMICA, *supra* note 214, at 58.

²⁹⁵ See Sabsay, *supra* note 69, at 35-37.

²⁹⁶ *Id.* See Henao *supra* note 278, at 3; CARLOS LLERAS DE LA FUENTE ET AL., *INTERPRETACIÓN Y GÉNESIS DE LA CONSTITUCIÓN DE COLOMBIA* 182 (Cámara de Comercio de Bogotá 1996).

²⁹⁷ MARTÍN MATEO, *supra* note 68, at 48-49.

Collective Rights in Latin American Constitutions

Most constitutions in Latin America recognize collective rights. They generally consider the right to environmental quality and the rights of indigenous people to be collective rights.²⁹⁸ It is important to note that the notion of collective rights is not limited to environmental rights and indigenous people's rights; it includes rights to the historic and cultural patrimony, the morality of the public administration, and the interests of the consumers at large, among others. For example, the Brazilian Constitution expressly enumerates the following collective rights: environmental quality, historic and cultural patrimony, the morality of the public administration and the interests of the consumers.²⁹⁹ Some countries also recognize economic competition, anti-trust protection and the like, as forms of collective interests.³⁰⁰ In addition, it is worth noting that "[f]or several decades, the Inter-American Commission on Human Rights, in the course of administering its mandate, has accepted the existence and validity of collective interests, generally, and in the particular situation of indigenous peoples."³⁰¹

The rights of indigenous peoples have been recognized in the constitutions of some Latin American countries or have developed through specific legislation.³⁰² The validity of such collective interests of indigenous peoples has been put to the test in various cases involving energy developments in indigenous territories. Indeed, in many instances the rights of indigenous peoples, in their collective nature, clash with the rights

²⁹⁸ See generally AMAYA NAVAS, *supra* note 294.

²⁹⁹ See CONST. arts. 5 & 225 (Braz.).

³⁰⁰ See Sabsay, *supra* note 69, at 37; Henao, *supra* note 278, at 8-9.

³⁰¹ Osvaldo Kreimer, *Collective Rights of Indigenous Peoples in the Inter-American Human Rights System, Organization of American States*, 94 AM. SOC'Y INT'L L. PROC. 315, 315. See *supra* §§ 1.6, 1.7.

³⁰² See JUSTICIA AMBIENTAL: CONSTRUCCIÓN Y DEFENSA DE LOS NUEVOS DERECHOS CULTURALES Y COLECTIVOS EN AMÉRICA LATINA 14-18 (Enrique Leff ed., PNUMA 2001) [JUSTICIA AMBIENTAL]; María Magdalena Gómez Rivera, *El Derecho de los Pueblos Indígenas: Su Naturaleza Colectiva. Id.* at 259-274.

of the State or its concessionaires to explore and exploit energy resources.³⁰³ Whether it is the construction of a large dam forcing their displacement and relocation, or the development of hydrocarbon resources causing environmental and social degradation, indigenous people face constant challenges from the energy industry.

Constitutional recognition of ancestral rights of indigenous communities occurs in Bolivia, Brazil, Colombia, Ecuador, and Venezuela.³⁰⁴ A lesser degree of recognition appears in the constitutional regimes of Argentina, Mexico and Peru.³⁰⁵ Chile enacted a law providing rights to indigenous people without a specific constitutional recognition of these communities.³⁰⁶ Indigenous territories have been established in Bolivia, Brazil, Colombia, Ecuador and Peru.³⁰⁷ In Colombia this resulted in indigenous people electing congressional representatives, even though they comprise about 8 percent of the population.³⁰⁸

The Brazilian Constitution does not list the right of indigenous peoples as a collective interest, but it does recognize indigenous custom and organization.³⁰⁹ Thus, in effect, rights of indigenous peoples may be afforded collective protection.³¹⁰ Similarly, Argentina and other countries in the region give protection to the ethnic and cultural

³⁰³ See, e.g., Maura Mullen de Bolivar, *A Comparison of Protecting the Environmental Interests of Latinamerican Indigenous Communities from Transnational Corporations under International Human Rights and Environmental Law*, 8 J. TRANSNAT'L L. & POL'Y 105 (1998); Jennifer E. Brady, *The Huaorani Tribe of Ecuador: A study in Self-Determination for Indigenous Peoples*, 10 HARV. HUM. RTS. J. 291 (1997); Judith Kimerling, *Rio + 10: Indigenous Peoples, Transnational Corporations and Sustainable Development in Amazonia*, 27 COLUM. J. ENVTL. L. 523 (2002); See e.g., Gerald P. Neugebauer III, *Indigenous People as Stakeholders: Influencing Resource-Management Decisions Affecting Indigenous Community Interest in Latin America*, 78 N.Y.U.L. REV. 1227, (2003).

³⁰⁴ See CONST. art. 1 (Bol.); CONST. 231 (Braz.); CONST. art. 330 (5) (Colom.); CONST. art. 84 (Ecuador); CONST. arts. 120, 123 (Venez.).

³⁰⁵ See e.g. CONST. 75 (Arg.); CONST. 4 (Mex.). See Gómez Rivera, *supra* note 302, at 261.

³⁰⁶ Gómez Rivera, *supra* note 302, at 261.

³⁰⁷ *Id.*

³⁰⁸ *Id.*

³⁰⁹ CONST. art. 231 (Braz.).

³¹⁰ See Gómez Rivera, *supra* note 302, at 260.

identity of these collectivities.³¹¹ In Mexico, some areas are mainly populated by indigenous people who have their own organizations, laws, customs, religions, languages, and traditions. “While these indigenous groups are granted special protection under Mexican law as minorities, their political organizations are not officially recognized and may only be used to deal with local issues.”³¹²

2.3 THE CONSTITUTIONAL RIGHT TO ENVIRONMENTAL QUALITY

Background: The Constitutions of Portugal and Spain

In the constitutional sphere, the concept of a right to environmental quality can be traced back to the Constitution of Portugal of 1976. It is the first modern constitution to grant a fundamental right to enjoy environmental quality, a duty to protect it, a legal action to enforce it, and a clear mandate to incorporate environmental protection in state actions, states Professor Guillermo Escobar Roca.³¹³ Notably, the 1976 Portuguese Constitution also included cultural and historic heritage as part of the environmental values receiving constitutional protection.³¹⁴

The Constitution of Spain of 1978 followed a similar approach to the Portuguese Constitution. However, it stopped short of making the enjoyment of environmental quality a fundamental right. The Spanish Constitution provides that “[e]veryone has the right to enjoy an environment suitable for the development of the person as well as the duty to preserve it.”³¹⁵ It further states that public authorities shall “ensure that all natural resources are used rationally, with a view to safeguarding and improving the quality of

³¹¹ See e.g., CONST. art. 75 (Arg.).

³¹² Commission for Environmental Cooperation of North America, *Summary of Environmental Law in North America, Mexico* [CEC, Environmental Law in Mexico], § 1.3, available at <http://www.cec.org>.

³¹³ See ESCOBAR ROCA, *supra* note 171, 29-33; CONST. art. 66 (1-4) (Port.).

³¹⁴ CONST. art. 66 (2) (c) (Port.). See ESCOBAR ROCA, *supra* note 171, at 30.

³¹⁵ CONST. art. 45 (1) (Spain). See ESCOBAR ROCA, *supra* note 171, at 39-44.

life and protecting and restoring the environment.”³¹⁶

The use of the expression “quality of life” in the Spanish Constitution is criticized by some, who claim that the term is ambiguous, that it lacks a legal content, and that its connection with the environment is not clearly spelled out in the constitutional text.³¹⁷ Others believe that the use of this term gives environmental protection an anthropocentric approach. This means, for instance, that the scope of the environmental impact assessment required for certain projects must focus on the human environment.³¹⁸

As stated above, the Spanish constitutional provision on environmental protection does not entail a fundamental right.³¹⁹ The argument for this proposition is twofold.³²⁰ First, the provision is not inserted in the chapter dealing with “Rights and Liberties”;³²¹ instead, it appears in the chapter on “Guiding Principles of Economic and Social Policy.”³²² Second, the Constitution expressly differentiates the legal effects of the guarantees recognized in each of these chapters. Pursuant to the Spanish Constitution, recognized “Rights and Liberties” are “binding on all public authorities,” and “any citizen may make a claim ... before the regular courts through a process based on the principles of preference and speed and through the recourse before the Constitutional Court.”³²³

In contrast, “Guiding Principles of Economic and Social Policy” in the Spanish Constitution serve as parameters for the legislature, the judiciary, and public officials in

³¹⁶ CONST. art. 45 (2-3) (Spain). See ESCOBAR ROCA, *supra* note 171, at 39-44.

³¹⁷ ESCOBAR ROCA, *supra* note 171, at 31.

³¹⁸ LOZANO CUTANDA, *supra* note 173, at 63.

³¹⁹ MARTÍN MATEO, *supra* note 68, at 48-49; ESCOBAR ROCA, *supra* note 171, at 65-70; LOZANO CUTANDA, *supra* note 173, at 75-76.

³²⁰ See ESCOBAR ROCA, *supra* note 171, at 65-66.

³²¹ CONST. Title I, Chapter 2 (Spain).

³²² *Id.* Chapter 3.

³²³ *Id.* arts. 24 & 53.

general, and may be raised through ordinary legal actions.³²⁴ The distinction is subtle but important. It means that only fundamental rights and liberties receive the highest constitutional protection. Based on this distinction, courts and scholars agree that the Spanish constitutional framers did not intend environmental protection to be regarded as a fundamental guarantee in the constitutional meaning of the term.³²⁵

The Constitutional Tribunal of Spain has indicated that the right to enjoy an environment suitable for the development of the person is not simply guidance, however. The Tribunal has held that this is a binding principle on all branches of government, and that the right can be claimed within the existing legal procedures.³²⁶ Nonetheless, the Tribunal has ruled that this right does not trigger the speedy and preferential procedures or the special constitutional recourse awarded to fundamental rights and liberties.³²⁷

In extreme circumstances the protection of the environment may be intricately connected with the protection of other fundamental rights, such as the right to life and the right to human dignity. Only in these exceptional circumstances would the protection of the environment entail the protection of a fundamental right. As noted in the preceding chapter, the European Court of Human Rights has taken this approach in *López Ostra v. Spain*, when interpreting the *European Convention on Human Rights*, which recognizes the right to respect for private and family life.³²⁸ Moreover, *López Ostra v. Spain* has influenced various decisions of the Spanish Constitutional Court in this matter.³²⁹

³²⁴ *Id.* arts. 24, 53 & 125.

³²⁵ See MARTÍN MATEO, *supra* note 68, at 48-49; ESCOBAR ROCA, *supra* note 171, at 65-66; LOZANO CUTANDA, *supra* note 173, at 63.

³²⁶ ESCOBAR ROCA, *supra* note 171, at 70-109; LOZANO CUTANDA, *supra* note 173, at 63 & 67-68..

³²⁷ LOZANO CUTANDA, *supra* note 173, at 67-68.

³²⁸ *López Ostra v. Spain*, *supra* note 172; See ESCOBAR ROCA, *supra* note 171, at 67-69; LOZANO CUTANDA, *supra* note 173, at 68-74.

³²⁹ LOZANO CUTANDA, *supra* note 173, at 73.

Environmental Protection in Latin American Constitutions

Widespread constitutional enactments related to environmental protection took place in the countries of Latin America during the 1980s and 1990s, or even earlier in some cases.³³⁰ As a result of these enactments, the right to environmental quality was expressly recognized in the constitutions of Argentina, Brazil, Colombia, Chile, Ecuador, Mexico and Venezuela.³³¹ Some constitutions use the expression “right to environmental quality” (*derecho a un ambiente sano*), which literally means “right to healthy environment” or variations thereof, such as the “right to an adequate environment”.³³² Some constitutions refer to the “right to an ecologically balanced environment”, while others use combinations of both expressions.³³³ For instance, the Brazilian Constitution provides: “All have the right to an ecologically balanced environment, which is an asset of common use and essential to a healthy quality of life.”³³⁴

Others constitutional regimes conceive environmental protection as a duty rather than a right. Peru’s Constitution illustrates the approach of imposing such a burden exclusively on the government.³³⁵ Some constitutions, like Argentina’s, stress both the duties and the rights in connection with environmental protection.³³⁶

In contrast, a few countries in the Central American region approach the

³³⁰ Argentina (1994), Bolivia (1967, amended in 1994), Brazil (1988), Colombia (1991), Chile (1980, amended 1989), Ecuador (1998), Mexico (1917, amended in 1971, 1983, 1987 and 1999), Peru (1979) and Venezuela (1999). *See generally* AMAYA NAVAS, *supra* note 294.

³³¹ CONST. art. 41 (Arg.); CONST. art. 225 (Braz.); CONST. art. 79 (Colom.); CONST. art. 19 (8) (Chile); CONST. art. 23 (6) (20) (Ecuador); CONST. art. 4 (Mex.); CONST. art. 127 (Venez.). *See* AMAYA NAVAS, *supra* note 294, at 216-307. *See also* José Maria Borrero Navia, *Derecho Ambiental y Cultura Legal en América Latina*, in JUSTICIA AMBIENTAL, *supra* note 302, at 57.

³³² *See* CONST. art. 79 (Colom.); CONST. art. 19 (8) (Chile); CONST. art. 4 (Mex.).

³³³ CONST. art. 41 (Arg.); CONST. art. 225 (Braz.); CONST. art. 23 (6), (20) (Ecuador); CONST. art. 127 (Venez.).

³³⁴ CONST. art. 225 (Braz.).

³³⁵ CONST. art. 68 (Peru).

³³⁶ CONST. art. 41 (Arg.).

protection of the human environment as a human health issue. To cite one example, the Constitution of Honduras reads, “[t]he right to health protection is recognized. Every one has a duty to promote and protect personal health and that of the community. The State shall conserve an adequate environment in order to protect the people’s health.”³³⁷ Another example of this approach is found in the Constitution of Guatemala, which refers to environmental rights in terms of environmental protection and sustainability, but the provision is inserted under the title “Health, Security and Social Services.”³³⁸

As noted by Professors Lila Katz de Barrera-Hernandez and Alastair Lucas, the human-health approach is usually backed by generic rights to clean air and water and also to an environment that is conducive to prosperity and that is free from any elements that may impact on a person’s physical—and in some cases emotional—well-being.³³⁹ “This is not to say that, in countries that have taken this approach, environmental laws do not go beyond strict health-related issues or that environmental legislation has developed differently than in the rest of the LAC [Latin American and Caribbean] countries.”³⁴⁰ The direct environment-health connection seems to stress the importance assigned to human wellbeing in relation to environmental protection, a feature that is common to the Latin American countries.³⁴¹

The concept of environmental protection in Latin America is closely related to that of “quality of life” and the “human environment”, notions developed in the basic legal international instruments concerning human rights and the environment which were

³³⁷ CONST. art. 145 (Hond.); Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 219 (footnotes omitted).

³³⁸ CONST. art. 97 (Guatemala). See OLADE/University of Calgary Study, *supra* note 3, at 60; AMAYA NAVAS, *supra* note 294, at 264 & 269..

³³⁹ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 219.

³⁴⁰ *Id.*

³⁴¹ *Id.*

discussed in Chapter 1. The concept “quality of life”—defined as generalized access to equitable living standards—evolved from the right to human dignity embedded in the *Universal Declaration of Human Rights*, and was developed further in the *Stockholm Declaration* and the *Rio Declaration*.³⁴²

Subsequently, the term “quality of life” was incorporated into the constitutional texts of Portugal and Spain and several countries in the Latin American region, such as Brazil and Ecuador.³⁴³ Human dignity and poverty reduction also are fundamental principles and objectives embedded in the constitutions of the countries in the region. For example, Brazil’s Constitution declares that a fundamental objective of the Nation includes the eradication of poverty and substandard living conditions and the reduction of social and regional inequalities.³⁴⁴

Environmental protection in the region focuses on the “human environment”, as opposed to just the “natural environment”. The “human environment” can be defined as the set of elements that make the existence and development of humans possible. It has an economic, environmental, and social context, and includes the natural, cultural, and historic heritage.³⁴⁵ Thus, Latin American constitutions do not limit the protection of the environment to natural resources, but also seek the minimum conditions for the well-being of all citizens, present and future.³⁴⁶ As stated by Professor Daniel A. Sabsay, “[q]uality of life as a legal right that must be protected has meant a vast expansion in the sphere of fundamental freedoms protected by law. Its scope does not only extend to the

³⁴² See *Universal Declaration of Human Rights*, *supra* note 63, arts. 1, & 25, *Stockholm Declaration* *supra* note 63, Principle 1; and *Rio Declaration*, *supra* note 71, Principles 1 & 8.

³⁴³ See, e.g., CONST. art. 45. (Spain), CONST. art. 225. (Brazil); CONST. arts. 23 (20), 86 (Ecuador).

³⁴⁴ CONST. art. 2 (Braz.). See also CONST. arts. 1, 170, & 225 (Braz.).

³⁴⁵ See Sabsay, *supra* note 69, at 33. See, e.g. CONST. art. 41 (Arg.).

³⁴⁶ See, e.g., INTEGRACIÓN ECONÓMICA, *supra* note 214, at 58-59; AMAYA NAVAS, *supra* note 294, at 164.

formulation of new human rights but also makes interesting contributions to the organization of power.”³⁴⁷

The right to environmental quality as a fundamental right of the individual with identical status to other fundamental rights and liberties of the individual is recognized in the constitutions of Chile, Ecuador, Mexico and Venezuela.³⁴⁸ Moreover, these constitutions enumerate this right along with other basic rights of the individual. The Constitution of Venezuela, which is the most recent constitutional enactment in the region, devotes an entire chapter to “Environmental Rights”.³⁴⁹

In Ecuador and Venezuela, the right to environmental protection is expressly recognized both, as a fundamental right of individuals and as a collective right. Thus, in these jurisdictions, constitutional environmental protection is afforded to two kinds of plaintiffs: the individual and the collectivity.³⁵⁰ Brazil’s “right to an ecologically balanced environment, which is an asset of common use” is clearly a collective right, but is found under the title “The Social Order”.³⁵¹ However, when dealing with fundamental rights and guarantees of the individual, the Brazilian Constitution refers to the protection of the environment.³⁵² Therefore, it seems that in Brazil, this right is both a fundamental right of the individual and a collective right.

Other constitutions in Latin America do not include environmental protection along with other basic rights and liberties of the individual. These jurisdictions include

³⁴⁷ See Sabsay, *supra* note 69, at 36.

³⁴⁸ CONST. art. 19 (8), 20 (Chile); CONST. art. 23 (6) (20), 86 (Ecuador); CONST. art. 4 (Mex.); CONST. arts. 127, 128 & 129 (Venez.). See AMAYA NAVAS, *supra* note 294, at 243-251 & 285-287.

³⁴⁹ CONST. Title III, Chapter IX, arts. 127, 128 & 129 (Venez.).

³⁵⁰ CONST. art. 127 (Venez.); CONST. art. 86 (Ecuador). See AMAYA NAVAS, *supra* note 294, at 248-251, 295-298; Borrero Navia, *supra* note 302, at 57.

³⁵¹ CONST. Title VIII, art. 225 (Braz.).

³⁵² CONST. Title II, Chapter I, art. 5 (XIX), (XX), (XXI) (XXII), (XXIII) (Braz.).

Argentina and Colombia. The Constitution of Argentina addresses the environment in a chapter titled “New Rights and Guarantees”.³⁵³ In the Constitution of Colombia, “the right to a healthy environment” is found in the chapter titled “Collective Rights and the Environment,” not under “Fundamental Rights.”³⁵⁴

The recognition of environmental quality as a fundamental right is highly significant. It means special constitutional protection, which implies a deferential treatment by public officials and the judiciary, and the possibility for the citizen of using a preferential and speedy legal recourse to claim or defend such right. The legal recourse to claim fundamental rights is usually termed *Amparo* (meaning protection), except in Colombia and Venezuela, where it is known as *Tutela* (meaning shelter). Latin American jurisdictions where environmental quality is not specifically recognized as a fundamental right, the traditional constitutional recourses of *Amparo* and *Tutela* have been expanded or specific actions granted to protect the constitutional right to environmental quality, as will be discussed *infra* in section 2.6.

2.4 THE RIGHTS TO HEALTH AND TO ESSENTIAL PUBLIC SERVICES

Health is regarded as a basic social right in most countries. In the Spanish Constitution, “[t]he right to health is recognized.”³⁵⁵ But, the right to health is listed under the “Guiding Principles of Economic and Social Policy”, as is the right to environmental quality. Thus, the right to health does not receive fundamental status in Spain.³⁵⁶ In contrast, several Latin American countries—including Brazil, Chile, Colombia, Ecuador, and Mexico—recognize both the right to health and the right to

³⁵³ CONST. art. 41 (Arg.).

³⁵⁴ CONST. Title II, Chapters I & 3 (Colom.).

³⁵⁵ CONST. art. 45 (Spain).

³⁵⁶ See MARTÍN MATEO, *supra* note 68, at 119-123.

environmental quality in their constitutional regimes.³⁵⁷ Whereas Chile and Mexico recognize both rights in the same constitutional provision (both rights are fundamental guarantees and receive the same protection under the law), the constitutions of Brazil, Ecuador, and Colombia deal with health and environmental rights in separate provisions.³⁵⁸ The Brazilian Constitution regards the right to health as a social right, while Colombia's right to health is found in the chapter titled "Social, Economic and Cultural Rights".³⁵⁹

Ecuador's Constitution imposes a duty on the State to provide potable water, basic sanitation services, and access to health services.³⁶⁰ Similarly, in Colombia, health services and sanitation are declared public services that are "to be provided by the State."³⁶¹ The Colombian Constitutional Court has explained that the right to health has two contexts. The first is its social context, which translates into the need for health services; the second is the environmental context, which relates to the human environment necessary for a healthy condition.

In sum, the right to health, which extends to sanitation in several countries, is a social right and, as such, belongs to the second generation of rights recognized in the constitutional regimes of the region. But the right to health also has a direct connection with the third tier of constitutional rights, particularly environmental rights and the rights of the consumer. The interrelation and interdependence of concepts and protective systems remains a challenge.

³⁵⁷ See, e.g., CONST. art. 6, 200, 225 (Braz.); CONST. art. 49, 79 (Colom.); CONST. art. 42, 86 (Ecuador), CONST. art. 4 (Mex.). See also AMAYA NAVAS, *supra* note 294, at 152.

³⁵⁸ CONST. art. 19 (8), (9) (Chile) & CONST. art. 4 (Mex.).

³⁵⁹ See CONST. art. 6 (Braz.); CONST. Title II, Chapter 2, art. 49 (Colom.).

³⁶⁰ CONST. art. 42 (Ecuador).

³⁶¹ CONST. art. 49 (Colom.). See AMAYA NAVAS, *supra* note 294, at 151.

At least a few regimes in Latin America have determined, at the constitutional level, that the state is obliged to secure universal access to essential public services, including access to energy. These countries are Ecuador and Mexico.³⁶² In Ecuador, the State is required to secure universal access to basic public services at affordable tariffs.³⁶³ Pursuant to Ecuador's Constitution, public services can be provided directly by the State or under delegation to mixed or private companies.³⁶⁴ In Mexico, the federal government is charged with the duty to "generate, transmit, transform, distribute, and supply electricity as a public service."³⁶⁵ These are considered "strategic areas" subject to federal governmental control.³⁶⁶

2.5 RIGHTS OF PETITION, ACCESS TO INFORMATION AND PUBLIC PARTICIPATION

Constitutional regimes in the region now recognize that citizens and non-governmental organizations should be actively involved in decision-making.³⁶⁷ Appropriate and meaningful public participation is warranted for key social, economic, and environmental processes, particularly to reach broad consensus and to find solutions in the areas of energy development and environmental protection. As proclaimed in the *Rio Declaration*:

Environmental issues are best handled with the participation of all concerned citizens ... each individual shall have appropriate access to information concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making

³⁶² CONST. art. 249 (Ecuador); CONST. art. 25 (Mex.).

³⁶³ CONST. art. 249 (Ecuador);

³⁶⁴ *Id.*

³⁶⁵ CONST. art. 27 (para. 6) (Mex.).

³⁶⁶ *Id.* art. 28.

³⁶⁷ See Sabsay, *supra* note 69, at 39-40.

processes.³⁶⁸

The rights of petition, access to information, and public participation in decision-making are the principal means of public involvement throughout Latin America. While some regimes recognize these rights in their constitutions, others have simply passed legislation affording these rights.

The right of petition is a general guarantee for every person to respectfully ask public officials to act in a certain manner or to abstain from taking certain actions, or to express any other concerns or comments regarding any issue arising in the relation between the person and the government. Brazil, Colombia, and Mexico are examples of constitutional enactments providing a right to petition. Brazil grants a right of petition (*direito de petição*) among other fundamental constitutional protections.³⁶⁹ In Brazil, the right to petition is “ensured to everyone without any payment of fees”, and is granted for the following purposes “in defense of rights or against illegal acts or abuse of power,” and for “obtaining of certificates from government offices for the defense of rights and clarification of situations of personal interest.”³⁷⁰ In Colombia’s Constitution the right to petition (*derecho de petición*) is regarded as a fundamental guarantee, “which can be used for public and private purposes.”³⁷¹

As for Mexico’s right of petition, it must be exercised “in writing and submitted in a peaceful and respectful manner.”³⁷² Upon receiving a request, authorities must release a prompt written answer. In Mexico, the right of petition has been used broadly;

³⁶⁸ *Rio Declaration*, *supra* note 71, Principle 10.

³⁶⁹ CONST. art. 5 (XXXIV) (Braz.).

³⁷⁰ *Id.*

³⁷¹ CONST. art. 23 (Colom.). *See* LLERAS DE LA FUENTE ET AL., *supra* note 296, at 114.

³⁷² CONST. art. 48 (Mex.).

even petitions to access government-held information have been successful. The Mexican Constitution also grants the right to request that the Congress consider adopting particular legislation, but in practice the Congress has generally ignored such requests.³⁷³

The right to know, or the right to information—more exactly, the right to access government-held information—is key for citizen involvement in decisions related to environmental matters in general, and to the management of natural resources, in particular, especially to the management of energy resources. The Mexican Constitution provides an example of this form of protection. A Constitutional amendment in 1977, asserted that access to information is a right guaranteed by the State.³⁷⁴ The Mexican Supreme Court of Justice initially issued a restrictive interpretation of the right to information, regarding it simply as a social guarantee correlative to the freedom of expression.³⁷⁵ In 1996, the Supreme Court linked the right to information to the duty imposed on public officials to refrain from manipulating information. Later, in 2000, the Court broadened its interpretation stating that the right to information encompasses an obligation to provide government-held information.³⁷⁶

The right to public participation translates into a governmental duty to afford a meaningful opportunity of intervention for citizens and non-governmental organizations in the decision-making process. Moreover, public involvement is an essential aspect of the constitutional guarantees related to health, the environment and basic public services. Public participation in the fields of energy and environment is particularly important for communities and indigenous people affected by such projects and activities.

³⁷³ See CONST. arts. 40, 41 (Mex.).

³⁷⁴ CONST. art. 6 (Mex.) (D.O. 6 de diciembre de 1977).

³⁷⁵ CEC, Environmental Law, Mexico, *supra* note 312.

³⁷⁶ *Id.*

Countries with a constitutional mandate calling for public participation include Ecuador and Colombia. A provision of the Ecuadorian Constitution expressly requires prior public participation for any decision that may affect the environment.³⁷⁷ To that end, the provision calls for the communities to be adequately informed.³⁷⁸ In Colombia the right to public involvement in environmental matters is not expressly granted in the Constitution.³⁷⁹ Nonetheless, public participation is listed in the essential principles of the Colombian State.³⁸⁰ Other countries in the region typically have included the right to public participation either in general laws or in environmental legislation.

2.6 ENFORCEMENT OF CONSTITUTIONAL RIGHTS

Constitutional rights—whether individual or collective—exist only to the extent that they can be recognized in day-to-day life. An important feature of the constitutions in the region is the development of effective constitutional habeas systems for such recognition. Four constitutional formats for legal enforcement of these rights have been developed in Latin American countries: individual actions (*Amparo* or *Tutela*), collective or popular actions, class actions, and mandamus actions.

In jurisdictions that recognize a right to environmental quality as a matter of constitutional right of a person, citizens are able to sue for environmental protection through the regular avenues for constitutional action (typically *Amparo*). Where there is a collective right to environmental quality, the constitutional drafters have extended the regular avenues of constitutional actions (collective *Amparo*), or created special kind of

³⁷⁷ CONST. art. 88 (Ecuador).

³⁷⁸ *Id.*

³⁷⁹ CONST. art. 23 (Colom.). See LLERAS DE LA FUENTE ET AL., *supra* note 296, at 114.

³⁸⁰ CONST. art. 3 (Colom.). See LLERAS DE LA FUENTE ET AL., *supra* note 296, at 89-90.

actions (collective or popular actions and class actions).³⁸¹ The mandamus action can be found in most jurisdictions, and even has constitutional nature in countries such as Brazil.

These constitutional actions can be filed by the affected individual or groups, and, in certain instances can be filed by Ombudsman-like figures, in some countries termed *Defensor del Pueblo*, which have the duty to enforce and protect constitutional rights.³⁸² In addition, the Office of the Attorney General (typically called *Ministerio Público* or *Procuraduría*) and the Comptroller's Office (referred to as *Contraloría*) also have such duties.³⁸³ Some jurisdictions, such as Mexico and Venezuela, have special offices for environmental enforcement. Mexico's office for environmental enforcement is the *Procuraduría Federal de Protección al Ambiental (PROFEMPA)*.³⁸⁴

Constitutional Habeas: Amparo, Tutela, Recurso de Revision

A proceeding to enforce fundamental constitutional rights in Latin America is given the name *Juicio de Amparo* (meaning “shelter” or “refuge”), or simply called *Amparo*.³⁸⁵ It may also be referred to as *Juicio de Tutela* (meaning “guardianship” or “tutelage”), or simply termed *Tutela*. The legal action is called *Acción de Amparo* or *Acción de Tutela*. The term *Amparo* is used in Argentina, Ecuador and Mexico.³⁸⁶ *Tutela* is used in Colombia and Venezuela, while the Chileans call it *Recurso de Protección*.³⁸⁷ In Argentina, Ecuador and Venezuela, *Amparo* (*Tutela* in Venezuela) can be interposed

³⁸¹ OLADE/University of Calgary Study *supra* note 3, at 12.

³⁸² See FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 25.

³⁸³ *Id.* at 27 (discussing Argentina's legal system).

³⁸⁴ See CEC, Environmental Law, Mexico, *supra* note 312, § 2.

³⁸⁵ See generally AMAYA NAVAS, *supra* note 294. See also Borrero Navia, *supra* note 330, at 62-64; FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 15-29.

³⁸⁶ CONST. art. 43 (Arg.); CONST. art. 24 (17) (Ecuador); CONST. arts. 101-102 (Mex.).

³⁸⁷ CONST. art. 86 (Colom.); CONST. art. 20 (Chile); CONST. arts. 26, 27 (Venez.).

to protect collective or individual rights.³⁸⁸ In Argentina, the former take the name *Amparo Colectivo* (collective *Amparo*).³⁸⁹

The protection afforded by this kind of proceeding is exceptional and immediate.³⁹⁰ Typically, these actions are allowed if no other remedy at law is available to the plaintiff. In some countries, such as Mexico, intermediate tribunals or the highest courts are given jurisdiction to handle these matters.³⁹¹ In other jurisdictions, for example in Colombia, these actions can be filed before any judge.³⁹² These legal suits have no exact equivalent in the common law tradition, but “encompasses elements of several legal actions of the common law tradition: writ of habeas corpus, injunction, error, mandamus, and certiorari.”³⁹³

The Chilean Constitution provides a legal action similar to *Amparo* termed *Recurso de Protección*.³⁹⁴ Interposing a *Recurso de Protección* triggers the special proceeding for the protection of fundamental rights. As such, it can be initiated by individuals who claim their fundamental “right to live in an environment free of pollution.”³⁹⁵ The Chilean provision states the action “shall also be applied when the right to live in an environment free of pollution has been affected by an arbitrary or unlawful action imputable to an authority or a specific person.”³⁹⁶ Therefore, the *Recurso de Protección* in environmental matters is expressly limited in three ways. First, it applies only to actions, not to omissions. Second, there has to be certainty as to the identity of the

³⁸⁸ See also Sabsay, *supra* note 69, at 41 (discussing Argentina’s legal system).

³⁸⁹ *Id.* See e.g., CONST. art. 43 (Arg.).

³⁹⁰ See FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 18-19; Borrero Navia, *supra* note 330, at 63.

³⁹¹ See CONST. arts. 101-102 (Mex.).

³⁹² See Borrero Navia, *supra* note 330, at 63.

³⁹³ FRANCISCO A. AVALOS, THE MEXICAN LEGAL SYSTEM 10 (F B. Rothman Publications, 2nd Ed., 2000).

³⁹⁴ CONST. art. 20 (Chile).

³⁹⁵ *Id.* art. 19 (8).

³⁹⁶ *Id.* art. 20. See AMAYA NAVAS, *supra* note 294, at 246.

defendant. And third, the action must be arbitrary and illegal.

Mexico offers a complex system of *Amparo* proceedings for the protection of rights and as a defense against unconstitutional laws and actions. In general, an *Amparo* suit may be brought in regard to: any law or action by authorities that violate an individual right guaranteed under the Mexican Constitution or federal laws; laws or federal official actions that violate or restrict the sovereignty of the states or that of state laws; or official actions that invade the sphere of federal authority.³⁹⁷ Thus, as a general rule, only parties that are directly affected by a governmental action or a law, regulation, or decree, may file an *Amparo* proceeding in Mexico. Nonetheless, in cases where the purpose is to seek protection of a collective interest, a collective *Amparo* is permitted, as well (as in Argentina). There are several limitations to *Amparo* suits in Mexico. For instance, judicial and administrative remedies must be exhausted before an *Amparo* suit may be brought. Additionally, decisions of the Supreme Court are not subject to *Amparo*.

In Colombia, the constitutional habeas action of *Tutela* may be used for environmental claims only in exceptional circumstances. The Colombian Constitutional Court has developed the “rule of connection” (*regla de conexidad*) to afford individuals the possibility of claiming the protection of environmental rights connected to or linked with their fundamental rights.³⁹⁸ In Colombia, the judge determines, based on the specific factual circumstances, whether fundamental rights are intrinsically connected with the suit and warrant environmental protection.³⁹⁹

³⁹⁷ See CEC, Environmental Law, Mexico, *supra* note 312, §§ 1.7 & 6.3.

³⁹⁸ See AMAYA NAVAS, *supra* note 294, at 164-165 (citing to the Constitutional Court’s Decision T-415, June 17, 1992); Borrero Navia, *supra* note 302, at 64.

³⁹⁹ See AMAYA NAVAS, *supra* note 294, at 164-165; Borrero Navia, *supra* note 302, at 64.

Collective Action: Ação Popular and Acción Popular

The Brazilian and Colombian constitutional framers developed a special public interest action specifically tailored for the protection of collective rights.⁴⁰⁰ These actions, termed *Ação Popular* and *Acción Popular*, respectively, are initiated by filing a collective complaint. Collective actions offer certain advantages for environmental plaintiffs. First, popular actions resolve issues of standing *per se*: Constitutional standing is automatically granted to all. Second, these actions are resolved more expeditiously than ordinary actions.⁴⁰¹

The Brazilian concept of a collective action, termed *Ação Popular*, is more limited than the Colombian format, the *Acción Popular*. In Brazil any citizen has standing to file an *Ação Popular* seeking to annul an act injurious to, among other protected interests, the public patrimony, the environment, and historical and cultural monuments.⁴⁰² It is expressly limited to injurious actions; omissions are not actionable (as in Chile). Colombia's format is broader, including actions or omissions that interfere or threaten to interfere with a collective right.⁴⁰³

In Colombia, popular actions, as defined by law, "are the procedural means for the protection of collective rights and interests."⁴⁰⁴ Under the Colombia system, popular actions have a broad scope and minimum limitations for the plaintiff. There is no statute of limitations and no need to exhaust other legal remedies.⁴⁰⁵ The popular action may seek an injunction, the adoption of preventive measures to protect the *status quo*, or the

⁴⁰⁰ CONST. art. 5 (74) (Braz.); CONST. art. 88 (Colom.).

⁴⁰¹ See AMAYA NAVAS, *supra* note 294, at 162-165, 224.

⁴⁰² CONST. art. 5 (XXIII) (Braz.).

⁴⁰³ "Ley 472, de 1998," D.O., 5 de agosto de 1998, art. 9 (Colom.) [Colombia's Collective Rights Law].

⁴⁰⁴ CONST. art. 88 (Colom.); Colombia's Collective Rights Law, *supra* note 403, art 9.

⁴⁰⁵ Colombia's Collective Rights Law, *supra* note 403, arts. 10, 11 & 12.

restitution to the *status quo ante* whenever possible.⁴⁰⁶ It can be interposed, with or without attorney, by individuals, corporations, organizations or other group entities, and by the attorney general or ombudsman in cases where the group is without any means to protect itself.⁴⁰⁷

Environmental Class Actions

Although class actions are not common in the civil law tradition, a few countries such as Brazil and Colombia allow such suits. In general, the class action procedure is a representative action or aggregative action that permits one or more persons to sue or be sued on behalf of themselves or others similarly situated.⁴⁰⁸ More precisely, one can say that the term “class action” denominates that form of action having its origins in equity practice, and now authorized in most common law jurisdictions either by statute or by rule of court, in which all the members of an ascertainable and numerous group of claimants share a well-defined community of interest in the questions of law and fact involved in their shared legal situation.⁴⁰⁹

The Colombian Constitution provides for class actions (*Acciones de Grupo*) in similar fashion to the concept developed in common law jurisdictions. The Colombian class action can also be used to seek damages in public interest lawsuits.⁴¹⁰ Brazilian law also permits class actions, although not mentioned in the Constitution.⁴¹¹ Therefore, Brazil and Colombia allow two types of actions in connection with the collective interests: a popular action and a collective class action. The former is interposed to

⁴⁰⁶ *Id.* arts. 2 & 9.

⁴⁰⁷ *Id.* art. 13.

⁴⁰⁸ See Madden, Davis & Tafur, *supra* note 293, at 3.

⁴⁰⁹ *Id.* See FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 24.

⁴¹⁰ CONST. art. 88 (Colom.); Colombia’s Collective Rights Law, *supra* note 403, art 9.

⁴¹¹ See *infra* Chapter 5 § 5.13.

prevent, and the latter to redress, the interference with collective rights.⁴¹² A special feature of these suits—both in Brazil and Colombia—is that if the outcome of the collective class action is an award of damages, these go not to the plaintiff’s pockets, but to a fund earmarked for certain projects and activities related to the protection of collective interests.

Constitutional Writ of Mandamus

Brazil and Colombia also provide a constitutional writ of mandamus, *Mandado de Segurança* or *Acción de Cumplimiento*, respectively.⁴¹³ In Brazil writs of mandamus are available to require a public official or an agent of a corporate legal entity exercising public duties to perform legally required actions.⁴¹⁴ Similarly, in Colombia mandamus actions are permissible to request the performance of a mandatory or ministerial duty required from a public official.⁴¹⁵

⁴¹² See AMAYA NAVAS, *supra* note 294, at 162-165, 224.

⁴¹³ CONST. art. 5 (LXIX), (LXX) (Braz.); CONST. art. 87 (Colom.).

⁴¹⁴ CONST. art. 5 (LXIX), (LXX) (Braz.).

⁴¹⁵ CONST. art. 87 (Colom.).

CHAPTER 3 – ARGENTINA

3.1 CONSTITUTIONAL ISSUES

One of the principal constitutional issues in relation to energy and the environment is the determination of ownership and control over the natural resources. In the countries with federal structures considered in this study—Argentina, Brazil, Mexico and Venezuela—, understanding ownership and jurisdictional issues between the federation (or union) and the provinces (or states) is necessary in order to analyze energy and environmental legislation, particularly in connection with oil and gas resources. This is particularly relevant in Argentina, the most federalized country among those in the region with a federal organization.⁴¹⁶

With respect to ownership, despite the federal nature of the Constitution of Argentina, ownership and control of oil and natural gas resources has shifted back and forth between the provinces and the federal government. Under the 1852 Constitution, the federal government had ownership of oil deposits only in federal lands and not in the provinces. However, legislation passed in 1967 declared that all hydrocarbon resources in the country were owned by the federal government, not by the provinces.⁴¹⁷ Subsequently, legislation adopted in 1992 “transferred back” ownership of oil and natural gas resources from the federal hands to the provinces.⁴¹⁸ The 1992 “transfer” included hydrocarbon resources inland and deposits found in the subsurface within 12 miles of the

⁴¹⁶ See AVALOS, *supra* note 393, at 3-4.

⁴¹⁷ “Ley No. 14.773 de 1958,” (Arg.); “Ley 17.319 de 1967,” B.O., 30 de junio de 1967, art. 1 (Arg.) [Argentina’s Hydrocarbons Law].

⁴¹⁸ “Ley No. 24.145 de 1992,” B.O., 6 de noviembre de 1992, art. 1 (Arg.) [Argentina’s Hydrocarbons Federalization and Privatization Law]. See also “Ley 24.474 de 1995,” B.O., 11 de abril de 1995 (Arg.).

costal waters of any province.⁴¹⁹ Eventually, the matter was settled under the current constitutional text, adopted in 1994, which clearly states that the provinces of Argentina have direct and original ownership of their natural resources, including all hydrocarbon deposits.⁴²⁰

Turning to jurisdictional issues, under the 1852 Constitution of Argentina, the provinces retained all the powers that had not been delegated to the federal government.⁴²¹ Natural resources and environmental regulation were non-delegated matters. Therefore, by 1994, when Argentina enacted its current Constitution, the provinces had included environmental provisions in their constitutions and enacted their own environmental laws.⁴²² To provide a coordinated framework, the 1994 Constitution declared that the provinces have original ownership of natural resources within their jurisdictions and continue to retain all non-delegated powers, but determined that the federal government is constitutionally empowered to impose minimum environmental standards applicable throughout the country.⁴²³ Provincial and municipal environmental authorities may require higher standards or additional conditions in their jurisdictions.⁴²⁴

According to Professor Sabsay and María E. Di Paola, it should be understood that, in ratifying the Constitution, a delegation occurred from the provinces to the Nation

⁴¹⁹ Argentina's Hydrocarbons Federalization and Privatization Law, *supra* note 418, art. 1.

⁴²⁰ CONST. art. 124 (Arg.).

⁴²¹ See BAKER & MCKENZIE, ENVIRONMENTAL LAW AND POLICY IN LATIN AMERICA 4 (Baker & McKenzie 2000). See also José Alberto Esain, *Environmental Federalism. Distribution of Environmental Powers in the Argentinean National Constitution Principle "Think Globally and Act Locally"*, in FARN, COMPLIANCE AND ENFORCEMENT I, *supra* note 36, at 151.

⁴²² THOMAS H. REYNOLDS & ARTURO A. FLOREZ, FOREIGN LAW: CURRENT SOURCES OF CODES AND BASIC LEGISLATION IN JURISDICTIONS OF THE WORLD, at III Argentina 2.

⁴²³ CONST. arts. 124 & 141 (Arg.). See generally FUNDACION AMBIENTE Y RECURSOS NATURALES, PRESUPUESTOS MÍNIMOS DE PROTECCIÓN AMBIENTAL (FARN 2003) [FARN, ARGENTINA'S MINIMUM ENVIRONMENTAL STANDARDS]. See also BAKER & MCKENZIE, *supra* note 421, at 4-5.

⁴²⁴ CONST. art. 41 para. 3 (Arg.). See John R. Nolon, *Fusing Economic and Environmental Policy: The Need for Framework Laws in the United States and Argentina*, 13 PACE ENVTL. L. REV. 685, 690 (1996).

with respect to issuing minimum environmental standards and principles for protecting the environment.⁴²⁵ This is consistent with the recognition of environmental rights to all inhabitants of the country.⁴²⁶ In practice, it means that Argentina has a basic environmental regulatory scheme for the entire federation, and laws and regulations that vary from one provincial jurisdiction to another with additional environmental safeguards.⁴²⁷ While issues of supremacy of laws may arise, it is clear that, “[i]n case of conflict or priority, provincial legislation is subordinate to federal enactments, which must be complied with.”⁴²⁸

3.2 OIL AND GAS LAW

The history of petroleum legislation in Argentina begins when *Yacimientos Petrolíferos Fiscales* (YPF), established in 1922, became the world’s first national oil company.⁴²⁹ Under YPF, the federal government managed and exploited hydrocarbon resources located on federal land.⁴³⁰ In 1924, much of the Patagonia region was declared a federal oil reserve, which ensured YPF’s access to these oil resources.⁴³¹ But YPF did not monopolize the oil industry.⁴³² In 1922, the same year YPF was formed, the U.S.-based Standard Oil incorporated a wholly owned subsidiary to exploit concessions obtained in the Province of Salta.⁴³³ Other foreign oil companies and private Argentine

⁴²⁵ Daniel A. Sabsay & María E. Di Paola, *Comentarios sobre la Ley General del Medio Ambiente*, in FARN, ARGENTINA’S MINIMUM ENVIRONMENTAL STANDARDS, *supra* note 423, at 19.

⁴²⁶ CONST. art. 41 (Arg.).

⁴²⁷ See BAKER & MCKENZIE, *supra* note 421, at 5.

⁴²⁸ REYNOLDS & FLOREZ, *supra* note 422, at III Argentina 3.

⁴²⁹ See LATIN AMERICAN OIL COMPANIES AND THE POLITICS OF ENERGY ix (John D. Wirth, ed., University of Nebraska Press, 1985) [LATIN AMERICAN OIL COMPANIES]. See also Carl E. Solberg, *YPF: The Formative Years of Latin America’s Pioneer State Oil Company, 1922-39*, in LATIN AMERICAN OIL COMPANIES, *supra*.

⁴³⁰ Solberg, *supra* note 429, at 68.

⁴³¹ *Id.* at 68 & 88.

⁴³² *Id.* at 51.

⁴³³ *Id.* at 61.

oil companies also acquired oil concessions throughout the country.⁴³⁴

During the following decades, the federal government and the provinces struggled for administrative and regulatory power over of hydrocarbon resources. In addition to the debate over regulatory control of the oil industry, another underlying issue, of course, was revenue from oil concessions. As discussed above, pursuant to the 1853 Constitution, the federal government had ownership of oil deposits only in federal lands and not in the provinces. Nonetheless, the federal government was pressing for the right of YPF to produce in the provinces; the provinces wanted to retain the autonomy to grant oil rights.⁴³⁵

Argentina's first national Petroleum Code, passed in 1935, gave the provinces the right to grant and administer oil concessions, and to charge a 12-percent production royalty, whether the producer was YPF or a private company.⁴³⁶ Similarly, the 1935 Petroleum Code authorized the federal government to impose a 12-percent production royalty on oil produced in federal land, whether the producer was YPF or a private company.⁴³⁷ But, in 1958, the Petroleum Code was amended shifting jurisdiction over hydrocarbon resources throughout the country from the provinces to the federal government, although it preserved the 12-percent share of oil production for the provinces.⁴³⁸

By 1967, federal government declared—under the Hydrocarbons Law of 1967—that it was the owner of all hydrocarbon resources in the country.⁴³⁹ The Hydrocarbons

⁴³⁴ *Id.* at 58 & 61.

⁴³⁵ See Solberg, *supra* note 429, at 86.

⁴³⁶ See “Ley No. 12.161 de 1935” (Arg.); Solberg, *supra* note 429, at 82 & 89.

⁴³⁷ Solberg, *supra* note 429, at 82.

⁴³⁸ “Ley No. 14.773 de 1958” (Arg.).

⁴³⁹ Argentina's Hydrocarbons Law, *supra* note 417, art. 2.

Law maintained the 12-percent share of oil revenue to oil-producing provinces.⁴⁴⁰ Dissatisfied, the provinces did not rest; and finally, in 1992, federal legislation transferred back ownership of hydrocarbon resources from the federal government to the provinces.⁴⁴¹ As noted above, two years later, the 1994 Constitution settled the issue clearly declaring that the provinces originally owned all natural resources within their jurisdictions, including the subsoil and the resources therein, definitively closing the debate on the issue of ownership.⁴⁴²

Despite these developments, many provisions of the 1967 Hydrocarbons Law are still in effect today, as amended with regards to the federal–provincial ownership and control issues. The Hydrocarbons Law provides the regulatory scheme for the exploration, exploitation, and transportation of hydrocarbons.⁴⁴³ In particular, this law establishes procedures for granting concessions to carry out these activities to private or mixed capital companies, as well as the rights and duties of the concessionaires. Because it does not recognize provincial ownership and control over hydrocarbons, the federal government was required to issue an extraordinary decree (hereinafter 2003 Hydrocarbons Decree) to enable the provinces to regulate the “exploration, exploitation, storage and transportation of hydrocarbon resources within their jurisdictions” under the terms of the 1967 Hydrocarbons Law and implementing regulations.⁴⁴⁴

The 2003 Hydrocarbons Decree provides that provincial governments assume all powers granted to the federal government under the 1967 Hydrocarbons Law and

⁴⁴⁰ *Id.* arts. 4-55, 61-71 & 93.

⁴⁴¹ See Argentina’s Hydrocarbons Federalization and Privatization Law, *supra* note 418, arts. 1-5.

⁴⁴² CONST. art. 121 (Arg.).

⁴⁴³ See Argentina’s Hydrocarbons Law, *supra* note 417, arts. 16-44.

⁴⁴⁴ “Decreto 546 de 2003, Secretaría de Energía”, B.O., 11 de agosto de 2003, art. 1 (Arg.) [Argentina’s 2003 Hydrocarbons Decree].

implementing regulations.⁴⁴⁵ This decree reserves for the federal government the authority to issue federal hydrocarbon policy, and makes clear that provinces cannot issue oil and gas transportation concessions outside their jurisdiction or authorize exports of hydrocarbons resources.⁴⁴⁶

Parallel to the debate over ownership of oil resources, a related debate was whether the federal government should control the oil business or not. Some wanted to dismantle YPF and open the oil industry completely to private investors. Others preferred to exclude all private capital (including foreign investment) from the oil business and grant YPF a monopoly. The 1967 Hydrocarbons Law established a system whereby government-owned, private, and mix-capital companies could participate in upstream and downstream petroleum activities.⁴⁴⁷ In practice, however, YPF continued to control the oil sector.

Eventually, it turned out that those in favor of a complete privatization of the sector prevailed; but not entirely. Indeed, YPF was not immune from the Argentine privatization wave of the 1990s.⁴⁴⁸ In 1989 and 1990, several presidential decrees made reforms to the structure of YPF, removed controls and restrictions on oil and natural gas trade, and eliminated taxes and tariffs on exports.⁴⁴⁹ Subsequently, legislation was passed in 1992 specifically allowed for the privatization of YPF.⁴⁵⁰ Argentina's oil sector is now

⁴⁴⁵ *Id.* art. 5.

⁴⁴⁶ Argentina's 2003 Hydrocarbons Decree, *supra* note 444, art. 6. *See also* Argentina's Hydrocarbons Law, *supra* note 417, arts. 2 & 3.

⁴⁴⁷ Argentina's Hydrocarbons Law, *supra* note 417, arts. 2 & 3. *See also* Solberg, *supra* note 429, at 51.

⁴⁴⁸ *See* Solberg, *supra* note 429, at 51-53.

⁴⁴⁹ *See* Energy Information Administration, U.S. Dep't of Energy, Country Analysis Briefs, Argentina [EIA, (country)] (2006), available at <http://www.eia.doe.gov/emeu/cabs/contents.html>.

⁴⁵⁰ Argentina's Hydrocarbons Federalization and Privatization Law, *supra* note 418, arts. 6-8. *See also* "Decreto 1.106 de 1993," B.O., 3 de junio de 1993 (Arg.).

completely privatized and operates under a market structure.⁴⁵¹

The Argentine federal and provincial governments rejoined the oil business in 2004. The Argentine economic and energy crises of 2001-2004 prompted the creation of a national energy company (*Energía Argentina Sociedad Anónima*, ENARSA).⁴⁵² ENARSA has the goal of regaining a place for the State in market that was completely privatized during the 1990s, mainly with the sale of YPF, but is also authorized to intervene in the market place to avoid abuses by dominant positions in the markets.⁴⁵³ ENARSA's main asset is the ownership of all rights of surveyance and concessions of exploitation of offshore energy resources, including all hydrocarbon resources that are or may be found in the maritime platform.⁴⁵⁴

ENARSA is authorized to participate in the exploitation of petroleum and natural gas, and their production, industrialization, transportation and trade.⁴⁵⁵ In addition, the company may participate in all the segments of the electric power industry.⁴⁵⁶ ENARSA is jointly owned and managed by the federal and provincial governments of Argentina, but private investors may acquire company stock. The Argentine federation owns 53 percent of the company; another 12 percent is to be held by the provincial states, and the remaining 35 percent is open to trade in the stock market (with no voting rights).⁴⁵⁷

The country's natural gas sector followed a similar path to the oil sector. During 1946-1992, *Gas del Estado*, a state-owned company for the transmission and distribution

⁴⁵¹ See PETROTECNIA, *Suplemento Estadístico*, Año XLV, No. 1, Febrero 2004, at 3.

⁴⁵² See "Ley No. 25.943 de 2004," B.O., 3 de noviembre de 2004 (Arg.) [Argentina's ENARSA Law].

⁴⁵³ *Id.* art. 4.

⁴⁵⁴ *Id.* art. 2.

⁴⁵⁵ *Id.* art. 1.

⁴⁵⁶ *Id.*

⁴⁵⁷ *Id.* art. 5.

of natural gas, dominated the sector.⁴⁵⁸ For decades, *Gas del Estado* distributed domestic and imported natural gas until the company was split and privatized in 1992, pursuant to the Natural Gas Law.⁴⁵⁹ *Gas del Estado* was split into two transportation companies (*Transportadora de Gas del Sur* and *Transportadora Gas del Norte*), and into several distribution companies.⁴⁶⁰ The two transportation companies and most of the distribution operations were sold to private investors in December of 1992.⁴⁶¹ As a result of the reform and privatization, a regulatory agency was necessary. The Natural Gas Law created the *Ente Regulator del Gas* (ENARGAS), the “regulator of the gas industry, the arbiter of disputes among players, dictates safety regulations and technical procedures, prevents monopolistic, anti-competition or discriminatory behavior, establishes the bases for calculating and approving tariffs for transportation companies and distribution companies.”⁴⁶²

Pursuant to the 1992 Natural Gas Law, the distribution, inter-province transmission and exports of natural gas are federally controlled activities.⁴⁶³ Specifically, the inter-province transmission and distribution of natural gas are public services, but can be carried out by private actors under a competitive market structure.⁴⁶⁴ But cross-ownership in production, transmission and distribution activities is restricted. Natural gas

⁴⁵⁸ See KANG WU, ENERGY IN LATIN AMERICA: PRODUCTION, CONSUMPTION, AND FUTURE GROWTH 94 (Praeger 1995).

⁴⁵⁹ See “Ley No. 24.076 de 1992,” B.O., 12 de junio de 1992 (Arg.) [Argentina’s Natural Gas Law]; “Decreto No. 1.189 de 1992,” B.O., 17 de julio de 1992 (Arg.) [Argentina’s Decree Privatizing *Gas del Estado*]; “Decreto No. 1.738 de 1992,” B.O., 18 de septiembre de 1992 (Arg.) [Argentina’s Natural Gas Regulations]; OLADE, POWER SECTOR, *supra* note 209, at 195.

⁴⁶⁰ See Argentina’s Decree Privatizing *Gas del Estado*, *supra* note 459, art. 4.

⁴⁶¹ OLADE, POWER SECTOR, *supra* note 209, at 196.

⁴⁶² *Id.* at 195.

⁴⁶³ Argentina’s Natural Gas Law, *supra* note 459; Argentina’s Natural Gas Regulations, *supra* note 459.

⁴⁶⁴ Argentina’s Natural Gas Law, *supra* note 459, art. 1, 4 & 95.

carriers must provide open access to their pipelines and are not permitted to sell gas.⁴⁶⁵

Imports of natural gas are unrestricted, while exports are permitted except in cases of national shortages.⁴⁶⁶ Non-federally controlled gas activities include: commercialization activities, natural gas treatment and compression services, and the construction, operation, and maintenance of pipelines. As noted above, ENARSA, the mixed-capital energy company controlled by the federal government is authorized to participate in the exploitation, production, industrialization, transportation and trade of natural gas.⁴⁶⁷

As a result of the reform, “the chain making up the natural gas sector in Argentina is segmented vertical and horizontally, which does not mean the disappearance of natural monopolies for the transportation and distribution of natural gas.”⁴⁶⁸ In summary, the natural gas sector is structured as follows:⁴⁶⁹

Production companies: hold a hydrocarbons exploitation concession and extract natural gas whose production they can dispose of under a free competition regime at unregulated prices (on the spot market), may sign supply contracts freely with marketing companies, distribution companies and major users. Marketing companies are the players who purchase and sell natural gas on behalf of third parties.

Transportation companies: (*Transportadora Gas del Norte* and *Transportadora Gas del Sur*) are enabled to provide transportation service and can neither buy nor sell natural gas, from the point of entry to the transportation system to the point of delivery to the loaders (distribution companies and consumers who contract directly with production companies). Transportation companies function as natural monopolies in their area of operation and are subject to national concessions, with regulated tariffs and quality. Their expense control is done through

⁴⁶⁵ *Id.* art. 33.

⁴⁶⁶ *Id.* art. 3.

⁴⁶⁷ See Argentina’s ENARSA Law, *supra* note 452, at 1.

⁴⁶⁸ See OLADE, POWER SECTOR, *supra* note 209, at 195.

⁴⁶⁹ *Id.* at 195-196.

accounting systems that have been approved by ENARGAS.

Distribution Companies: (nine distribution companies, one per zone) provide gas supply service to final users who do not contract supply independently, negotiating directly with the producer or marketer. They constitute a natural monopoly, with prices regulated by ENARGAS. Their accounting systems should be approved by ENARGAS in order to control all expenses.

Consumers: are small and large final users. Large users may contract their natural gas supply independently for their own consumption, freely negotiating the transaction conditions, without prejudice to the rights granted to distribution companies for their habilitation.

The results of the reform to the natural gas sector have been positive for the supply side. According to the World Bank, “service provision was expanded, and direct access by final consumers was developed.”⁴⁷⁰ However, improvements on the production, transmission, and distribution levels were not accompanied by efficiency improvements on the demand side. This situation, coupled with Argentina’s economic crisis in 2001-2004, resulted in higher energy use and higher energy costs for the productive sectors; greater energy consumption for consumers with higher costs as retail prices increased, and greater local and global pollution associated with the consumption of fossil fuels.⁴⁷¹ Significantly, the production gas prices increased by about 135 percent during 2001-2006, and these increases have been passed through to industrial, commercial, and compressed natural gas consumers, resulting in retail price increases of

⁴⁷⁰ See WORLD BANK, GEF PROJECT BRIEF ON A PROPOSED GRANT FROM THE GLOBAL ENVIRONMENT FACILITY TRUST FUND IN THE AMOUNT OF USD 15.2 MILLION TO THE REPUBLIC OF ARGENTINA FOR AN ENERGY EFFICIENCY PROJECT 1 (2005) [World Bank, Argentina’s Energy Efficiency Project].

⁴⁷¹ *Id.*

30-90 percent in this period.⁴⁷² These same problems also occurred in the power sector as well (as discussed below).

In 2004, Argentina reformulated its energy sector, particularly the oil and gas sector, in order to mitigate the crisis suffered in 2004, “the largest energy crisis in over 15 years,”⁴⁷³ and to prevent it from recurring. As explained by the OLADE, “[t]his crisis resulted from a series of events and measures that began to accumulate years before, such as artificially low energy prices, increased gas demand for industrial and vehicular use, and conversion to [Argentine] Pesos of rates that were formerly pegged to the [U.S.] Dollar.”⁴⁷⁴ In response to the crisis, the government took urgent measures to solve this crisis, including: cutting natural gas exports and prioritizing domestic market supply; importing diesel oil from Brazil to substitute fuels wherever possible; raising the wellhead natural gas prices, which had significant repercussions on the prices for industrial and residential consumers.⁴⁷⁵

In order to avoid future crises, these measures were included in a national energy plan that would reorient the energy policy, called the *Plan Nacional Energético 2004–2008*, which was based on four major items: raising the export tax for hydrocarbons, creating a national energy company (ENARSA), establishing programs for rational energy use, and promoting energy integration. In addition, the plan calls for the creation of an electronic natural gas market; an investment fund to finance natural gas transportation infrastructure projects (both domestic and for interconnecting to neighboring countries); and, seeks the promoting of nuclear power (in particular, the

⁴⁷² *Id.*

⁴⁷³ See OLADE, Report 2004, Argentina, *supra* note 2.

⁴⁷⁴ *Id.*

⁴⁷⁵ *Id.* See also OLADE, POWER SECTOR, *supra* note 209, at 163 & 196.

completion of a nuclear station through ENARSA).⁴⁷⁶

3.3 ELECTRICITY LAW

Argentina has established one of the most competitive restructured power sectors in Latin America.⁴⁷⁷ In the early 1900s, the Government of Argentina conducted an aggressive privatization program for the country's electricity sector as part of its reform of the entire energy sector. Privatization was completed in the period 1991–1996. The restructuring was essentially accomplished in three-step process. The first step for reorganizing the power sector was to unbundle activities within the sector, that is, to divide the electricity sector into distribution, transmission, and generation instead of the previous approach, which encouraged integrated utilities. The next step was to allow private actors open entry to the functions of generation, transmission, and distribution. Private actors, however, may participate only in one of the functions within the power industry. The third step was to encourage competition within the market where feasible, essentially by liberating pricing at the wholesale level (also known as the bulk power market).

The key to Argentina's restructuring is allowing direct negotiations between generators, distribution enterprises, and large consumers, either through the use of bilateral contracts or via the spot market. In the spot market, generators are dispatched according to their marginal cost, beginning from the lowest cost units. "Plants that are not

⁴⁷⁶ See OLADE, Report 2004, Argentina, *supra* note 2.

⁴⁷⁷ See generally MENTOR POVEDA, COMPETENCIA EN MERCADOS ENERGÉTICOS: UNA EVALUACIÓN DE LA REESTRUCTURACIÓN DE LOS MERCADOS ENERGÉTICOS EN AMÉRICA LATINA Y EL CARIBE (OLADE/ACDI/University of Calgary 2004); Inter-American Development Bank, *Overview of Power Sector Reform in Selected Latin American and Caribbean Countries* (1999) [IDB, *Power Sector*, (country)] (i.e., IDB, *Power Sector*, Argentina), at www.iadb.org. See also A. John Armstrong, *Unplugged: The Effect of the New World Electric Power Order on Renewable Energy Industries*, 22 N.C.J. INT'L L. & COM. REG. 449 (1997).

efficient are not dispatched, pushing low efficiency units out of the market. From this point of view, new, efficient, modern and environmentally friendly projects could, in theory, constitute a replacement of older, lower efficiency and more polluting units.”⁴⁷⁸ A non-profit organization, called the *Compañía Administradora del Mercado Mayorista Eléctrico SA* (CAMMESA), headed by the Energy Secretariat, but owned by all participants, administers the power grid.⁴⁷⁹ Access to the grid is guaranteed to all players in order to allow generators to serve distributors and large customers anywhere in the country. The government’s role in the sector is limited: it regulates the system, oversees all aspects of the industry, and mediates disputes among the participants. Additionally, the government imposes tariffs (for all other consumers), connection fees, and usage charges.⁴⁸⁰

The reform of the power sector began with federal legislation passed in 1989, which directed the executive branch to reorganize and to privatize public enterprises.⁴⁸¹ In 1991, the Ministry of Economy issued a decree providing guidelines for unbundling electricity sector activities, and for private participation in distribution, transmission and dispatch activities.⁴⁸² The 1991 decree also defined the rights and obligations of each area of service, directed the establishment of the sector’s regulatory entity and of the wholesale market (including the spot market), and outlined the privatization schedule and plan for the sector.⁴⁸³ But the cornerstone for the ambitious restructuring and

⁴⁷⁸ *Id.*

⁴⁷⁹ See *infra* § 3.5. See also BESANT-JONES, *supra* note 119; OLADE, POWER SECTOR, *supra* note 209, at 176, 193-194.

⁴⁸⁰ See Armstrong, *supra* note 477, at 496 (noting that “one notable difference [between Argentina and other systems is that] the Argentina law uses marginal cost to fix electricity prices”).

⁴⁸¹ “Ley No. 23.696 de 1989” (Arg.); IDB, *Power Sector, Argentina*, *supra* note 477, at II.

⁴⁸² “Decreto No. 634 de 1991, Ministerio de Economía,” (Arg.) [Argentina’s Electricity Restructuring Decree].

⁴⁸³ *Id.* See also IDB, *Power Sector, Argentina*, *supra* note 477, at II.

privatization of the sector was the Electricity Law passed in 1992.⁴⁸⁴

The 1992 Electricity Law restructured and reorganized the sector and provided for the privatization of virtually all commercial activities that had been carried out by federally owned enterprises.⁴⁸⁵ Notwithstanding, this legislation declares that the transportation and distribution of electricity are “public services”, while the generation of electricity to satisfy these public services are “of public interest”.⁴⁸⁶ Accordingly, the transportation and distribution of electricity are regulated activities that require prior governmental authorization—which takes the form of a “certificate of convenience and public necessity”—and their tariffs must be “fair and reasonable.”⁴⁸⁷ Nonetheless, projects for the expansion of transportation infrastructure are excepted from obtaining a concession and can be freely undertaken by private investors.⁴⁸⁸ Transportation and distribution entities have the right of eminent domain.⁴⁸⁹

Pursuant to the 1992 Electricity Law, transportation and distribution actors must provide unrestricted access to the grid to other players, which allows generators to serve large customers anywhere in the country.⁴⁹⁰ This law also provides a basis for the administration of the wholesale power market, pricing in the spot market, and tariff-setting in regulated areas.⁴⁹¹ It also determines the framework for the federal regulatory entity (ENRE) and other institutional authorities in the sector, as discussed below in

⁴⁸⁴ “Ley No. 24.065 de 1992,” B.O., 16 de enero de 1992 (Arg.) [Argentina’s Electricity Law].

⁴⁸⁵ *Id.* arts. 93-97. *See* IDB, *Power Sector*, Argentina, *supra* note 477, § II

⁴⁸⁶ *See* Argentina’s Electricity Law, *supra* note 484, arts. 1-2.

⁴⁸⁷ *Id.* arts. 40-49.

⁴⁸⁸ *Id.* arts. 2 (d), 10 & 40.

⁴⁸⁹ *Id.* arts. 40-49.

⁴⁹⁰ *Id.* arts. 1 & 3.

⁴⁹¹ *Id.* art. 18.

⁴⁹² *Id.* art. 22.

⁴⁹³ *Id.* arts. 4-10 & 40-49. *See also* “Decreto No. 186 de 1995,” B.O., 27 de julio de 1995 (Arg.).

section 3.5.⁴⁹²

In summary, there is vertical separation of activities in generation, transportation and distribution, which is described by an OLADE-sponsored report, as follows: Generating companies, which are subject to free competition with no regulated prices (selling at marginal cost on the spot market), may sign freely negotiated supply contracts with distribution companies and large wholesale or retail users). Transportation companies are transmission system operators, with regulated prices and qualities, but have no obligation to expand the system. A fund has been created for financing transmission improvement and expansion works. System users—generating companies and consumers—should pay a fixed charge based on transportation capacity for each line they use, defined using a market bar in proportion to flow rate, with the so-called “area of influence” method.

Distribution companies are responsible for operating the network in the area of concession, creating a natural monopoly, and relate directly to regulated customers. Power distribution companies compete for concession contracts and must ensure free access to networks. The ENRE establishes the distribution value added for five-year periods, based on model efficient distribution companies with similar regional and service characteristics. Large consumers may participate directly on the wholesale market, paying a transportation fee to the distribution companies. Concessions are for 95 years, but there are administrative intervals of 10 years, during which the licensee may choose to abandon the contract. Provincial authorities control concession contracts and terms. Customers are the final users and large users. Large users contract freely for

⁴⁹² Argentina’s Electricity Law, *supra* note 484, arts. 54-69.

consuming electric power supply, freely negotiating supply prices. Finally, there is a wholesale power market where energy, power and related services are transacted, which is made up of a term market: with prices freely negotiated among sellers and buyers; and spot (occasional) market, with prices sanctioned on an hourly basis.⁴⁹³

As a result of the reform, the power sector is predominantly in the hands of private companies. Federal (except nuclear and generating assets co-owned with other countries including Brazil and Paraguay) and most provincial electric enterprises were privatized during the period 1991-1996. Several provincial utilities remain in public hands. The overall results of the power sector reform were positive for supply side efficiency. In the eyes of the World Bank, “[i]n the power sector, there was significant new investment in generation, wholesale price and distribution losses were halved, and retail tariffs and service interruption decreased. The introduction of competition among electricity generators and the increase in transmission efficiency were also important achievements.”⁴⁹⁴

The reform had several weak points, however, which the World Bank summarizes as follows: “insufficient social tariff mechanism, lack of incentives for transmission investment, insufficient coordination between gas and electricity regulation, lack of regulatory accounting, insufficient attention to customers’ interests, and, insufficient incentives for increased efficiency on the energy demand side.”⁴⁹⁵ Further, the momentum of the reform was derailed by the economic crisis in 2002, which resulted in tight control of electricity tariffs, especially for residential consumers.⁴⁹⁶ By 2006

⁴⁹³ See OLADE, POWER SECTOR, *supra* note 209, at 193-194.

⁴⁹⁴ World Bank, Argentina’s Energy Efficiency Project, *supra* note 470, at 1 & 24.

⁴⁹⁵ *Id.* at 24.

⁴⁹⁶ *Id.* at 1 & 24-26.

electricity wholesale prices had been adjusted to reflect variations in seasonal costs and passed through to industrial and commercial users, whose tariffs increased by over 50 percent since 2002.

Despite the serious macroeconomic crisis that began in 2002, the wholesale electrical market, including the interconnected system, continued to be supplied by the company CAMMESA, and the generators continued to participate under free competition.⁴⁹⁷ The government had to renegotiating concession contracts with private power companies. Reportedly, the concessionaries agreed to tariff increases and waived lawsuits or arbitration demands against the State due to enforcement of the emergency measures taken to alleviate the crisis.⁴⁹⁸

3.4 RENEWABLE ENERGY AND ENERGY EFFICIENCY LAW

Argentina's renewable energy legislation is, in contrast with oil and gas legislation, fairly recent. In 1998, the Congress passed legislation declaring wind and solar energy generation "of national interest" and authorizing the installation of wind and solar projects without prior governmental permits.⁴⁹⁹ The 1998 legislation offers various economic incentives for the promotion of solar and wind energy projects, including a 15-year deferral of value added taxes incurred in such projects.⁵⁰⁰ This law guarantees that federal taxation on electric solar and wind generation will not be altered for a period of 15 years.⁵⁰¹ Wind energy projects receive an additional subsidy of one cent per

⁴⁹⁷ See OLADE, Report 2004, Argentina, *supra* note 2; OLADE, POWER SECTOR, *supra* note 209, at 163, 176 & 193.

⁴⁹⁸ See OLADE, Report 2004, Argentina, *supra* note 2.

⁴⁹⁹ "Ley 25.019 de 1988," B.O., 26 de octubre de 1998, art. 1 (Arg.) [Argentina's Renewable Energy Law].

⁵⁰⁰ *Id.* art. 2.

⁵⁰¹ *Id.* art. 7.

kilowatt/hour generated, if the energy is sold in the wholesale market.⁵⁰² Funds to cover this subsidy are collected from a surcharge imposed on other wholesale energy sales.⁵⁰³

In addition, Argentina's renewable energy legislation mandates that utilities purchase wind-generated electricity, if it is made available to them.⁵⁰⁴ But it stops short of establish a mandate that utilities purchase a certain quantity or percentage of the electricity distributed from renewable energy resources—the legal mechanism known as Renewable Portfolio Standard (RPS)—. The 1998 renewable energy legislation, however, was not implemented until 2001, when its provisions took effect.⁵⁰⁵ At this juncture, these incentives were not as attractive due to Argentina's economic crisis and, therefore, investment in renewables has not been significant, according to a report by Argentina's Energy Secretariat.⁵⁰⁶

In 2001, Argentina's Energy Secretariat launched a federal program aimed at providing electric power to rural dwellers, generated from renewable local energy sources, especially solar and wind power, which is known as PERMER (*Proyecto de Energías Renovables en Mercados Rurales*).⁵⁰⁷ The potential beneficiaries of the program are mostly low-income families living in isolated areas, far from the conventional electrical network.⁵⁰⁸ To help finance the program, the federal government requires companies that provide electrical services to contribute with one third of the initial investment in equipment and civil works.⁵⁰⁹ The companies are authorized to

⁵⁰² *Id.* art. 5.

⁵⁰³ *Id.* See Argentina's Electricity Law, *supra* note 484, art 70.

⁵⁰⁴ Argentina's Renewable Energy Law, *supra* note 499, art. 6.

⁵⁰⁵ ARGENTINA, SECRETARÍA DE ENERGÍA, DESCRIPCIÓN, DESARROLLO Y PERSPECTIVAS DE LAS ENERGÍAS RENOVABLES EN LA ARGENTINA Y EN EL MUNDO (2004) [Argentina, Energía Renovable], at 19.

⁵⁰⁶ *Id.* at 5 & 19.

⁵⁰⁷ *Id.* at 19. See also World Bank, Argentina's Energy Efficiency Project, *supra* note 470, at 35.

⁵⁰⁸ See Argentina, Energía Renovable, *supra* note 505, at 19.

⁵⁰⁹ *Id.*

recuperate the investment through the users' monthly payments for the service. As early results suggest, this is an interesting option to promote renewable energy within a restructured electricity sector.⁵¹⁰

Argentina is pursuing legislation aimed at promoting biofuels.⁵¹¹ A legislative proposal introduced in 2004, backed by the federal government and agro-industry groups, would establish tax incentives for producers of ethanol and biodiesel fuel. The proposal's core requirement is that biofuels make up 5 percent of the country's gasoline and diesel supplies within four years. In this front, Argentina's biofuels legislative effort follows Brazil's enactment in early 2005 of legislation requiring that biodiesel make up 2 percent of all diesel fuel sold in the country by 2008 and 5 percent by 2013 (for decades Brazil has required gasoline to contain a minimum 25 percent mix of sugar cane-based ethanol).⁵¹² Argentina's biofuels legislation could have positive effects in both urban areas and rural areas: in urban areas it could help cut down harmful air emissions; in rural areas it would also increase diesel-supply for Argentina's agriculture sector.⁵¹³

Demand side management and energy efficiency are also becoming important components of Argentina's energy law and policy. As note above, "[w]hile the country made significant progress on improving supply side efficiency through major energy sector reforms introduced in the 1990s, demand side efficiency improvements have been more difficult to achieve and were further hampered by the economic crisis of 2001."⁵¹⁴ In 2003, the federal government, through the Energy Secretariat, designed the Energy

⁵¹⁰ See OLADE, Report 2004, Argentina, *supra* note 2.

⁵¹¹ See *Argentina's Congress readying biofuels law*, ECOAMÉRICAS, June 2005, Vol. 7. No. 8, at 5.

⁵¹² See *supra* Chapter 5 § 5.4. See also *Brazilian companies gear up to make biodiesel*, ECOAMÉRICAS, March 2005, Vol. 7. No. 5, at 1 & 9.

⁵¹³ See *Argentina's Congress readying biofuels law*, ECOAMÉRICAS, June 2005, Vol. 7. No. 8, at 5.

⁵¹⁴ World Bank, Argentina 2005 Energy Efficiency Project, *supra* note 470, at 3.

Saving and Efficiency Program.⁵¹⁵ The program's key strategic policy areas for promoting energy efficiency include the following aspects: developing a regulatory framework that promotes energy efficiency measures; designing the appropriate institutional structure to involve the different actors interested in developing a market for energy efficiency; implementing a program for energy savings and efficiency in public buildings; awareness raising, education, and dissemination of information on energy efficiency; stimulating the energy efficiency market through economic incentives; and increasing research and development in the area of energy efficiency. Despite these ambitious goals, this program "is limited in scope and scale (total budget is less than US\$200,000/year)."⁵¹⁶

In 2004, the federal government launched the Program for the Rational Use of Energy, an incentive-based program, which is similar to the initiative developed by Brazil during its energy crisis in 2001.⁵¹⁷ Electricity and natural gas users of the major providers were required to save in 2004 at least 5 percent compared with their energy use in the same period of 2003 or pay penalties, and actual savings were rewarded.⁵¹⁸ The incentive-based program was extended in 2005 and incentives were stiffened.⁵¹⁹

The federal government is also seeking—with funding from the World Bank and the Global Environmental Facility Trust Fund (GEF)—the establishment of an energy efficiency fund (of about US\$40 Million) to facilitate energy efficiency investments by users and energy service companies (ESCOs), primarily in the industrial and commercial

⁵¹⁵ *Id.* at 3-4 & 31.

⁵¹⁶ *Id.* at 91.

⁵¹⁷ *Id.* See "Resolución 552 de 2004, Secretaría de Energía," B.O., 21 de mayo de 2004 (Arg.).

⁵¹⁸ *Id.* Annex I. art. 6; World Bank, Argentina 2005 Energy Efficiency Project, *supra* note 470, at 4.

⁵¹⁹ "Resolución 745 de 2004, Secretaría de Energía," B.O., 10 de mayo de 2005 (Arg.); "Resolución ENRE 355/2005," B.O., 16 de junio de 2005 (Arg.).

sectors.⁵²⁰ The central objective of the energy efficiency fund is to demonstrate the commercial viability of investment in energy efficiency. In addition, this project seeks to encourage further energy efficiency investments by electricity utilities in order to achieve energy savings in the residential and public sectors as well, and to establish a comprehensive regulatory and institutional framework for energy efficiency.⁵²¹

Howard Geller, who was asked to review the World Bank/GEF Energy Efficiency Project for Argentina, noted the importance of strengthening the regulatory and policy framework for energy efficiency in the country.⁵²² Mr. Geller recommended—and the World Bank/GEF project team agreed—to include consideration of options in the utility sector tariffs and regulations so that utilities are not penalized financially for implementing effective energy efficiency programs, noting that “[i]n short, it is difficult to get investor-owned, private utilities to implement effective DSM [Demand side Management] programs if they lose revenues and profits for doing so.”⁵²³

Evidently, under the current regulatory scheme, electricity and gas distribution utilities’ profits are pegged to the amount of power they move; the more electricity or natural gas they deliver, the greater their earnings. Mr. Geller suggested exploring options for decoupling of electricity sales and revenues.⁵²⁴ It remains to be seen whether Argentina is able to properly implement the project and establish a comprehensive regulatory and institutional framework for energy efficiency.

⁵²⁰ World Bank, Argentina 2005 Energy Efficiency Project, *supra* note 470, at 7.

⁵²¹ *Id.* at 8.

⁵²² *Id.* at 97.

⁵²³ *Id.*

⁵²⁴ *Id.*

3.5 ENERGY AUTHORITIES AND REGULATORY AGENCIES

Argentina's main federal entity in charge of the energy sector is the Energy Secretariat (*Secretaría de Energía*), within the Ministry of Federal Planning and Public Investment and Services (*Ministerio de Planificación Federal, Inversión Pública y Servicio*), which oversees energy policy generally.⁵²⁵ The federal entity in charge of the nuclear sector is the Federal Atomic Energy Commission (*Comisión Nacional de Energía Atómica*) within the Energy Secretariat.⁵²⁶ The Federal Atomic Energy Commission regulates all aspects of nuclear activities, including the generation of nuclear energy and the disposal of radioactive waste.⁵²⁷

The Under-Secretariat of Fossil Fuels (*Subsecretaría de Combustibles*), within the Energy Secretariat makes federal policy for the oil and gas sector, and oversees the sector's performance. A specialized federal agency of the Energy Secretariat, the National Entity for Gas Regulation (*Ente Regulador del Gas*, ENARGAS), created in 1992, is the regulatory body for the distribution, interprovince transmission, imports and exports of natural gas.⁵²⁸ ENARGAS assigns gas concessions, set the rates for gas carriers, and, in general, oversees downstream gas activities.⁵²⁹

The Under-Secretariat of Electricity (*Subsecretaría de Electricidad*), within the Energy Secretariat, makes federal policy for the power sector, and oversees the sector

⁵²⁵ "Decreto No. 27 de 2003," B.O., 27 de mayo de 2003 (Arg.). See also Argentina's Hydrocarbons Law, *supra* note 417, arts. 2 & 3; Argentina's Hydrocarbons Decree, *supra* note 418, art. 6.

⁵²⁶ See "Decreto No. 10.936 de 1999," B.O., 31 de mayo de 1950 (Arg.).

⁵²⁷ See "Ley No. 25.018 de 1998," B.O., 23 de octubre de 1998 (Arg.); "Ley No. 24.804 de 1997," B.O., 24 de abril de 1997 (Arg.). See also "Decreto-Ley No. 22.478 de 1956," ratified by "Ley 14.467 de" B.O., de de (Arg.).

⁵²⁸ Argentina's Natural Gas Law, *supra* note arts. 50-64; Argentina's Natural Gas Regulations, *supra* note arts. 50-64. See also "Decreto No. 729 de 1995," B.O., 30 de mayo de 1995 (Arg.).

⁵²⁹ Argentina's Natural Gas Law, *supra* note 459, arts. 2 & 52.

performance and defines dispatch criteria for the bulk power market.⁵³⁰ The main federal regulatory body for the power sector in Argentina is the *Ente Regulador de la Energía Eléctrica* (ENRE), which oversees the industry and mediates disputes among the participants.⁵³¹ Tariffs are regulated by the ENRE and include connection and usage charges.⁵³² The ENRE is also in charge of the regulation for transmission at the federal level and for distribution activities in the Buenos Aires area.

The Energy Secretariat is also in charge of overseeing the competitive behavior of the wholesale market in coordination with the market administrative body (*Compañía Administradora del Mercado Mayorista Eléctrico SA*, CAMMESA). CAMMESA is a non-profit organization owned by participants on the power grid, but headed by the Energy Secretariat.⁵³³ Some provinces have created their own regulatory bodies, something that has complicates the implementation of uniform market rules.

The Energy Secretariat also exert some regulatory power through ENARSA, the mixed-capital energy company controlled by the federal government is authorized to participate in the exploitation, production, industrialization, transportation and trade of oil, natural gas and electricity.⁵³⁴ ENARSA is authorized not only to participate in the energy sector but is also authorized to intervene in the market place to avoid abuses by dominant positions.⁵³⁵

⁵³⁰ IDB, *Power Sector, Argentina*, *supra* note 477, § II.

⁵³¹ Argentina's Electricity Law, *supra* note 484, arts. 54-69.

⁵³² *Id.* art. 56. OLADE, POWER SECTOR, *supra* note 209, at 193.

⁵³³ IDB, *Power Sector, Argentina*, *supra* note 477, § II; OLADE, POWER SECTOR, *supra* note 209, at 195.

⁵³⁴ See Argentina's ENARSA Law, *supra* note 452, at 1.

⁵³⁵ *Id.* art. 4.

3.6 INSTITUTIONAL ENVIRONMENTAL FRAMEWORK

After years of debate, in 2002 the National Congress passed an Environmental Framework Law (*Ley General del Ambiente*) that attempts to coordinate the roles of the federal, provincial, and local governments in the implementation of environmental law.⁵³⁶ In addition, the law ratified two environmental instruments that had been adopted earlier by various provinces, the federal government, and the City of Buenos Aires.⁵³⁷ In 1990, these parties signed a compact creating the Federal Council on the Environment (COFEMA).⁵³⁸ The COFEMA was established as an advisory and coordinating entity of environmental policies and legislation.⁵³⁹ The federal government participates in the COFEMA through the Secretariat of the Environment and Sustainable Development, which is part of the Ministry of Health and Environment, which is the highest federal environmental authority in Argentina. In 1993, the same parties subscribed the Federal Pact on the Environment to promote harmonization and coordination of environmental policies and standards.⁵⁴⁰

The Federal Council on the Environment (COFEMA) is empowered to issue “recommendations or resolutions” to pursue its objectives.⁵⁴¹ The COFEMA is also charged with providing guidelines for coordinating land use laws and policies in the

⁵³⁶ See “Ley No. 25.675 de 2002,” B.O., 28 de noviembre de 2002, art. 1 (Arg.) [Argentina’s Environmental Law]. See also Sabsay, *supra* note 69, at 38 & 41-42; Nolon, *supra* note 424, at 710; FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 14-15.

⁵³⁷ See Argentina’s Environmental Law, *supra* note 536, art. 25, Annex I & Annex II.

⁵³⁸ “Acta Constitutiva del Consejo Federal de Medio Ambiente de 31 de agosto de 1990” (Arg.). See Sabsay & Di Paola, *supra* note 425, arts. 20-24.

⁵³⁹ Argentina’s Environmental Law, *supra* note 536, “Anexo I”.

⁵⁴⁰ See “Pacto Federal Ambiental de 1993” (Arg.); Argentina’s Environmental Law, *supra* note 536, “Anexo II”.

⁵⁴¹ See Argentina’s Environmental Law, *supra* note 536, art. 24 & Annex I, art. 9. See also Sabsay, *supra* note 69, at 41-41; Sabsay & Di Paola, *supra* note 425, at 18.

country.⁵⁴² The regulating role of COFEMA, however, is limited to the provinces that adhered to the compact, and requires further implementation.⁵⁴³ As explained by Professor Sabsay, in spite of the federal ratification of the agreement and its ratification by seven provincial jurisdictions, which allows it to operate, it cannot pass resolutions for the nation as a whole.⁵⁴⁴ Thus, the resolutions issued by COFEMA are obligatory in those jurisdictions that specifically ratified the inter-provincial compact.⁵⁴⁵ The COFEMA has met regularly since its inception in 1990, but issued only few recommendations and resolutions that relate to the energy sector.⁵⁴⁶

3.7 THE ENVIRONMENTAL FRAMEWORK LAW

The Environmental Framework Law defines “minimum standards for environmental quality” and lays the basic legal principles for the protection and management of the environment, in addition to establishing an institutional organization for environmental law.⁵⁴⁷ The law sets forth the objectives for the nation’s environmental policy, as well as the instruments for implementing such policy.⁵⁴⁸ These instruments include: land use planning; the environmental impact review process; environmental education; access to environmental information; public participation in environmental decision-making; and economic instruments to promote sustainable development.⁵⁴⁹

The Environmental Framework Law also defines environmental damage, determines the rules for liability and remediation, and mandates environmental

⁵⁴² See Argentina’s Environmental Law, *supra* note 536, arts. 9-10 & 23.

⁵⁴³ Sabsay & Di Paola, *supra* note 425, art. 21.

⁵⁴⁴ See Sabsay, *supra* note 69, at 42.

⁵⁴⁵ *Id.*

⁵⁴⁶ See Sabsay & Di Paola, *supra* note 425, art. 21.

⁵⁴⁷ Argentina’s Environmental Law, *supra* note 536, art. 1.

⁵⁴⁸ *Id.* arts. 2 & 8.

⁵⁴⁹ *Id.* arts. 8-21; Sabsay & Di Paola, *supra* note 425, at 17-33.

insurance.⁵⁵⁰ Accordingly, the law has a mixed character: it is a framework law, it provides minimum standards for environmental quality, and it defines and regulates environmental liability as well as the remediation of environmental damage.⁵⁵¹

3.8 OTHER FEDERAL ENVIRONMENTAL LAWS RELATED TO ENERGY ACTIVITIES

With regards to climate change, the Congress has passed laws ratifying the *Climate Change Convention* and its *Kyoto Protocol*, in 1994 and 2001, respectively.⁵⁵² Significantly, in order to promote the use of the market-based mechanisms authorized under the Kyoto regime, the Argentine Carbon Fund (*Fondo Argentino de Carbono*) was established by the federal government in 2005.⁵⁵³ The federal decree creating the Argentine Carbon Fund, however, simply requires that a fund must be created, but it did not provide a framework or guidance, or even a timeframe, for its development.

Starting in 2002, the Congress has passed legislation imposing or authorizing the federal government to impose minimum environmental standards in several areas. These laws address the following topics: residential waste, waste management in industrial and service activities; management and elimination of polychlorinated biphenyls (PCBs); and, water management.⁵⁵⁴ In addition, legislation governing access to environmental information was passed in 2004.⁵⁵⁵ Previously, the Hazardous Waste Law had been adopted in 1992, and is still in effect; this law regulates “cradle to grave” management of

⁵⁵⁰ Argentina’s Environmental Law, *supra* note 536, arts. 27-34; Sabsay & Di Paola, *supra* note 425, at 33-41.

⁵⁵¹ Sabsay & Di Paola, *supra* note 425, at 18; FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 19.

⁵⁵² “Ley No. 24.295 de 1994,” B.O., 11 de enero de 1994 (Arg.); “Ley No. 25.438 de 2001,” B.O., 19 de julio de 2001 (Arg.).

⁵⁵³ “Decreto No. 1.070 de 2005,” B.O., 5 de septiembre de 2005 (Arg.).

⁵⁵⁴ “Ley No. 25.916 de 2004,” B.O., 7 de septiembre de 2004 (Arg.); “Ley No. 25.612 de 2002,” B.O., 29 de julio de 2002 (Arg.); “Ley No. 25.670 de 2002,” B.O., 19 de Noviembre de 2002 (Arg.); “Ley No. 25.688 de 2003,” B.O., 3 de enero de 2003 (Arg.).

⁵⁵⁵ “Ley No. 25.831 de 2004,” B.O., 7 de enero del 2004 (Arg.). See FUNDACIÓN AMBIENTE Y RECURSOS NATURALES, ACCESO A LA INFORMACIÓN Y PARTICIPACIÓN EN MATERIA AMBIENTAL (FARN 2005).

hazardous waste from all sources.⁵⁵⁶

Related to energy activities, there are other federal environmental laws, adopted prior to the 1994 Constitution, which governs the following areas: air pollution; discharges from vessels and ports; and national parks. The Hazardous Waste Law, passed in 1992, regulates “cradle to grave” management of hazardous waste from all sources.⁵⁵⁷ Pursuant to the federal Air Pollution Law passed in 1973, federal health authorities are empowered to issue air quality standards, while provincial and local health authorities control permissible levels of emission within their jurisdictions.⁵⁵⁸ However, each level of government—federal, provincial, and municipal—is empowered to enforce the provisions of the law.⁵⁵⁹ In connection with discharges from vessels and ports, legislation passed in 1980 seeks to prevent and control pollution discharged into waterbodies from vessels and ports.⁵⁶⁰ This legislation specifically targets the prevention of and response to oil spills, and includes sanctions for violations to its norms.⁵⁶¹

To regulate and manage national parks, natural reserves and national monuments, the National Parks Law was adopted in 1980.⁵⁶² The National Parks Administration Agency controls national parks, natural reserves, and national monuments. The National Parks Law prohibits any commercial exploitation within national parks, with the exception of tourism, and restricts commercial exploitation within natural reserves, subject to the applicable regulations and with authorization on a case-by-case basis issued

⁵⁵⁶ “Ley No. 24.051 de 1992,” B.O., 17 de enero de 1992 (Arg.); “Decreto No. 831 de 1993,” B.O., 3 de mayo de 1993 (Arg.).

⁵⁵⁷ “Ley No. 24.051 de 1992,” B.O., 17 de enero de 1992 (Arg.); “Decreto No. 831 de 1993,” B.O., 3 de mayo de 1993 (Arg.).

⁵⁵⁸ “Ley No. 20.284 de 1973,” B.O., 3 de mayo de 1973, arts. 6 & 7 (Arg.).

⁵⁵⁹ *Id.* art. 2. See BAKER & MCKENZIE, *supra* note 421, at 7.

⁵⁶⁰ “Ley No. 22.190 de 1980,” B.O. 18 de marzo de 1980 (Arg.).

⁵⁶¹ *Id.* arts. 2 & 4.

⁵⁶² “Ley No. 22.351 de 1980,” B.O., 12 de diciembre de 1980 (Arg.).

by the National Parks Administration Agency.⁵⁶³ Activities within national monuments are absolutely prohibited.⁵⁶⁴

3.9 ENVIRONMENTAL LEGISLATION FOR THE ENERGY SECTOR

Argentina has adopted environmental statutes that apply only to the energy sector. Furthermore, energy authorities, in lieu of environmental authorities, are empowered to implement and enforce these sector-specific environmental laws. Certainly, environmental management of energy developments is determined, implemented and controlled primarily by energy authorities—rather than by environmental authorities—and is grounded on energy laws—rather than environmental laws—.

Pursuant to the 1967 Hydrocarbons Law, the Energy Secretariat is responsible for issuing controlling measures for the protection of the environment during the exploration and exploitation phases of hydrocarbon developments.⁵⁶⁵ Similarly, pursuant to the 1992 Natural Gas Law, the National Entity for Gas Regulation (ENARGAS) is charged with preventing environmental impacts of downstream natural gas activities.⁵⁶⁶ For its part, the 1992 Electricity Law empowers the federal Energy Secretariat to issue norms and regulations for the protection of the environment in connection to the generation, transmission and distribution of electricity.⁵⁶⁷ In addition, the 1992 Electricity Law assigns to the main regulatory body for the power sector—the *Ente Regulador de la Energía Eléctrica* (ENRE)—the task of overseeing the industry’s environmental

⁵⁶³ *Id.* arts. 4, 5 & 10.

⁵⁶⁴ *Id.* art. 8.

⁵⁶⁵ See Argentina’s Hydrocarbons Law, *supra* note 417, arts. 69, 87-90 & 97. See also “Decreto 27 de 2003,” B.O., 27 de mayo de 2003 (Arg.); Argentina’s Hydrocarbons Decree, *supra* note 444, art. 6.

⁵⁶⁶ Argentina’s Natural Gas Law, *supra* note 459, arts. 2 (f) & 52 (b); Argentina’s Natural Gas Regulations, *supra* note 463, arts. 16-18 & 50-64; “Decreto No. 729 de 1995,” B.O., 30 de mayo de 1995 (Arg.).

⁵⁶⁷ See Argentina’s Electricity Law, *supra* note 484, art. 17. See also Argentina’s Restructuring Decree, *supra* note 482.

performance.⁵⁶⁸

Oil and Gas

In 1987, a federal decree implementing Argentina's Hydrocarbons Law made clear that the energy companies involved in the exploitation of hydrocarbons have environmental obligations in carrying out their activities.⁵⁶⁹ Specifically, this federal decree requires oil and gas developers to prevent spills and to pay for damages incurred, in the event they are declared responsible for the spills pursuant to the law.⁵⁷⁰ The decree also requires developers to follow "general accepted security practices" in order to prevent or minimize any other disastrous situation or event."⁵⁷¹ Furthermore, oil and gas exploitation activities in oceans, rivers or lakes, must be carried out in ways that prevent water contamination; and, those activities taking place in national or provincial parks must abide by the environmental norms issued to protect these areas (i.e., the National Parks Law).⁵⁷²

In 1992, the Energy Secretariat issued a comprehensive set of regulations for the protection of the environment during the exploration and exploitation phases of hydrocarbon developments.⁵⁷³ This set of rules provides guidelines for the preparation of an environmental impact statement for upstream activities, criteria for approval, and monitoring requirements. It requires hydrocarbon developers to prepare two separate environmental impact assessments: one for the exploration phase and another for the

⁵⁶⁸ Argentina's Electricity Law, *supra* note 484, art. 56 (b), (k).

⁵⁶⁹ "Decreto 623 de 1987, Poder Ejecutivo Nacional," B.O., 10 de agosto de 1987 (Arg.).

⁵⁷⁰ *Id.* art. 5 (c).

⁵⁷¹ *Id.* art. 5 (d).

⁵⁷² *Id.* art. 5 (f) & (g).

⁵⁷³ "Resolución 105 de 1992, Secretaría de Energía", B.O., 18 de Noviembre de 1992 (Arg.) [Argentina's Environmental Regulations for Hydrocarbons].

exploitation phase.⁵⁷⁴ These studies must be prepared by recognized environmental experts registered as such with the Energy Secretariat.⁵⁷⁵

Guidelines for the preparation of environmental impact statements for oil and gas upstream developments were initially adopted in 1993 and amended in 2004.⁵⁷⁶ Notably, the developer is required to present an annual report on its environmental performance, which must be prepared by an independent auditor.⁵⁷⁷ The Energy Secretariat and provincial authorities coordinate the monitoring of these activities.⁵⁷⁸ The Federal Council on the Environment (CONAMA), for its part, issued a resolution establishing a commission to study environmental impacts of oil and gas activities, and to coordinate implementation of these regulations in the oil and gas producing provinces that are members of CONAMA.⁵⁷⁹

No environmental impact review is required to carry out superficial exploration of lands with potential oil reserves. The 1967 Hydrocarbons Law requires only authorization from the owner and permission from the provincial energy authority.⁵⁸⁰ However, the corresponding energy authority is empowered to inspect the performance of superficial exploration activities, and any damages inflicted on private lands resulting from such activities must be repaired.⁵⁸¹ In such event, the injured party can sue for damages in the courts or, alternatively, the parties may settle based on an estimate of damages prepared by the corresponding energy authority.⁵⁸²

⁵⁷⁴ *Id.* §§ 1.2.1. & 1.2.2.

⁵⁷⁵ *Id.*

⁵⁷⁶ “Resolución No. 25 de 2004, Secretaría de Energía,” B.O., 14 de enero de 2004 (Arg.).

⁵⁷⁷ Argentina’s Environmental Regulations for Hydrocarbons, *supra* note 573, § 1.2.2.

⁵⁷⁸ *Id.*

⁵⁷⁹ CONAMA’s “Resolucion 82 de 25 de Marzo de 2004,” (Arg.).

⁵⁸⁰ Argentina’s Hydrocarbons Law, *supra* note 417, arts. 14 & 15.

⁵⁸¹ *Id.* arts. 14 & 15.

⁵⁸² *Id.* art. 100.

Other environmental norms issued by the Energy Secretariat for the oil and gas sector address the following topics: transportation;⁵⁸³ gas flaring;⁵⁸⁴ contingency plans;⁵⁸⁵ oil clean-ups and restoration of contaminated soils;⁵⁸⁶ environmental audits;⁵⁸⁷ and sanctions for failures in such audits.⁵⁸⁸ Safety norms for the production of hydrocarbon fuels were issued in 1949, and have been in effect ever since.⁵⁸⁹

Downstream Natural Gas

Until 1992, the Energy Secretariat supervised environmental aspects of the transportation and distribution of natural gas, in addition to supervising upstream activities. In 1992, such power shifted to the federal entity for gas regulation (ENARGAS), pursuant to the Natural Gas Law.⁵⁹⁰ This law gave ENARGAS a specific mandate to “promote the rational use of natural gas and protect the environment,” and entrusted the entity with issuing environmental regulations for the distribution and inter-province transmission of natural gas.⁵⁹¹

The ENARGAS is responsible for reviewing and approving environmental impact assessments for “significant works”, “additions”, and “expansions” of activities and projects related to the distribution and inter-province transmission of natural gas.⁵⁹² Further, pursuant to the Natural Gas Law, carriers and distributors of gas must ensure

⁵⁸³ “Disposición No. 56 de 1997, Secretaría de Energía, Subsecretaría de Combustibles” B.O., 22 de abril de 1997 (Arg.). See also “Decreto 44 de 1991, Poder Ejecutivo Nacional,” B.O., 11 de enero de 1991 (Arg.).

⁵⁸⁴ “Resolución No. 143 de 1998, Secretaría de Energía,” B.O., 22 de abril de 1998 (Arg.).

⁵⁸⁵ “Resolución No. 342 de 1993, Secretaría de Energía,” B.O., 4 de noviembre de 1993 (Arg.).

⁵⁸⁶ “Resolución No. 341 de 1993, Secretaría de Energía,” B.O., 11 de abril de 1993 (Arg.).

⁵⁸⁷ “Resolución No. 404 de 1994, Secretaría de Energía,” B.O., 29 de diciembre de 1994 (Arg.).

⁵⁸⁸ “Resolución No. 160 de 1999, Secretaría de Energía,” B.O., 15 de abril de 1999 (Arg.); See Argentina’s Hydrocarbons Law, *supra* note 417, Title VII, arts. 87-90.

⁵⁸⁹ “Ley No. 13.660 de 1949,” B.O., 4 de noviembre de 1949 (Arg.).

⁵⁹⁰ Argentina’s Natural Gas Law, *supra* note 459, arts. 2 & 52.

⁵⁹¹ *Id.* arts. 2 (f) & 52 (b).

⁵⁹² *Id.* art. 16; Argentina’s Natural Gas Regulations, *supra* note 463, art. 16 & 18.

compliance with safety norms in their activities, utilize advanced technology, and refrain from abandoning installations without prior authorization.⁵⁹³ In addition, this law sets forth enforcement procedures and grants citizens the right to request a public hearing to determine whether violations of the law have occurred.⁵⁹⁴ Regulations implementing the Natural Gas Law provide for citizen access to information and participation in decision-making related to downstream gas activities.⁵⁹⁵

In 2002, all applicable gas regulations were compiled in the so-called Natural Gas Code.⁵⁹⁶ The Natural Gas Code specifically requires implementation of mitigating measures during the construction, operation, and maintenance of all pipelines, regardless of pipeline location. The application of these norms ensures minimum environmental standards of protection for pipelines and delivery networks throughout the country. The ENARGAS also has provided gas pipeline safety guidelines, which are incorporated into the Natural Gas Code. Under the Natural Gas Code, all downstream gas activities are required to submit an environmental impact assessment, an environmental protection plan (including mitigation measures and monitoring programs), and an environmental auditing plan (including procedures for supervision and quality control during construction and operation and for performing environmental audits).

The Power Sector

Environmental regulation of the power sector in Argentina dates back to 1987—prior to the restructuring of the sector—when the Energy Secretariat required the

⁵⁹³ Argentina's Natural Gas Law, *supra* note 459, arts. 19, 21 & 78.

⁵⁹⁴ *Id.* arts. 65-70; Argentina's Natural Gas Regulations, *supra* note 463, arts. 65-70.

⁵⁹⁵ Argentina's Natural Gas Regulations, *supra* note 463, art. 67.

⁵⁹⁶ "Resolución No. 2747 de 2002, Ente Nacional Regulador del Gas," B.O., 15 de enero de 2003 (Arg.), *amended by* "Resolución No. 2.785 de 2003, Ente Nacional Regulador del Gas," B.O., 7 febrero de 2003 (Arg.); "Resolución No. 186 de 1995, Ente Regulador del Gas," B.O., 1 de septiembre de 1995 (Arg.).

preparation of environmental impact assessment and monitoring plans for all energy projects.⁵⁹⁷ The Energy Secretariat only provided guidance on the preparation of assessments and monitoring plans for hydroelectric projects in 1987, however.⁵⁹⁸ Later, in 1990, the Energy Secretariat issued guidance on the preparation of assessments and monitoring plans for thermoelectric projects, subsequently updated in 1993 and 1995.⁵⁹⁹ Guidance relating to the electricity transportation projects was adopted in 1992.⁶⁰⁰

In 1990, the Congress passed legislation ordering an environmental evaluation of dams for electric generation in Argentina, including ecological, geological, seismological and hydrological impacts.⁶⁰¹ This mandate related to dams “constructed, under construction and/or planned, whether national or extranational.”⁶⁰² To preserve consistency, the law required the use of the Energy Secretariat’s guidance on environmental aspect of hydroelectric projects issued in 1987.

The 1990 legislation requires a joint evaluation by the federal and provincial energy and environmental authorities with jurisdiction over the project.⁶⁰³ The result of these studies was to be presented to the Congress and subject to public hearings.⁶⁰⁴ The Congress also instructed the federal government to pursue agreements with neighboring countries to minimize social and environmental impacts of dams, to complement the

⁵⁹⁷ “Resolución No. 475 de 1987, Secretaría de Energía,” B.O., 4 de septiembre de 1987, art. 1 (Arg.).

⁵⁹⁸ “Resolución No. 718 de 1987, Secretaría de Energía,” B.O., 29 de diciembre de 1987, art. 1 (Arg.).

⁵⁹⁹ “Resolución No. 149 de 1990, Secretaría de Energía,” B.O., 2 de octubre de 1990, art. 1 (Arg.); “Resolución No. 154 de 1993, Secretaría de Energía,” B.O., 27 de mayo de 1987, art. 1 (Arg.); “Resolución No. 182 de 1995, Secretaría de Energía,” B.O., 22 de abril de 1995, art. 1 (Arg.) [Argentina’s Environmental Regulations for Thermoelectric Projects].

⁶⁰⁰ “Resolución No. 15 de 1992, Secretaría de Energía,” B.O., 11 de septiembre de 1992, art. 1 (Arg.).

⁶⁰¹ “Ley No. 23.879 de 1990,” B.O., 1 de noviembre de 1990 (Arg.), art. 1.

⁶⁰² *Id.*

⁶⁰³ *Id.* art. 2.

⁶⁰⁴ *Id.* art. 3.

efforts undertaken pursuant to this legislation.⁶⁰⁵

Since 1992, when Argentina restructured the electricity sector, federal law—the 1992 Electricity Law—requires that all generation, transportation and distribution facilities comply with the norms “for the protection of the watersheds and ecosystems affected.”⁶⁰⁶ The 1992 Electricity Law sets forth and penalties fines for violations to its provisions.⁶⁰⁷ In addition, this legislation specifically provides that these facilities must fulfill applicable federal emission standards set forth by the Energy Secretariat.⁶⁰⁸ Thus, the Energy Secretariat—not the environmental authorities—determines performance standards of power generating facilities, in particular with regards to air emissions of sulphur dioxide, nitrus oxides and particulate matter for units of capable of generating 50 megawatts or more.

The main regulatory body for the power sector—*Ente Regulador de la Energía Eléctrica* (ENRE)—empowered by the 1992 Electricity Law to oversee the industry’s environmental performance, also requires actors in the power sector to abide by federal, provincial and local environmental norms and to prepare environmental management plans.⁶⁰⁹ Since the 1992 Electricity Law imposes fines and penalties for violations to its provisions, ENRE has explicitly indicated that non-compliance with environmental norms will trigger these fines and penalties.⁶¹⁰ The ENRE has established guidance for the preparation of environmental studies relating to the transportation and distribution of

⁶⁰⁵ *Id.* art. 5.

⁶⁰⁶ See Argentina’s Electricity Law, *supra* note 484, art. 17.

⁶⁰⁷ *Id.* art. 77.

⁶⁰⁸ *Id.* art. 17.

⁶⁰⁹ “Resolución ENRE 51/1995,” B.O. 4 de abril de 1995 (Arg.), art. 1; “Resolución ENRE 51/1995,” B.O. 4 de abril de 1995 (Arg.), art. 1; Argentina’s Electricity Law, *supra* note 484, arts. 17, 56 (b), 56 (k) & 77.

⁶¹⁰ “Resolución ENRE 51/1995,” B.O., 4 de abril de 1995 (Arg.), art. 2.

electricity.⁶¹¹

3.10 ENFORCEMENT

Difficulties with enforcement of environmental laws dealing with the energy sector in Argentina, stem both from reforms that have occurred in the sector, as well as from the lack of territorial and institutional coordination to enforce these laws. Before the privatization wave of the 1990s, Argentina's energy sector (and the economy as a whole) was largely run under the control and management of the federal government.⁶¹² Environmental law practitioners have noted that "[a]s a practical matter, the State was the only subject of the environmental regulations enacted by the government, and even then compliance was minimal. Nowadays governmental participation in economic activities is negligible, and it is private industries that are increasingly concerned with environmental norms."⁶¹³

The sectoral approach concerning environmental matters in Argentina's energy sector, determines, to a large degree, enforcement of environmental laws in the energy sector. Inevitably, energy and environmental authorities within each level of government could clash in the exercise of statutory mandates, and the coordination is necessary. With the establishment of COFEMA, the enactment of the 1994 Constitution and the passing and implementation of the 2002 Environmental Framework Law, environmental enforcement responsibilities have been redefined as well: the federal government must act to protect the minimum standards throughout the nation and the local authorities enforce their local laws. The courts have also played a key role in clarifying the roles of

⁶¹¹ "Resolución ENRE 236/1996," B.O., 4 de junio de 1996 (Arg.), art. 3.

⁶¹² See BAKER & MCKENZIE, *supra* note 421, at 3.

⁶¹³ *Id.*

federal and state governments.⁶¹⁴

Another vital step to facilitate enforcement of environmental laws was to provide a clear legal basis for environmental liability. This was accomplished with the passage of the Environmental Framework Law. Previously, there were no specific provisions on environmental liability (except in connection with hazardous waste disposal under the 1992 Hazardous Waste Law).⁶¹⁵ Consequently, the matter was governed by the Civil Code, which made it difficult to ascertain liable parties or remedies for polluting activities.⁶¹⁶ Further, doctrinal debates on this topic (not just in Argentina, but in the entire Latin American region), lead to uncertainty and difficulties enforcement. As a result of the structural changes in the energy sector and the enactment of various laws setting minimum environmental standards, federal and provincial authorities are stepping up the enforcement of environmental laws and regulations.

Perhaps the most important tool to set in motion effective enforcement of environmental law in Argentina is the provision in the 1994 Constitution that gives the means to claim the protection of the environment via collective actions of *Amparo*, discussed *supra* in Chapter 2.⁶¹⁷ The effective use of collective *Amparo* enforcement actions in energy activities has been demonstrated in *Oikos v. Repsol-YPF*, where the courts ordered the suspension of an oil project in the Province of Mendoza that would impact a wetland system.⁶¹⁸ The wetland ecosystem had been declared a provincial

⁶¹⁴ See Sergio Dugo, *Access to Environmental Justice, The Effectiveness of Judicial Procedures and the Efficiency of Environmental Decisions; the Experience of the Argentine Courts in FARN*, COMPLIANCE AND ENFORCEMENT II, *supra* note 36, at 97.

⁶¹⁵ See FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 45.

⁶¹⁶ See BAKER & MCKENZIE, *supra* note 421, at 14.

⁶¹⁷ See FARN, JUSTICE AND ENVIRONMENT, *supra* note 271, at 15-18.

⁶¹⁸ See *Around the Region: Court suspends large Argentine oil project*, ECOAMÉRICAS, April 2005, Vol. 7. No. 76, at 2.

natural reserve in 1980. In 1993, Repsol-YPF won a 25-year oil concession encompassing areas in the reserve from provincial authorities. The wetland was later designated for conservation under the 1971 *Ramsar* wetland-protection treaty in 1995.

In 2000, Repsol-YPF proposed a large oil development including areas within the provincial reserve, and the provincial authorities approved the environmental-impact assessment in 2003. At this point, the environmental group *Oikos Red Ambiental (Oikos)* filed a collective *Amparo* suit. The plaintiffs argued that the oil development by Repsol-YPF would contravene the Constitution's Article 41, which grants citizens the right to a healthy environment, as well as provincial law prohibiting oil and mining activity in protected areas. It also alleged deficiencies in the project's environmental impact assessment mainly that the project failed to fulfill public-hearings requirements, that it inaccurately described the boundaries of the protected area, and that it lacked proper technical review.⁶¹⁹

Reportedly, Repsol-YPF argued in court that its oil concession should be honored because it predates the provincial law prohibiting developments in protected areas.⁶²⁰ In March 14, 2005, the Supreme Court for Mendoza province ruled favorably on the collective *Amparo* complaint filed by *Oikos*.⁶²¹ The Supreme Court also held that environmental norms should take precedence over the developer's rights.⁶²² The ruling may not be the end of the oil development. Reportedly, Repsol-YPF may resubmit the environmental assessment and continue to pursue the project.⁶²³

⁶¹⁹ *Id.*

⁶²⁰ *Id.*

⁶²¹ See *Oikos v. Repsol-YPF* available at <http://www.oikosredambiental.org.ar/llanca.htm> (in Spanish).

⁶²² See *Around the Region: Court suspends large Argentine oil project*, ECOAMÉRICAS, April 2005, Vol. 7. No. 76, at 2.

⁶²³ *Id.*

CHAPTER 4 – BOLIVIA

4.1 CONSTITUTIONAL ISSUES

Under the 1967 Bolivian Constitution, as restated in 2004, the public domain encompasses all natural resources, including renewable and non-renewable energy resources.⁶²⁴ Hydrocarbon and mineral resources, in whatever condition or form, are specifically declared to be public domain and subject to the State's exclusive rights of exploration and exploitation.⁶²⁵ Pursuant to the 1967 constitutional text, no concession or contract can confer ownership of the hydrocarbon deposits to third parties.⁶²⁶ The Bolivian Constitution further provides that the State will regulate the exploitation of renewable natural resources, "seeking their conservation and increment."⁶²⁷ Despite these provisions, which place energy resources in the hands of the Bolivian people and give the central government ample powers to manage energy resources, a constitutional assembly was convened in 2006 to rewrite the Constitution, in particular to address the issue of energy resources management and control.

4.2 OIL AND GAS LAW

Until recently, the development of the oil and gas industry in Bolivia had followed a similar path to neighboring Argentina. In 1936, Bolivia followed Argentina's lead and created its own state oil company: *Yacimientos Petrolíferos Fiscales Bolivianos* (YPFB).⁶²⁸ In 1994, the country again followed a trend initiated in Argentina two years earlier, and passed legislation to allow for the privatization of YPFB under a so-called

⁶²⁴ CONST. art. 136 (Bol.) ("Ley 2.650 de 2004," G.O., de 13 de abril de 2004 (Bol.).

⁶²⁵ *Id.* arts. 137 & 139.

⁶²⁶ *Id.* art. 139.

⁶²⁷ *Id.* art. 170.

⁶²⁸ *See* "Estatutos de Yacimientos Petrolíferos Fiscales Bolivianos del 21 de diciembre de 1936" (Bol.).

“capitalization” program. Pursuant to the Capitalization Law of 1994, the government implemented a program that targeted private investments in all of Bolivia's major government-owned companies, not just YPFB.⁶²⁹ The Bolivian government set up the program so that, after a public tender, investors with the winning bid would be awarded up to 50 percent of a company's shares, with the other 50 percent of the shares reserved for Bolivian nationals via private pension funds handled by international trustees.⁶³⁰ Despite the 50/50 ownership the private investor nonetheless gained full administrative control of the company.⁶³¹

In 1996, a Hydrocarbons Law was passed to facilitate the reforms to the oil and gas sector.⁶³² Under the 1996 Hydrocarbons Law and the Bolivian “capitalization” program, YPFB split into several companies: two upstream units, a transportation company, a refining company, and several natural gas distribution networks.⁶³³ The two upstream units and the transportation company for oil and natural gas were privatized in 1997.⁶³⁴ The oil refining company was sold in 1998. By 2002, however, the government had not received any bids for YPFB's natural gas distribution networks, and abandoned the sell-off of this group of assets. As a result, by 2002, Bolivia had established a semi-privatized hydrocarbons sector.

Political turmoil followed, starting in 2003 when a plan to export Bolivian natural gas came to a halt. The stalled project envisioned the construction of a pipeline and port facilities to transport natural gas from Bolivia's southern fields to the Pacific Ocean.

⁶²⁹ “Ley No. 1.544 de 1994,” G.O., 21 de marzo de 1994, arts. 1 & 2 (Bol.) [Bolivia's Capitalization Law].

⁶³⁰ *Id.* art. 4.

⁶³¹ *Id.*

⁶³² “Ley No. 1.689 de 1996,” G.O., 30 de abril de 1994 (Bol.), arts. 1 & 44 [Bolivia's Hydrocarbons Law].

⁶³³ See EIA, Bolivia, *supra* note 449.

⁶³⁴ *Id.*

Bolivia, a landlocked state, had to face the determination of whether the export terminal would be constructed in a Peruvian port or in a Chilean port. The project raised massive protests that eventually resulted in the resignation of the President in October of 2003. Early the next year, the interim President called for a referendum on national energy policy, which included the main controversial issues: plans for exporting natural gas, the 1996 Hydrocarbons Law and its ensuing reforms to the sector, and the future management of hydrocarbon recourses in Bolivia—particularly natural gas—. ⁶³⁵

The referendum took place on July 18, 2004, and posed the following questions to the Bolivian electorate:

- Do you agree that the 1996 Hydrocarbon Law should be repealed?
- Do you agree that the State should recover ownership over all hydrocarbons at the wellhead?
- Do you agree that YPFB [the state-oil company] should be reestablished, recovering the State's ownership of stakes held in the part-privatized oil companies, so that it can take part in all stages of the hydrocarbon production chain?
- Do you agree with the policy of using gas as a strategic resource to recover sovereign and viable access to the sea?
- Do you agree that Bolivia should export gas under a national policy framework that ensures supplies for Bolivians; encourages the industrialization of gas on national territory; levies taxes and/or royalties on oil companies up to 50 percent of the production value of oil and gas; and earmarks resources from the export and industrialization of gas mainly for education, health, roads and jobs? ⁶³⁶

The majority of voters answered “yes” to these five questions. ⁶³⁷ Accordingly, the

⁶³⁵ See OLADE, Report 2004, Bolivia, *supra* note 2; OLADE, POWER SECTOR, *supra* note 209, at 164-165.

⁶³⁶ See OLADE, Report 2004, Bolivia, *supra* note 2. See also *Bolivia's referendum: Counter-reform—or muddle along?*, THE ECONOMIST, Jul. 15, 2004.

⁶³⁷ See OLADE, Report 2004, Bolivia, *supra* note 2 (noting that the answer to these questions was on average 65 percent affirmative).

government was empowered to exert greater control over the export and sale of the country's vast oil and gas wealth.

In May 2005, the National Congress acted on its mandated. First, Congress abrogated the 1996 Hydrocarbons Law and passed new Hydrocarbons Law to regulate the oil and gas sector.⁶³⁸ In this way, the legislature acted on the response to the first question in the referendum (whether the 1996 Hydrocarbon Law should be repealed). Second, pursuant to the 2005 Hydrocarbons Law, the Bolivian State declared ownership over all hydrocarbons, responding to the second question in the referendum (whether Bolivia should recover ownership over all hydrocarbons at the wellhead).⁶³⁹ Those having oil and natural gas concession from the State had to comply with the new legal framework with a six month timeframe.⁶⁴⁰

Third, responding to the third question in the referendum, YPFB [the state-oil company] was reestablished in order to recover the State's ownership stakes in the part-privatized oil companies, and it was empowered to participate in all stages of the hydrocarbon industry.⁶⁴¹ Fourth, oil and natural gas were declared strategic resources, meaning these resources should be used to foster economic development and a viable access to the sea.⁶⁴² In this way, the legislature acted on the response to the fourth question in the referendum.

Fifth, in response to the last question in the referendum, the goals of Bolivia's general policy toward natural gas were established. The four policy goals will seek to:

⁶³⁸ "Ley No. 3058 de 2005," G.O., de 17 de mayo 2005 (Bol.) [Bolivia's Hydrocarbons Law], arts. 2 & 3. *See also Growing Protest in Bolivia: Mocking Pilate*, THE ECONOMIST, May 21, 2005, at 42.

⁶³⁹ *See* Bolivia's Hydrocarbons Law, *supra* note 638, art. 5.

⁶⁴⁰ *Id.*

⁶⁴¹ *Id.* art. 6.

⁶⁴² *Id.* art. 4.

export gas under a national policy framework that ensures supplies for Bolivians; encourage the industrialization of gas on national territory; levy taxes and/or royalties on oil companies up to 50 percent of the production value of oil and gas; and, earmark resources from the export and industrialization of gas mainly for education, health, roads and jobs.⁶⁴³ The 2004 Hydrocarbons Law also contains chapters dealing with the rights of indigenous people and environmental protection.⁶⁴⁴ Recognizes ancestral and sacred places of indigenous people and provides for a special procedure to apply eminent domain laws in relation to oil and gas developments.⁶⁴⁵

The 2005 legislation regulating oil and natural gas was insufficient to satisfy those claiming that the entire hydrocarbons industry should be nationalized. The interim President was forced to resign, leaving the Supreme Court of Justice with no other option but to call for a general election.⁶⁴⁶ The incoming administration immediately called for constitutional assembly to address, among other issues, the topic of energy exploitation. Further, in May 2006, the government of Bolivia re-nationalized the country's hydrocarbon reserves, effectively giving control of oil and natural gas reserves back to YPFB.⁶⁴⁷ Private oil companies had 180 days to negotiate new agreements to operate as service providers to YPFB.⁶⁴⁸

⁶⁴³ *Id.* arts. 7-15, 139-144.

⁶⁴⁴ *Id.* arts. 114-134.

⁶⁴⁵ *Id.* arts. 121-128.

⁶⁴⁶ See *Bolivia: Corraling the gas – and democracy*, THE ECONOMIST, June 11, 2005, at 35; *Bolivia: Mob rule, not people power*, THE ECONOMIST, June 18, 2005, at 17.

⁶⁴⁷ See “Decreto No. 28.701 de 2006,” G.O., 1 de mayo de 2006 (Bol.), arts. 1 & 2.

⁶⁴⁸ *Id.* art. 3.

4.3 ELECTRICITY LAW

Bolivia, following the lead of Chile, Argentina, and other Latin American countries, restructured and privatized the power sector in the 1990s. Passed in 1994, the Electricity law divided the assets of the State utility (*Empresa Nacional de Electricidad*, ENDE), separated the responsibilities for electric generation, transmission, and distribution, and allowed the privatization of the sector.⁶⁴⁹ As of 2006, there were various private power-generating companies in Bolivia generating power for the interconnected system, including several subsidiaries of foreign energy companies.⁶⁵⁰

Bolivia's Electricity law separates the country's electricity supply into generation, transmission, and distribution functions, and it prohibits any generating company operating on the interconnected system from owning more than 35 percent of national installed generating capacity.⁶⁵¹ It also stipulates that companies on the interconnected system are only allowed to participate in one activity: generation, transmission or distribution.⁶⁵² Only isolated systems, also termed "free-standing systems", may be vertically integrated.⁶⁵³

In Bolivia, the distribution companies are required to maintain contracts with generation companies.⁶⁵⁴ The Electricity Law requires distributors to sign supply contracts with generators "to comply with [their] obligation to meet total demand for

⁶⁴⁹ "Ley No. 1.604 de 1994," G.O., 21 de diciembre de 1994, art. 15 (Bol.) [Bolivia's Electricity Law]. See Armstrong, *supra* note 477, at 495.

⁶⁵⁰ See OLADE, Report 2004, Bolivia, *supra* note 2; EIA, Bolivia, *supra* note 449.

⁶⁵¹ Bolivia's Electricity Law, *supra* note 649, art. 15.

⁶⁵² *Id.*

⁶⁵³ *Id.* art. 20.

⁶⁵⁴ Bolivia's Electricity Law, *supra* note 649, art. 20.

electricity within [their] concession area[s].”⁶⁵⁵ The law further mandates that these contracts cover, at a minimum, 80 percent of the maximum demand in the area for which a distribution company is responsible.⁶⁵⁶

The National Load Dispatch Committee coordinates the Bolivian power pool. This dispatch entity is composed of representatives of generation, transmission, and distribution companies, as well as the consumers and the government.⁶⁵⁷ The National Load Dispatch Committee is responsible for calculating the prices for a period of forty-eight month and for calculating peak and non-peak energy prices.⁶⁵⁸

Power agreements between generators and distributors are regulated only if they are not addressed in supply contracts; thus, pricing in power purchase agreements is essentially unregulated.⁶⁵⁹ However, the maximum prices for power sales to distribution companies are subject to government regulation. Some commentators regard this scheme “a regulatory cap on electricity prices, if not capacity.”⁶⁶⁰ With respect to the rate structure for regulated consumers, tariffs are linked to short-term marginal costs.⁶⁶¹

4.4 ENERGY AUTHORITIES AND REGULATORY AGENCIES

The Ministry of Hydrocarbons (*Ministerio Hidrocarburos*) oversees energy policy generally and the upstream oil and gas industry in particular.⁶⁶² The Office of the Superintendent of Hydrocarbons (*Superintendencia de Hidrocarburos del Sistema de Regulación Sectorial*, SIRESE), established in 1994, is responsible for regulating

⁶⁵⁵ *Id.* art. 31.

⁶⁵⁶ *Id.*

⁶⁵⁷ *Id.* art. 18.

⁶⁵⁸ *Id.* art. 49.

⁶⁵⁹ *Id.* art. 45.

⁶⁶⁰ See Armstrong, *supra* note 477, at 496.

⁶⁶¹ Bolivia’s Electricity Law, *supra* note 649, art. 15.

⁶⁶² See Bolivia’s Hydrocarbons Law, *supra* note 638, arts. 20-21.

downstream oil and gas industries.⁶⁶³ The SIRESE's duties include granting concessions and licenses and ensuring a competitive industry.⁶⁶⁴

When Bolivia passed the Electricity Law in 1994, it established the Office of the Superintendent of Electricity (*Superintendencia de Electricidad*) as the regulatory body for the Bolivian electricity sector.⁶⁶⁵ The Office of the Superintendent of Electricity oversees the power sector as a whole. Specifically, the Superintendent's mandates include the following: protecting consumer rights; granting and amending concessions and licenses; approving international interconnections and stipulating the quantity of electricity exports and imports; and supervising the activities of the National Committee of Load Dispatch (*see supra* at section 4.3). Regarding the electrical sector, it should be noted that in April 2003 Bolivia reorganized the sector, and the electrical sector, which was traditionally part of the Ministry of Hydrocarbons, was transferred to the Ministry of Economic Development.⁶⁶⁶ This move has been criticized by some experts, who believe that this approach eliminates “a great potential for the development of integral energy policies.”⁶⁶⁷

4.5 INSTITUTIONAL ENVIRONMENTAL FRAMEWORK

Bolivia's Law for the Protection and Conservation of the Environment and Natural Resources (*Ley de Protección y Conservación del Medio Ambiente y los Recursos Naturales*) (hereinafter Bolivia's Environmental Framework Law), enacted in 1992, created the nation's regulatory and institutional framework for environmental

⁶⁶³ *Id.* art. 24. *See also* “Ley 1.600 de 1994,” G.O., 28 de octubre de 1994 (Bol.).

⁶⁶⁴ *See* Bolivia's Hydrocarbons Law, *supra* note 638, art. 25.

⁶⁶⁵ Bolivia's Electricity Law, *supra* note 649, arts. 11-12.

⁶⁶⁶ *See* OLADE, POWER SECTOR, *supra* note 209, at 164-165.

⁶⁶⁷ *Id.* at 165.

management.⁶⁶⁸ The institutional framework is premised on the principle of decentralization of the environmental authority, with responsible units at the national and regional levels.⁶⁶⁹ At the national level, responsibility for national environmental policy, planning and research, as well as for issuing regulations, is assigned to the Ministry of Sustainable Development and Planning (*Ministerio de Desarrollo Sostenible y Planificación*).⁶⁷⁰ In each of Bolivia's regions, a regional agency, termed *Prefectura*, is responsible for implementing the national environmental policy.⁶⁷¹

Bolivia's Environmental Framework Law devotes particular attention to environmental management of energy resources.⁶⁷² Article 73 provides that energy resources are essential for sustainable development and must be used rationally, taking into account the protection and conservation of the environment. Article 74 requires that the Ministry of Sustainable Development and the Ministry of Hydrocarbons collaborate in the adoption of regulations for such purpose.⁶⁷³ The Ministry of Sustainable Development at the national level, and the *Prefecturas*, at the regional level, are responsible for implementing and enforcing the regulations.⁶⁷⁴ The Ministry of Sustainable Development and the *Prefecturas* are also charged with carrying out the environmental impact review process.

⁶⁶⁸ "Ley No. 1333 de 1992," G.O., 27 de abril de 1992 (Bol.) [Bolivia's Environmental Law]. See Ricardo Cronembold Bello, *Ten Years of Validity of the Environmental Law. The Bolivian Experience*, in FARN, COMPLIANCE AND ENFORCEMENT I, *supra* note 36, at 63.

⁶⁶⁹ Bolivia's Environmental Law, *supra* note 668, arts. 6-10.

⁶⁷⁰ *Id.* art. 7.

⁶⁷¹ *Id.* art. 9.

⁶⁷² *Id.* Title IV, Chapter XII, arts. 68-69 & 73-74.

⁶⁷³ *Id.* art. 74.

⁶⁷⁴ "Decreto Supremo No. 24.176 de 1995," G.O., 8 de diciembre de 1995 (Bol.) [Bolivia's General Environmental Regulations].

4.6 GENERAL ENVIRONMENTAL REGULATIONS

Regulations implementing Bolivia's Environmental Framework Law were adopted in 1995 and 1996. The first set of regulations, issued in 1995, included the following parts: General Environmental Management, including the environmental impact assessment system; Prevention and Control of Environmental Pollution; Air Pollution; Water Pollution; Hazardous Waste Activities; and Solid Waste Management.⁶⁷⁵ Pursuant to the General Environmental Management regulations, the Ministry of Hydrocarbons, as the top sectoral entity in the hydrocarbon's sector, is charged with formulating technical standards and environmental requirements for the sector, in coordination with the Ministry of Sustainable Development.⁶⁷⁶ Ultimately, the Ministry of Sustainable Development issues the regulations and oversees compliance therewith.⁶⁷⁷

The issuance of environmental permits for energy activities may require consultations with different institutions, including the following: the Office of the Forestry Superintendent (*Superintendencia Forestal*), for deforestation activities; the National Office for Protected Areas (*Servicio Nacional de Areas Protegidas*), for activities in protected areas, national parks, and forestry reserves; the National Unit of Archaeology (*Unidad Nacional de Arqueología*), for activities in areas of archeological interest; and the Vice Ministry of Rural and Indigenous Issues (*Ministerio de Asuntos Campesinos y Pueblos Originarios*), for activities affecting indigenous communities or indigenous territories.⁶⁷⁸ As noted above, Bolivia recognizes indigenous peoples'

⁶⁷⁵ Bolivia's General Environmental Regulations, *supra* note 674.

⁶⁷⁶ *Id.* art. 12 (a).

⁶⁷⁷ *Id.* art. 7 (a).

⁶⁷⁸ "Ley No. 1.775 de 18 de octubre de 1996," (Bol.).

collective rights over indigenous territories, as well as the right to manage the use of their renewable natural resources.⁶⁷⁹

4.7 SPECIFIC ENVIRONMENTAL LEGISLATION FOR HYDROCARBONS

A second set of environmental regulations was issued in 1996. This set is aimed purposely at the hydrocarbons sector (*Reglamento Ambiental para el Sector Hidrocarburos*).⁶⁸⁰ These regulations provide substantive and procedural rules for the preparation, review and approval of environmental assessments for oil and gas activities.

The environmental licensing process for hydrocarbon projects consists of two basic steps. First, the applicant presents an Environmental Summary (*Ficha Ambiental*) to the Environmental Unit in the Ministry of Hydrocarbons. The Environmental Summary must contain a description of the project, the baseline environmental conditions, and the expected impacts. Second, the Environmental Unit in the Ministry of Hydrocarbons suggests the category under which the project should be classified, and, accordingly, what kind of report must be submitted the Ministry of Sustainable Development.

The Ministry of Sustainable Development will classify the project under one of four categories: Category I projects require full environmental impact assessment; Category II projects require specific environmental studies; Category III projects only require a Statement of Mitigation Measures and an Environmental Management Plan. Category IV projects do not require any environmental study, but this last category does not apply to activities or projects of the oil and gas sector.

Projects are approved upon the review of the environmental studies and according

⁶⁷⁹ *Id.* See Bolivia's Hydrocarbons Law, *supra* note 638, arts. 114-118. See *supra* §§ 1.6, 2.2, 4.2.

⁶⁸⁰ "Decreto Supremo No. 24.335 de 1996," G.O., 19 de julio de 1996 (Bol.) [Bolivia's Environmental Regulations for Hydrocarbons].

to the project category. An environmental permit is issued for Categories I and II; whereas for Categories III and IV, applicants are informed, if applicable, that an environmental permit is not required. The developer of the project must carry out public consultations regarding these documents, and the results of this process must be included in the environmental impact assessment. Further, the developer must take into consideration the observations, suggestions, and recommendations of the affected population in the corresponding environmental assessment.

For projects that were undergoing implementation, operation, and/or abandonment prior to the enacted of the Environmental Framework Law, an Environmental Manifest (*Manifiesto Ambiental*) is required. The Environmental Manifest must inform about the environmental status of a particular project or activity, its direct area of influence, and propose a corrective action plan to address deficiencies. Along the same lines, the government established a special regime for environmental impacts of the state oil company YPFB. As part of the privatization process of YPFB, a decree established that all environmental pollution caused in or around YPFB facilities would constitute environmental liabilities to be transferred to the Government of Bolivia.⁶⁸¹ Remediation actions of these liabilities do not require an environmental license, but the environmental and energy authorities must approve the remedial work plan.

4.8 ENVIRONMENTAL PROVISIONS IN THE ENERGY LAWS

In addition to the general environmental laws and regulations applicable to the energy sector, Bolivia's energy legislation includes significant requirements aimed at minimizing the environment and social impacts from such activities. Bolivia's

⁶⁸¹ See "Decreto Supremo No. 24.412 de 1996," G.O., 16 de noviembre de 1996 (Bol.).

Hydrocarbons Law provides that the use and exploitation of the hydrocarbons must be efficient and sustainable.⁶⁸² This law requires that oil and gas activities comply with all environmental statutes, and impose additional monitoring, auditing and even a special “deposit” (equivalent to 0.5 percent of the total investment) for these purposes.⁶⁸³

The Hydrocarbons Law explicitly prohibits oil and gas developments in certain environmental sensitive and protected areas, explicitly mentioning *Ramsar* sites, and allows exceptional authorizations with respect to such sites, but only when the developer complies with strict standards and procedures. Additional environmental safeguards are required in connection with environmental impact assessment, mitigation and restoration, seeking the highest protection achievable through the use of the best technology and management practices available.⁶⁸⁴ The 2004 Hydrocarbons Law also contains chapters dealing with the rights of indigenous people, including consultation and compensation requirements.⁶⁸⁵ Recognizes ancestral and sacred places of indigenous people and provides for a special procedure to apply eminent domain laws in relation to oil and gas developments.⁶⁸⁶

Similarly, the Electricity Law contains general provisions that subject the power sector to “the environmental legislation applicable to the sector.”⁶⁸⁷ The Electricity Law also states that the use of water and other renewable, natural resources for the production of electricity shall be conducted taking into account the rational, integral, and sustainable

⁶⁸² Bolivia’s Hydrocarbons Law, *supra* note 638, arts. 10 & 11.

⁶⁸³ *Id.* arts. 129-131.

⁶⁸⁴ *Id.* arts. 132-134.

⁶⁸⁵ *Id.* arts. 114-120.

⁶⁸⁶ *Id.* arts. 121-128.

⁶⁸⁷ Bolivia’s Electricity Law, *supra* note 649, art. 6.

exploitation of such resources.⁶⁸⁸ Further, in order to seek the rational exploitation of hydro resources, “the Executive Branch may define the minimum hydroelectric participation in the generation capacity of the national interconnected system.”⁶⁸⁹

4.9 ENFORCEMENT

In Bolivia, as in the rest of Latin America, enforcement presents the most important challenge in environmental law.⁶⁹⁰ Ricardo Cronembold Bello notes that, while the Bolivian population knows or understands that there is an Environmental Framework Law and that violations of the law will be punished, society as a whole has not yet reached the stage of demanding strict enforcement of the environmental laws.⁶⁹¹ One of the problems, he points out, is that the “[c]onstant structural changes in the Executive Power have generated total confusion regarding the competent environmental authority. Nobody knows to which authority they have to resort, nor are there trained public officers to serve or carry out a responsible management.”⁶⁹²

The institutional legal framework and the decentralized environmental management system adopted in Bolivia raises two key concerns.⁶⁹³ The first concern is that both energy and environmental authorities are required to coordinate the issuance and implementation of environmental regulations for the energy sector, essentially sharing responsibility over environmental protection. This institutional approach, however, requires effective collaboration between these governmental bodies, which may be difficult to reconcile, to say the least, due to competing goals and objectives. It seems

⁶⁸⁸ *Id.* art. 5.

⁶⁸⁹ *Id.*

⁶⁹⁰ *See* Cronembold Bello, *supra* note 668, at 65.

⁶⁹¹ *Id.*

⁶⁹² *Id.*

⁶⁹³ *Id.*

that in practice energy authorities exert great control of the process and the final decision-making on these matters.

The second concern relates to the decentralized environmental management system adopted in the country. Pursuant to the Environmental Framework Law the system is designed to allow the different regions to constitute their own environmental management for their own realities.⁶⁹⁴ But such decentralized environmental management has not worked as expected. The regions have not taken advantage of the “decentralized” approach; instead, the “centralized” approach is the norm.⁶⁹⁵

⁶⁹⁴ *Id.*

⁶⁹⁵ *Id.*

CHAPTER 5 – BRAZIL

5.1 CONSTITUTIONAL ISSUES

Brazil has a federal system where the Brazilian Union, the states, the municipalities, the Federal District, and even indigenous communities, share ownership and control of energy and natural resources. Significantly, unlike other federal systems where power is divided between only the federal government and the states, in Brazil municipalities are recognized as autonomous entities.⁶⁹⁶ The constitutional framework is not simple, however, and implementing it raises many challenges, as discussed below.

The Union holds the hydrocarbon resources because it owns the “mineral resources, including those of the subsoil”⁶⁹⁷ The Constitution expressly provides that mineral deposits are deemed “a property separate from that of the soil and belong to the Union, the concessionaire being guaranteed the ownership of the mined product.”⁶⁹⁸ Therefore, the exploitation of oil and gas resources is controlled by the Union. The states and municipalities where the activity takes place, nonetheless, are entitled to a significant share of the revenues from their exploitation.⁶⁹⁹ Royalties charged for the exploitation of hydrocarbon resources are as follows: to the federal government (8 percent), the states (45 percent), and municipalities (45 percent).⁷⁰⁰

The Brazilian Constitution includes specific provisions addressing hydro energy resources. Similar to hydrocarbon resources, the Union owns the country’s “hydro energy

⁶⁹⁶ CONST. arts. 18 & 29; Silvia Capelli, *Environmental Management in Brazil: National Environmental System – From Formality to Reality*, in FARN, COMPLIANCE AND ENFORCEMENT I, *supra* note 36, at 45.

⁶⁹⁷ CONST. art. 20 ¶ IX (Braz.).

⁶⁹⁸ *Id.* art. 176.

⁶⁹⁹ *Id.* art. 20 para. 1.

⁷⁰⁰ “Lei No. 8.001 de 1990,” D.O.U., 14.03.1990 (Braz.); “Lei No. 7.990 de 1989,” D.O.U., 29.12.1989 (Braz.).

potentials.”⁷⁰¹ However, the states totally own “the surface or subterranean waters within their domain.”⁷⁰² The federal Constitution declares that the federal government directly or private parties under the concession, authorization, or permission from the federal government, may carry out the exploitation of waterbodies for electric generation in conjunction “with the states where those hydro-energy potentials are located.”⁷⁰³

The utilization of hydro energy potential must be conducted by Brazilians or by a company organized under Brazilian laws and having its head-office and management in Brazil.⁷⁰⁴ Other constitutional provisions relating to hydro-energy are, by and large, very similar to those dealing with hydrocarbon resources. In particular, economic participation in the results of water resources utilization for the purpose of hydroelectric generation is assured to the states or municipalities where the exploitation takes place.⁷⁰⁵

Significantly, the Constitution guarantees public participation and consultation in the decision-making process related to the exploitation of energy resources. In particular, the Congress’s may only authorize hydrocarbon activities on indigenous people territories “after hearing the communities involved.”⁷⁰⁶ Further, the Constitution assures these communities also share in the economic results of such activities.⁷⁰⁷ Similarly, water resources on indigenous people’s lands may only be exploited after the Congress hears the affected communities and authorizes the proposed project, and, as in the case of hydrocarbons, indigenous communities are ensured participation in the results of the

⁷⁰¹ CONST. art. 20 ¶ VIII (Braz.). *See also* CONST. art. 20 ¶¶ III, IV, V, VI, VII and X.

⁷⁰² *Id.* art. 26.

⁷⁰³ *Id.* art. 21 ¶ XII (b).

⁷⁰⁴ Constitutional Amendment No. 6 of 1995 (Braz.) (added para. 1 to art. 176).

⁷⁰⁵ *Id.* art. 20 para. 1. *See* “Lei No. 8.001 de 1990,” and “Lei No. 7.990 de 1989,” *supra* note 700. *See also* “Decreto No. 774 de 1993,” D.O.U., 19.03.1993 (Braz.); “Decreto No. 1.771 de 1996,” D.O.U., 04.01.1996; “Decreto No. 001 de 1991,” D.O.U., 14.01.1991 (Braz.).

⁷⁰⁶ CONST. art. 231 para. 3 (Braz.).

⁷⁰⁷ *Id.* art. 49 ¶ XVI.

project.⁷⁰⁸

With respect to environmental regulation, the Constitution grants *exclusive* legislative powers to the Union over certain matters and *concurrent* legislative powers to both the Union and the states over others.⁷⁰⁹ Residually, the municipalities have the power to legislate upon matters of local interest.⁷¹⁰ The Union, the states, and the municipalities also share certain *common* responsibilities on environmental matters.⁷¹¹ Regarding all other matters, the Constitution expressly states that “[t]he Union shall not intervene in the states,” and that “[t]he state shall not intervene in its municipalities,” except in exceptional circumstances.⁷¹²

Basically, the Union has plenary power for creating general environmental norms, and the states and local entities have supplemental competence.⁷¹³ The Union has *exclusive* power to legislate on topics such as water and energy law, mineral resources law and indigenous peoples.⁷¹⁴ The Union and the states have the power to legislate *concurrently* on matters including the “protection of the environment and the control of pollution” and “liability for damages to the environment.”⁷¹⁵ Municipalities have the power to “(i) legislate on local matters; [and] (ii) supplement federal and state legislation where pertinent.”⁷¹⁶ Specifically, municipalities are empowered to organize and render local public services (including mass-transportation).⁷¹⁷ Municipalities are also instructed

⁷⁰⁸ *Id.* arts. 231 para. 3 & 49 ¶ XVI.

⁷⁰⁹ CONST. arts. 22 & 24 (Braz.). (Note: the states and the Federal District are similarly treated).

⁷¹⁰ *Id.* art. 30.

⁷¹¹ *Id.* art. 23 ¶¶ (III), (VI), (VII), (IX) & (XI).

⁷¹² CONST. arts. 34 & 35 (Braz.).

⁷¹³ See Janelle Kellman, *The Brazilian Legal Tradition and Environmental Protection: Friend or Foe*, 25 HASTINGS INT’L & COMP. L. REV. 145, 152 (2002).

⁷¹⁴ CONST. art. 22 ¶ IV, XII & XIV.

⁷¹⁵ *Id.* art. 24 ¶¶ VI & VIII.

⁷¹⁶ *Id.* art. 30 ¶¶ (I) & (II).

⁷¹⁷ *Id.* art. 30 ¶ (V).

to promote adequate land use planning; and protect local historic and cultural heritage.⁷¹⁸

All the political and administrative entities, including the Union, the states and municipalities, have the power *in common*, “to protect ... assets of historical, artistic or cultural value, monuments, remarkable landscapes and archaeological sites; ... to protect the environment and fight pollution in any of its forms; preserve the forests, fauna and flora; to promote ... basic sanitation conditions;” [and] “to register, monitor and control the concessions of rights to research and exploit water and mineral resources within their territories.”⁷¹⁹ According to Silvia Capelli, “[c]ommon competence, also called cumulative or parallel ... translates [into] the so called Cooperative Federalism.”⁷²⁰

In sum, while energy matters are essentially controlled at the federal level, the responsibility for environmental protection is shared between the Union, the states, and local bodies. The division of competence on environmental matters under the federal Constitution results in a formula whereby the Union is charged with the task of legislating on general rules, and the states supplement this legislation.⁷²¹ If there is no general rule regarding matters subject to “concurrent” powers, the states can exercise the absolute legislative competence.⁷²² The supremacy principle comes into play in cases of conflicting provisions of state law with federal law.⁷²³

5.2 OIL AND GAS LAW

Federal regulation of the hydrocarbons sector in Brazil dates back to 1938, when the Congress passed a Petroleum Law that declared the oil industry a matter of public

⁷¹⁸ *Id.* art. 30 ¶¶ (VIII) & (IX).

⁷¹⁹ *Id.* art. 23 ¶ (III), (VI), (VII), (IX) & (XI).

⁷²⁰ Capelli, *supra* note 696, at 46.

⁷²¹ *Id.* at 46.

⁷²² *Id.*

⁷²³ *Id.*

utility.⁷²⁴ The same legislation established the National Petroleum Council (*Conselho Nacional do Petróleo*) to conduct a strategy for developing the nation's oil and natural gas resources.⁷²⁵ The National Petroleum Council also was authorized to engage directly in exploration and production activities.⁷²⁶ The 1938 Petroleum Law did not, however, call for an oil monopoly in the country under the National Petroleum Council; "[e]xploration, refining, and marketing were open to Brazilian private initiative until 1953."⁷²⁷ Foreign capital was kept out of these activities, mainly for security concerns.⁷²⁸ While the National Petroleum Council dominated petroleum activities during the period 1938-1953, national private capital nevertheless played an important role in the development of the oil industry.⁷²⁹

The State oil monopoly began in 1953 when the Congress passed legislation prohibiting private capital in the exploration, refining or marketing of hydrocarbons.⁷³⁰ This legislation created the state oil company *Petróleos Brasileiros* (*Petrobrás*) to conduct all phases of oil and gas development in the country. Unlike the National Petroleum Council (the *Conselho Nacional do Petróleo*), *Petrobrás* "was designed as a well-capitalized, financially independent company."⁷³¹ But *Petrobrás* "has not been permitted to control national energy policy."⁷³² Between 1953 and 2000, *Petrobrás* remained entirely owned by the Brazilian Union. Nevertheless, in 2000, the government sold a 28.5

⁷²⁴ See generally John D. Wirth, *Setting the Brazilian Agenda, 1936-53*, in *LATIN AMERICAN OIL COMPANIES*, *supra* note 429, at 103; Solberg, *supra* note 429, at 95.

⁷²⁵ Wirth, *supra* note 429, at 113.

⁷²⁶ *Id.*

⁷²⁷ *Id.* at 103 & 114.

⁷²⁸ *Id.* at 118.

⁷²⁹ *Id.* at 103.

⁷³⁰ "Lei No. 2.004 de 1953," D.O.U., 03.10.1953 (Braz.). See Wirth, *supra* note 429, at 103; REYNOLDS & FLOREZ, *supra* note 422, at I, Brazil 47.

⁷³¹ Wirth, *supra* note 724, at 138.

⁷³² *Id.* at 103.

percent stake in the *Petrobrás*.⁷³³

The State oil monopoly ended in 1995, pursuant to the 9th Constitutional Amendment that allowed private entities to carry out the exploitation of oil and gas resources.⁷³⁴ Initially, the 1988 Constitution maintained *Petrobrás*' monopoly, which had been in effect since 1953 pursuant to the law that created *Petrobrás*, over the following activities: exploration and exploitation of hydrocarbons; refining of domestic or foreign petroleum; imports and exports of petroleum products and basic oil by-products; ocean transportation of crude petroleum of domestic origin or of basic petroleum by-products produced in the country; and, pipeline transportation of crude petroleum, its by-products and natural gas of any origin.⁷³⁵

The 1995 amendment authorizes the federal government to enter into contracts with private entities for the execution of the activities enumerated above.⁷³⁶ The amendment further instructs the Congress to establish general conditions for contracting such activities, and to fix the structure and duties of a regulatory agency for hydrocarbons.⁷³⁷ The prospecting and production of hydrocarbon resources may only take place under concession or authorization "by Brazilians or by a company organized under Brazilian laws and having its head-office and management in Brazil," pursuant to the 6th Amendment in 1995.⁷³⁸

The mandates of the 1995 constitutional amendments were implemented in 1997

⁷³³ EIA, Brazil, *supra* note 449.

⁷³⁴ Constitutional Amendment No. 9 of 1995 (Braz.) (incorporated para. 1 to art. 177, which allows private parties to carry out activities enumerated in art. 177 ¶ I-IV).

⁷³⁵ CONST. art. 177 ¶ I-IV (Braz.).

⁷³⁶ Constitutional Amendment No. 9 of 1995 (Braz.) (incorporated para. 1 to art. 177, which allows private parties to carry out activities enumerated in art. 177 ¶ I-IV).

⁷³⁷ *Id.* (incorporated para. 2 to art. 177).

⁷³⁸ See Constitutional Amendment No. 6 of 1995 (incorporated para. 1 to art. 176).

with the passage of the Energy Policy Law, which effectively ended *Petrobrás*' 44-year monopoly of the petroleum industry.⁷³⁹ The Energy Policy Law opened the country's sedimentary basins to public and private exploration and development of oil and natural gas. To gain concession rights to exploit hydrocarbons, all companies must bid under tender processes regulated by the Energy Policy Law.⁷⁴⁰ Thus, since 1997, *Petrobrás* has been required to compete with private ventures to obtain concessions from the Brazilian Government.⁷⁴¹ The 1995 Energy Policy Law also permits joint ventures between *Petrobrás* and foreign oil companies for such endeavors.⁷⁴²

In 2001, another constitutional amendment authorized the Congress to enact legislation establishing duties on the importation and commercialization of petroleum and oil products, natural gas, and ethanol.⁷⁴³ The income received from these duties must be earmarked for purposes including, but not limited to, the following: financing environmental projects related to the oil and gas industry; financing transportation infrastructure in the energy industry; and establishing cross-subsidies in fuel prices.

5.3 ELECTRICITY LAW

During the last part of the 20th Century, through centralized planning and substantial public spending and debt, Brazil was able to build and operate an extensive electrical system.⁷⁴⁴ The system was depended mostly on large hydroelectric plants, which required a robust transmission and distribution system. The ruling principle “was

⁷³⁹ “Lei 9.478 de 1997,” D.O.U., 07.08.1997, art. 1. (Braz.) [Brazil's Energy Policy Law]. See *Brazil's Move Toward Privatization*, INTER-AMERICAN TRADE, May 29, 1998, Vol. 5, No.11, p.1.

⁷⁴⁰ Brazil's Energy Policy Law, *supra* note 739, Chapter V, arts. 21-52.

⁷⁴¹ *Brazil's Move Toward Privatization*, INTER-AMERICAN TRADE, *supra* note 739, at 1.

⁷⁴² Brazil's Energy Policy Law, *supra* note 739, Chapter IX, art. 63.

⁷⁴³ Constitutional Amendment No. 33 of 2001 (Braz) (added para. 4 of art. 177).

⁷⁴⁴ See Winrock International, *Trade Guide on Renewable Energy in Brazil* (October 2002), at 9, available at <http://www.winrock.org/GENERAL/Publications/TradeGuide2002.pdf>.

that a vertical monopoly, directly regulated by the government, would be the most efficient structure.”⁷⁴⁵

Under this principle, the federal holding company for generation, transmission, and distribution of electrical power, termed *Centrais Eletricas Brasileira (Eletrobrás)*, was created in 1961.⁷⁴⁶ *Eletrobrás* became “the sector’s main financing agency ... responsible for developing the plan for expansion and integrated operation of the power sector.”⁷⁴⁷ Moreover, *Eletrobrás* held control of various subsidiaries operating throughout the country in the areas of generation, transmission, and distribution. “In short, the sector was a State-owned monopoly, both at national and regional levels, regulated, supervised and managed by the State itself.”⁷⁴⁸

The 1988 Constitution, however, offered possibilities for sector reform by declaring that “[i]t is incumbent upon the federal government, as set forth by law, to provide public utility services directly or by [private parties under] concession, authorization, or permission, which should always be awarded through public bidding.”⁷⁴⁹ Specifically, the 1988 Constitution instructed Congress to regulate “the duration, the conditions of forfeiture, control and termination of the concession, authorization or permission,” as well as “the rights of the users, tariff policy; and the obligation of maintaining adequate service.”⁷⁵⁰

By the mid-1990s, the Brazilian power industry had reached a profound structural crisis, due largely to the public sector’s inability to continue making large investments to

⁷⁴⁵ *Id.*

⁷⁴⁶ “Lei No. 3.890 de 1961,” D.O.U., 28.04.1961, arts. 1 & 2 (Braz.).

⁷⁴⁷ Winrock International, *supra* note 744, at 9.

⁷⁴⁸ *Id.* at 11.

⁷⁴⁹ CONST. arts. 21 ¶ XII (b), 175 & 176 (Braz.).

⁷⁵⁰ *Id.* arts. 175 & 176.

it.⁷⁵¹ The Brazilian government undertook a series of reforms aimed at restructuring of the sector, thereby moving step-by-step towards a competitive marketplace, and allowing private investment in the electricity sector.⁷⁵² The reforms opened electric generation and trading to competition, while leaving transmission and distribution as regulated activities.⁷⁵³

The federal government initiated the process of reform in 1993 when it authorized the formation of consortiums of self-producers to construct and operate new hydroelectric plants, and opened federally owned transmission lines to use by private companies.⁷⁵⁴ Implementing the 6th Constitutional Amendment of 1995 and other constitutional norms, Congress passed the 1995 Public Service Concessions Law, which is a general concessions law for public services.⁷⁵⁵ In the same year, legislation “established rules for electric power concessionaires, recognizing the role of the independent power producer (IPP), freeing large-scale consumers from the commercial monopoly of the utility and guaranteeing access for IPPs to the transmission and distribution systems.”⁷⁵⁶ This legislation also mandated the unbundling of the companies in the sector.⁷⁵⁷

The federal government adopted regulations for electric energy production by independent producers in 1996, and regulations for open-access conditions to the transmission grid in 1997.⁷⁵⁸ To complete the reform, in 1998 the National Congress

⁷⁵¹ Winrock International, *supra* note 744, at 9-10.

⁷⁵² *Id.* at 12. See also OLADE, POWER SECTOR, *supra* note 209, at 197.

⁷⁵³ See EIA, Brazil, *supra* note 449; OLADE, POWER SECTOR, *supra* note 209, at 197.

⁷⁵⁴ See Winrock International, *supra* note 744, at 12.

⁷⁵⁵ Constitutional Amendment No. 6 of 1995 (added para. 1 to art. 176); “Lei No. 8.987 de 13.02.1995,” D.O.U., 14.02.1995 (Braz.) [Brazil’s Public Service Concessions Law].

⁷⁵⁶ “Lei No. 9.074 de 07.07.1995,” D.O.U., 08.07.1995 (Braz.) [Brazil’s Public Service Law]. This Law allowed consumers with a higher demand than 10 MW to choose their electricity provider. See “Decreto No. 1.717 de 24.11.1995,” D.O.U., 27.11.1995 (Braz.).

⁷⁵⁷ Brazil’s Public Service Law, *supra* note 756. See IDB, *Power Sector, Brazil*, *supra* note 477.

⁷⁵⁸ “Decreto No. 2.003 de 10.09.1996,” D.O.U., 11.09.1996 (Braz.) See Winrock, *supra* note 744, at 12.

passed a law that launched the wholesale energy market for the buying and selling of electricity, and adopted rules for a competitive electricity market.⁷⁵⁹ In 2004, further legislation refined the schemes for the commercialization of electricity.⁷⁶⁰ With these undertakings, Brazil's electrical power market structure is "evolving toward greater liberation of electric power as a commodity, and by 2006, bilateral contracts are expected to be the predominant form of concession/consumer relations."⁷⁶¹

At the same time the government was restructuring the electric sector, most of the companies controlled by *Eletrobrás* were privatized under a government program that targeted the privatization of both the generation and distribution segments of the power sector.⁷⁶² As a result of the sell-off, most distribution networks were acquired by the private sector. Only about 15-20 percent of electric generation passed on to private hands, however.⁷⁶³ The federal holding utility, *Eletrobrás* kept control of about half of the country's installed capacity and most of the large transmission lines. The states and local government companies also kept certain assets in the energy sector.

Climactic events exacerbated the combined effect of heavy reliance on hydropower, increasing consumption, and lack of investment in the energy sector, causing an energy crisis in 2001.⁷⁶⁴ Imminent blackouts prompted the government to impose a 20-percent mandatory reduction in energy consumption for all economic

⁷⁵⁹ "Lei No. 9.648 de 1998," D.O.U., 28.05.1998, arts. 10-12 (Braz.) [Brazil's *Eletrobrás* Restructuring/Wholesale Energy Market Law]. See IDB, *Power Sector, Brazil*, *supra* note 477.

⁷⁶⁰ "Lei 10.848 de 15.03.2004," D.O.U. 16.03.2004 (Braz.) [Brazil's Law for the Commercialization of Electricity]. See also "Decreto No. 5.163, de 30.07.2004," D.O.U. 30.07.2004 (Braz.); "Decreto No. 5.081 de 2004," D.O.U. 17.05.2004 (Braz.). See OLADE, POWER SECTOR, *supra* note 209, at 199-199.

⁷⁶¹ Winrock International, *supra* note 744, at 13. See Brazil's Public Service Law, *supra* note 756, at 15.

⁷⁶² *Id.* at 12. See "Decreto No. 1.503 de 27.12.1994," D.O.U., 28.12.1994 (Braz.). See also Brazil's *Eletrobrás* Restructuring/Wholesale Energy Market Law, *supra* note 759.

⁷⁶³ See OLADE, POWER SECTOR, *supra* note 209, at 197. See also EIA, Brazil, *supra* note 449.

⁷⁶⁴ See Winrock International, *supra* note 744, at 13.

sectors, including the government.⁷⁶⁵ In addition, the government responded by increasing the supply of electricity through the purchase of electricity from “on-call” thermal power plants owned and operated by independent power producers.⁷⁶⁶ Essentially, independent power producers, ranging outputs between 10 and 350 megawatts, acted as back-up generation for the electric power system. Reportedly, “[o]verall, the program was effective and succeeded in avoiding the disastrous power outages that would have otherwise resulted.”⁷⁶⁷

Brazil has set the goal of providing universal electrification (*Luz para Todos*) in the country, based on legislation passed in 2002 (the so-called PROINFA Law).⁷⁶⁸ The universal electrification program is set so that electrification progresses in stages, according to targets to be established by the government for each utility, concessionaire, and permit-holder of the public electric power distribution service.⁷⁶⁹ The government defines areas “progressively increasing” around the distribution networks within which all consumers should be supplied without extra cost.⁷⁷⁰ The government also defines areas “progressively decreasing” within which service to new consumers may be delayed.⁷⁷¹ At some point, however, all consumers should be served without any extra cost.⁷⁷² To encourage universal electrification, the law allows the government to grant concessions, through bidding processes, for the provision of public electricity services in

⁷⁶⁵ *Id.*

⁷⁶⁶ *Id.*

⁷⁶⁷ *Id.* at 13.

⁷⁶⁸ “Lei No. 10.438 de 26.04.2002,” D.O.U., 29.04.2002, art. 14 (Braz.) [Brazil’s PROINFA Law]. See OLADE, Report 2004, Brazil, *supra* note 2. See *infra* § 5.4.

⁷⁶⁹ *Id.*

⁷⁷⁰ *Id.* art. 14 (I).

⁷⁷¹ *Id.* art. 14 (II).

⁷⁷² *Id.*

areas that are already under concession, but that are not subject to exclusivity clauses.⁷⁷³

A revised Electricity Law was passed by the Brazilian Congress in 2004. It is a second-generation reform to the power sector and seeks to prevent the short, medium and long-term power crises, outages and rationings that paralyzed the country in 1999 and 2001.⁷⁷⁴ This reform introduced the following elements: restructures contracts and medium to long-term power planning; introduces the lowest-tariff criteria; monitors customer service; introduces two model contracts: regulated and free; creates an institution to process regulated contracts and do energy planning (*Empresa de Planeamiento Energético*, EPE); separates distribution from all other activities in the chain; and requires a contingency reserve to maintain a constant balance between supply and demand. According to the OLADE, “[t]hrough this reform, the administration went for a centralized institutional model, thus strengthening the energy planning role of the Ministry of Energy to identify strategic projects to be developed and/or correct any supply and demand error or imbalance that may occur in time.”⁷⁷⁵

5.4 RENEWABLE ENERGY AND ENERGY EFFICIENCY LAW

Ethanol & Biodiesel Programs

In response to the oil crisis in 1973, Brazil launched the National Alcohol Program (PRO-ALCOOL).⁷⁷⁶ PRO-ALCOOL has been a key element in Brazil’s energy policy for over thirty years. The program’s goal was to encourage the production of sugarcane ethanol for use as a fuel substitute and the use of its byproduct, bagasse, for co-

⁷⁷³ *Id.* art. 15.

⁷⁷⁴ See OLADE, Report 2004, Brazil, *supra* note 2.

⁷⁷⁵ *Id.*

⁷⁷⁶ See ORGANIZACIÓN LATINOAMERICANA DE ENERGÍA ET AL., COUNTRY PROFILES: RENEWABLE ENERGY AND ENERGY EFFICIENCY IN LATIN AMERICA AND THE CARIBBEAN 165 (1995) [OLADE et al., Country Profiles].

generation by the sugar industry.⁷⁷⁷ A summary of the program is provided below:

Brazil first launched its National Alcohol Fuel Program (PRO-ALCOOL) in 1975 to promote ethanol production as a substitute for gasoline. The first oil embargo had shaken the nation, which was then importing over 80 percent of its oil supply, and the international price of sugar was also very low. Ethanol production was justified to reduce dependence on oil imports and the environmental impacts of energy use, and to create domestic jobs and income. The government offered a variety of incentives including low-interest loans to build distilleries, ethanol purchase guarantees, favorable pricing relative to gasoline, and sales tax reductions.

From 1985 to 1990, 90 percent of new cars sold were fueled on pure ethanol. However, rising sugar prices led to ethanol shortages and price hikes, and sales of ethanol-fueled cars fell almost to zero by the late 1990s. About 4-5 million cars were fueled solely by pure ethanol in 2000, about a quarter of the total automobile fleet. But with few ethanol-only cars being manufactured and about 300,000 to 400,000 ethanol-fueled cars being scrapped each year, the market for pure ethanol fuel is in sharp decline. Today, ethanol is used in Brazil mainly as a gasoline additive. About one-quarter of gasoline sold in Brazil today contains ethanol in a blend required by law to control local air pollution.⁷⁷⁸

Ethanol production peaked in the 1980s, but Brazil remains the world's leading ethanol producer. The government-mandated percentage of ethanol in Brazilian gasoline remained at around 20 percent for decades.⁷⁷⁹ In 2003, the required ethanol component in gasoline was raised from 20 percent to 25 percent.⁷⁸⁰ Pump stations throughout the country currently sell 25 percent ethanol gasoline, and carry 100 percent ethanol to accommodate about four million Brazilians who drive ethanol-only vehicles (20 percent

⁷⁷⁷ WILLIAM CHANDLER ET AL., PEW CENTER ON GLOBAL CLIMATE CHANGE, CLIMATE CHANGE MITIGATION IN DEVELOPING COUNTRIES 7 (2002).

⁷⁷⁸ *Id.* (footnotes omitted).

⁷⁷⁹ EIA, Brazil, *supra* note 449.

⁷⁸⁰ *Id.*

of all vehicles in the country).

Brazil also enacted legislation in January of 2005 requiring that biodiesel make up 2 percent of the diesel fuel mix in the country by 2008 and 5 percent by 2013.⁷⁸¹ This legislation authorizes the voluntary sale of diesel containing 2 percent biofuel through 2007. The law addresses only diesel because, as noted above, the country already requires that the gasoline mix contain a minimum 25 percent mix of sugarcane-based ethanol.

Other Alternative Energy Programs

Brazil has established several programs to promote renewable energy, both for off-grid energy sources and for electric generators connected to the grid. A program to promote off-grid sources, termed Program for Energy Development in States and Municipalities (*Programa de Desenvolvimento Energético dos Estados e Municípios*, PRODEEM), was created in 1994.⁷⁸² PRODEEM's aim is to promote the use of small-scale renewable energy systems, mostly photovoltaic (PV) systems, biomass projects, and wind developments in remote and isolated communities that are unconnected and may never be connected to the national grid. To complement PRODEEM, the Program for Rural Electrification (*Programa Nacional de Eletrificação Rural Luz no Campo*) was launched in 1999, when additional federal funds were made available for the provision of electricity to unserved rural areas.⁷⁸³

The government of Brazil also makes resources available through *Eletrobrás*, to wind, solar, biomass, small hydro, and thermal systems associated with small

⁷⁸¹ See *Brazilian companies gear up to make biodiesel*, ECOAMÉRICAS, March 2005., Vol. 7. No. 5, at 1 & 9 (noting that Brazil hopes to use not just sugarcane but its ample supply of soybeans, palm oil and other crops to produce biodiesel fuel).

⁷⁸² "Decreto de 28.12.1994," D.O.U., 28.12.1994, arts. 1 & 2 (Braz.). See OLADE et al., Country Profiles, *supra* note 776, at 166.

⁷⁸³ "Decreto de 02.12.1999," D.O.U., 03.12.1999 (Braz.).

hydropower projects. The funds can also be used for the construction of plants of up to 5 megawatts, dedicated to the public service of the isolated systems and to energy efficiency projects.⁷⁸⁴ In the case of solar power energy, there is a specific program for the encouragement of PV utilization, in which *Eletrobrás* utilizes these resources to directly contract utilities and permit-holders.⁷⁸⁵

The Brazilian program to promote electric generation from renewable energy systems connected to the grid is termed the Alternative Electric Energy Sources Program (*Programa de Incentivo às Fontes Alternativas de Energia Elétrica*, PROINFA). This program was established by the PROINFA Law in 2002.⁷⁸⁶ However, in addition to promoting grid-connected renewable generation projects, PROINFA contains several measures that will help develop off-grid generation. In particular, PROINFA establishes that the sharing of diesel fuel costs for isolated systems in the Amazon will continue for 20 years, and that generators utilizing small hydropower, wind, solar, biomass, and natural gas are granted access to the subsidy account for projects implemented within the isolated system which substitutes the need for diesel fuel. This program was modified by in 2003 to include greater participation by the states in the program, the encouragement of national industry and the inclusion of low-income families.⁷⁸⁷

To promote electric generation from renewable energy systems connected to the grid, the PROINFA will be implemented in two phases. In its first phase, PROINFA is designed to stimulate development of wind generation, small hydro generators, and

⁷⁸⁴ Winrock International, *supra* note 744, at 17.

⁷⁸⁵ *Id.*

⁷⁸⁶ Brazil's PROINFA Law, *supra* note 768, art. 3; "Decreto No. 4.541 de 2002," D.O.U., 24.12.2002 (Braz.).

⁷⁸⁷ See "Lei No. 10.762 de 2003," D.O.U., 12.11.2003 (Braz.); OLADE, POWER SECTOR, *supra* note 209, at 165.

biomass cogeneration. It does so by guaranteeing power purchase agreements to independent power producers (*Produtores Independentes Autônomos*) for the first 3,300 MW of projects, under competitive bidding, which use these technologies.⁷⁸⁸ The PROINFA Law defines an independent power producer as a company in which stock control does not belong to any generation, transmission, or distribution utility.⁷⁸⁹

Electrobrás will buy electricity produced from the different renewable resources under contracts of up to 15 years.⁷⁹⁰ Projects having an environmental installation license (*Licença de Instalação*) will be considered first; then projects with preliminary license (*Licença Prévia*) are considered.⁷⁹¹ The PROINFA Law requires that the first 3,300 megawatts systems of new projects be in operation by the end of 2006.⁷⁹² Bagasse-fired cogeneration capacity is expected to account for 1,100 megawatts of this total, wind energy for another 1,100 megawatts, and small-hydro installation for a similar amount.⁷⁹³

The implementation of the first stage of the program has been open to public input. In 2004, the Ministry of Mines and Energy held a public comment period on the rules for the procurement of the renewable electricity.⁷⁹⁴ After the comment period, the program was implemented by presidential decree and the procurement procedures were initiated shortly thereafter.⁷⁹⁵ In 2004, *Electrobrás* selected 154 projects (48 for biomass,

⁷⁸⁸ Brazil's PROINFA Law, *supra* note 768, art. 3. (I) (a).

⁷⁸⁹ *Id.* art. 3. (I) (f), (II) (i) (§1).

⁷⁹⁰ *Id.* art. 3. (I) (a).

⁷⁹¹ *Id.* art. 3. (I) (d). The environmental review process in Brazil is discussed *infra* § 5.8.

⁷⁹² *Id.* art. 3. (I) (a).

⁷⁹³ CHANDLER ET AL., *supra* note 777, at 7.

⁷⁹⁴ See Ministério de Minas e Energia, Proinfa, *Guia de Habilitação de Projetos de Geração de Energia Elétrica Centrais Eólicas* (2004); *Guia de Habilitação de Projetos de Geração de Energia Elétrica Centrais Termelétricas a Biomassa* (2004); *Guia de Habilitação de Projetos de Geração de Energia Elétrica Pequenas Centrais Hidrelétricas* (2004) (documents available at <http://www.mme.gov.br>).

⁷⁹⁵ See "Decreto No. 5.025 de 2004," D.O.U., 30.03.2004 (Braz.).

54 small hydroelectric plants and 57 wind generators).⁷⁹⁶

The second phase of PROINFA will be developed to ensure that at the end of 20 years wind energy, biomass, and small hydropower systems supply 10 percent of the annual electric power consumption of Brazil.⁷⁹⁷ The contracts will be signed with *Eletrobrás* for 15 years and they are expected to represent at least 15 percent of the Brazilian electric energy market growth.⁷⁹⁸ The costs of PROINFA will be shared among all consumers, including low income consumers.⁷⁹⁹

Under PROINFA, the government will assign economic values or prices of reference to the renewable energy to be purchased by *Eletrobrás*. These economic values will be established in accordance to each specific technology and energy source. PROINFA, in its second phase (which will start immediately after the initial target of 3,300 megawatts is achieved), ensures that renewable energy generators will be entitled to receive a rebate from a special energy development account. This rebate could make up for the difference between the specific technology's economic value, which is at least 80 percent of the national end-user average tariff, and the value received from *Eletrobrás*, which will be dictated by the electricity market.

The National Electrical Energy Agency (*Agência Nacional de Energia Elétrica*, ANEEL), the federal agency in charge of regulating and overseeing the electricity sector (*see infra* section 5.5), will regulate tariff reductions of at least 50 percent for access to transmission and distribution systems for ventures that produce energy from wind, biomass, and qualified co-generation. Producers of small hydropower, wind, biomass,

⁷⁹⁶ See OLADE, Report 2004, Brazil, *supra* note 2.

⁷⁹⁷ Brazil's PROINFA Law, *supra* note 768, art. 3. (II) (a).

⁷⁹⁸ *Id.* art. 3. (II) (b).

⁷⁹⁹ Winrock International, *supra* note 744, at 16.

and solar may commercialize energy directly with a consumer or consumer group, whose load is equal or greater than 50 kilowatts within the isolated systems.

The legislation establishing PROINFA has been regarded as a “revolutionary legal document of the modern energy sector.”⁸⁰⁰ The PROINFA Law should have significant impacts on renewable energy, energy efficiency, universal electrification of electric power services, and poverty alleviation. It remains to be seen, however, whether the government can accomplish the expected results within the timeframes established by the legislature.

Energy Efficiency

Brazil has implemented an energy conservation program geared towards saving electricity nationally, which is known as the National Electricity Conservation Program (*Programa Nacional de Conservação de Energia Elétrica*, PROCEL).⁸⁰¹ PROCEL is, according to Howard Heller, one of the strongest national energy conservation programs in the world.⁸⁰² Launched in 1985, PROCEL is managed by *Electrobrás*, and works on both increasing end-use efficiency as well as reducing losses in electricity generation, transmission, and distribution systems throughout the country. Reportedly, “[p]rogress has been made in a wide range of areas including improving the efficiency of refrigerators and other household appliances, introducing and disseminating a variety of energy-efficient lighting technologies, and increasing the efficiency of motors made and

⁸⁰⁰ *Id.* at 17.

⁸⁰¹ See “Decreto de 18.07.1991,” D.O.U., 19.07.1991 (Braz.); “Decreto de 10.02.1993,” D.O.U., 11.02.1993 (Braz.); “Decreto de 20.09.1994,” D.O. de 21.09.1994 (Braz.); “Decreto de 20.09.1994,” D.O.U., 21.09.1994. (Braz).

⁸⁰² HOWARD HELLER, AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY, TRANSFORMING END-USE ENERGY EFFICIENCY IN BRAZIL (2000), at 28.

sold in Brazil.”⁸⁰³

Initially, the adoption of efficiency standards was accomplished through negotiations of voluntary targets between electrical equipment manufacturers and the federal government.⁸⁰⁴ This approach had “mixed results,” notes Heller, because it was difficult to get the manufacturers to accept meaningful standards, and manufacturers did not fully comply with the voluntary targets to which they agreed.⁸⁰⁵ In any case, it has been estimated that, as of 1998, the overall results of PROCEL were energy savings equivalent to 1.8 percent of total electricity consumption.⁸⁰⁶ In addition to direct energy savings, the program’s other positive impacts include contributions to the development of a number of new technologies now manufactured in Brazil, and environmental benefits resulting from the reduced need for new power plants.⁸⁰⁷

In 2000, the Brazilian Congress adopted rules on mandatory investments in research and development and in energy efficiency by companies that are concessionaires or permit-holders in the electric power sector.⁸⁰⁸ From 2000 to 2002, the rules required electric power distribution concessionaires and permit holders to invest no less than 0.5 percent of their annual net operating income in research and development of the electricity sector, and no less than 0.25 percent on end-user energy efficiency programs.⁸⁰⁹ By the end of 2002, the minimum percentages of required investment leveled at 0.5 percent for all programs, including energy efficiency programs in the

⁸⁰³ *Id.* at 28.

⁸⁰⁴ *Id.* at viii.

⁸⁰⁵ *Id.*

⁸⁰⁶ *Id.* at 28.

⁸⁰⁷ See HOWARD HELLER ET AL., AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY, UPDATE ON BRAZIL’S NATIONAL ELECTRICITY CONSERVATION PROGRAM (PROCEL) (1999), at 8 & 9.

⁸⁰⁸ “Lei No. 9.991 de 2000,” D.O.U., 25.07.2000, art. 1 (Braz.).

⁸⁰⁹ *Id.* art. 1.

supply and end use of the energy.⁸¹⁰ The rules also require generation concessionaires and companies authorized to produce electric power independently to invest at least 1 percent of their net operating income annually in research and development in the electricity sector. It is worth noting that companies that generate electricity solely from wind-driven, solar, or biomass facilities, and small hydroelectric plants are exempted from this requirement.⁸¹¹

Legislation authorizing the federal government to adopt mandatory energy efficiency standards for appliances and engines sold in Brazil, as well as for buildings throughout the country, was adopted in 2001.⁸¹² This legislation expressly required that, prior to the adopting such standards, the government carry out public notice and comment procedures to involve the equipment manufacturers, other interested parties, and the public at large.⁸¹³

5.5 FEDERAL ENERGY AUTHORITIES AND REGULATORY AGENCIES

The National Energy Policy Council (*Conselho Nacional de Política Energética*), created pursuant to the 1997 Energy Policy Law, is responsible for establishing federal energy policy.⁸¹⁴ The Council “is made up of seven technical committees whose objective is to develop policies on a wide range of issues affecting the electric power sector, such as tariffs, expansion of the generating capacity, energy efficiency, environmental impacts of power generation and universal electrification, among others.”⁸¹⁵ Specifically, the Council is authorized to adopt measures in five areas:

⁸¹⁰ *Id.* art. 1 (I).

⁸¹¹ *Id.* art. 2.

⁸¹² “Lei No. 10.295 de 2001,” D.O.U., 18.10.2001, arts. 2, 3 & 4 (Braz.).

⁸¹³ *Id.* art. 5.

⁸¹⁴ Brazil’s Energy Policy Law, *supra* note 739, art. 2 (I).

⁸¹⁵ Winrock International, *supra* note 744, at 13; “Decreto No. 4.505 de 2002,” D.O.U., 12.12.2002 (Braz.).

promoting the rational use of energy resources; promoting energy services for remote areas; periodically reviewing the national and regional energy mix; establishing specific guidelines for the ethanol program and the natural gas program; and regulating imports and exports of hydrocarbons.⁸¹⁶

The Ministry of Mines and Energy (*Ministério de Minas e Energia*) is charged with overseeing the execution of Brazilian federal energy policy.⁸¹⁷ The Minister of Mines and Energy presides over the National Energy Policy Council.⁸¹⁸ Under the supervision of this Ministry, the Entity for Energy Research (*Empresa de Pesquisas Energética*) was established in 2004 for the purpose of encouraging and carrying out research in the field of energy.⁸¹⁹

The National Petroleum Agency (*Agência Nacional do Petróleo*, ANP), another creation of the Energy Policy Law, is charged with implementing the country's hydrocarbons policy.⁸²⁰ In particular, the Agency is responsible for providing the regulatory framework for oil and gas development, and for carrying out enforcement actions of such provisions.⁸²¹ It is also responsible for issuing tenders for oil and gas concessions or authorizations and monitoring their performance.⁸²²

The National Electrical Energy Agency (*Agência Nacional de Energia Elétrica*, ANEEL), which was set up in 1996, is in charge of regulating and overseeing the electricity sector at the federal level.⁸²³ The ANEEL has its own budget, is independently

⁸¹⁶ Brazil's Energy Policy Law, *supra* note 739, art. 2 (I-V).

⁸¹⁷ "Decreto No. 4.642 de 2003," D.O.U., 21.03.2003 (Braz.).

⁸¹⁸ Brazil's Energy Policy Law, *supra* note 739, art. 2.

⁸¹⁹ "Lei No. 10.847 de 2004," D.O.U. 16.03.2004 (Braz.).

⁸²⁰ Brazil's Energy Policy Law, *supra* note 739, arts. 7 & 8.

⁸²¹ *Id.* art. 8 (IX).

⁸²² *Id.*

⁸²³ "Lei No. 9.427 de 26.12.1996," D.O.U., 27.12.1996, arts. 1 & 2. (Braz.) [Brazil's ANEEL Law]. See "Decree No. 2335 de 1997," D.O.U., 07.10.1997 (Braz.); IDB, *Power Sector, Brazil*, *supra* note 477.

funded (via inspection fees), and has a managing board with a four-year guaranteed tenure of office.⁸²⁴ These provisions are intended to provide the agency with a high degree of independence and autonomy.⁸²⁵

The ANEEL is responsible for implementing federal policies and procedures related to hydroelectric exploration and production, as well as for issuing the appropriate concessions, permits, and other authorizations required to operate in the power sector.⁸²⁶ The agency is also responsible for calculating the value of financial compensation charged for the use of hydrological resources in the generation of electricity on a monthly basis, taking into account the amount of electric power effectively generated by the hydroelectric facility.⁸²⁷ In addition, the agency is charged with developing the stages for universal electrical public services by imposing specific obligations regarding coverage on utilities, concessionaires, and permit-holders.⁸²⁸

The Independent System Operator (*Operador Nacional do Sistema*) was created in 1998 to coordinate the dispatch of electric generation and transmission systems.⁸²⁹ This is a private consortium comprised of generating companies, transmission companies, distribution companies, importers and exporters of electricity and the federal government. The Federal government intervenes in the Independent System Operator through the Ministry of Mines and Energy, and maintains veto power on issues that conflict with its strategic policies.⁸³⁰

⁸²⁴ Brazil's ANEEL Law, *supra* note 823, arts. 4, 5 & 11. *See also* "Decreto No. 2410 de 1997," D.O.U., 01.12.1997 (Braz.).

⁸²⁵ *See* Winrock International, *supra* note 744, at 12.

⁸²⁶ Brazil's ANEEL Law, *supra* note 823, arts. 2 & 3.

⁸²⁷ "Lei No. 8.001 de 1990," *supra* note 700, art. 1. *See supra* § 5.1.

⁸²⁸ Brazil's PROINFA Law, *supra* note 768, arts. 14 & 15.

⁸²⁹ Brazil's *Electrobrás* Restructuring/Wholesale Energy Market Law, *supra* note 759, arts. 13-14.

⁸³⁰ *Id.*; Winrock International, *supra* note 744, at 12.

While not a federal energy authority or regulatory agency, the Power Sector's Committee on the Environment (*Comitê de Meio Ambiente do Setor Elétrico*), which consists of *Eletrobrás* and other power sector participants, was established to evaluate the environmental impacts of electricity in Brazil. The Committee has undertaken studies on the environmental and social costs of electricity in Brazil from hydroelectric, thermal and transmission systems.⁸³¹

5.6 INSTITUTIONAL AND LEGAL ENVIRONMENTAL FRAMEWORK

Brazil's environmental framework law is the National Environmental Policy Law (NEPL) of 1981, the earliest of such laws in Latin America.⁸³² Indeed, the Brazilian law demonstrates an early commitment to sustainable development.⁸³³ "Its objectives, articulated in 1981, include enhancing the existing environment, reclaiming damaged environments and ensuring sustainable socio-economic development. It dedicates itself to achieving sustainable development, consistent with environmental consciousness," notes Professor John R. Nolon.⁸³⁴ Silvia Capelli further notes that Brazil's NEPL and the Public Civil Action Law of 1985, for the enforcement of collective rights, "instrumented environmental defense in the country, culminating with the Federal Constitution of 1988."⁸³⁵

In Brazil, environmental legislation and regulations are enacted at the federal, state, and municipal levels, pursuant to the constitutional framework discussed earlier. The Constitution divides competence in environmental matters between the three levels

⁸³¹ See *Eletrobrás*' web site at <http://www.eletrobras.gov.br>.

⁸³² "Lei No. 6.938 de 1981," D.O.U., 02.09.1981 (Braz.) [Brazil's NEPL]; "Decreto No. 99.274 de 1990," D.O.U., 07.06.1990 (Braz.) [Brazil's NEPL Regulations].

⁸³³ See Nolon, *supra* note 424, at 711 & 713.

⁸³⁴ *Id.* (footnotes omitted) (citing to Brazil's NEPL art. 2).

⁸³⁵ Capelli, *supra* note 696, at 45.

under criteria such as *exclusive*, *concurrent*, and *common*, as discussed *supra* under section 5.1.⁸³⁶ The federal government establishes general standards and requirements of broad applicability, while specific standards are left to state and municipal agencies. Specifically, “[t]he duties of the federal government include setting environmental quality criteria and standards, encouraging appropriate research and development, education, defining and protecting priority areas, and preserving natural resources and maintaining ecological equilibrium.”⁸³⁷ The states and municipalities may issue standards and requirements more stringent than the general federal standards and requirements; state and municipal regulations, however, cannot be less stringent than federal and state standards, respectively.

Capelli believes that “[t]his sharing of law-making duties will enhance environmental control in some areas but may reduce it in others.”⁸³⁸ In any case, the purpose, extent, and practicality of this division of legislative power and responsibilities are not easy to understand, not to say difficult to implement. As another commenter of this topic explains,

The relative power of each level of government in protecting the environment is not always clear. The federal government is usually credited with formulating general and strategic requirements, while the states and local bodies issue more specific and, at times, more restrictive environmental measures. ... The shared nature of environmental protection in Brazil can have many repercussions. Concurrent legislation means that the federal government has plenary power to establish laws and regulations, and the states and municipalities have only limited powers. In

⁸³⁶ *Id.*

⁸³⁷ Nolon, *supra* note 424, at 713-714 (footnote omitted) (citing to Brazil’s NEPL art. 2).

⁸³⁸ Peter C.L. Roth, *The Emerging Role of the Extractive Reserve*, 2 COLO. J. INT’L ENVTL. L. & POL’Y 247, 259. See also Emilio F. Moran, *The Law, Politics and Economics of Amazonian Deforestation*, 1 IND. J. GLOBAL LEG. STUD. 397, 399.

some respects, this means that the Constitution limits the federal government's role to the creation of general terms, but leaves to the states and municipalities broad discretion to implement more restrictive measures.⁸³⁹

One key purpose of Brazil's NEPL is to coordinate the roles of the various levels of government. To that end, the Law establishes an institutional environmental framework and provides the main instruments to carry out environmental policy, termed the National Environmental System (*Sistema Nacional do Meio Ambiente*, SISNAMA) and National Environmental Policy (*Política Nacional do Meio Ambiente*), respectively.⁸⁴⁰

5.7 BRAZIL'S NATIONAL ENVIRONMENTAL SYSTEM

The Brazilian National Environmental System (SISNAMA) is composed of federal, state, and local authorities, as well as sectoral and specialized agencies of the federal government with responsibility over environmental matters.⁸⁴¹ At the federal level, the Ministry of the Environment, Water Resources and the Amazon (*Ministério do Meio Ambiente, dos Recursos Hídricos e da Amazônia Legal*) is responsible for coordinating the national environmental policy.⁸⁴² Within the Ministry of the Environment, two entities are in charge of implementing national energy policy in general, and two bodies specifically set policy and manage water resources.

The National Environmental Council (*Conselho Nacional do Meio Ambiente*, CONAMA) is the body responsible for adopting environmental regulations and for

⁸³⁹ Kellman, *supra* note 713, at 153.

⁸⁴⁰ Brazil's NEPL, *supra* note 832, arts. 6-18.

⁸⁴¹ *Id.* art. 6; Brazil's NEPL Regulation, *supra* note 832, art. 3; "Decreto No. 3.942 de 2001," D.O.U., 28.09.2001 (Braz.) [Brazil's CONAMA Decree]. *See also* Capelli, *supra* note 696, at 50.

⁸⁴² "Lei No. 8.746 de 1993", D.O.U., 09.12.1993 (Braz.).

providing federal standards, basic criteria, and guidelines to implement federal environmental policy.⁸⁴³ The CONAMA is essentially a regulatory body whose members include representatives of industry, government and environmental groups. In addition, CONAMA establishes the general requirements for the environmental review process and environmental licensing.⁸⁴⁴ The Brazilian Institute for Environment and Renewable Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis*, IBAMA) is the federal agency responsible for executing environmental policy and issuing environmental permits at the federal level.⁸⁴⁵

Professor Nolon provides a useful explanation of the roles of CONAMA and IBAMA, as follows:

One is established as a cabinet department [IBAMA]; the other [CONAMA] is interdisciplinary, composed of industry, labor and non-governmental representatives, state officials, and environmental professionals. The interdisciplinary group establishes pollution standards and criteria for the licensing of pollution generators.

... The cabinet level agency serves additional functions. The issuance of licenses to potential polluters by the states is done under its supervision. It also monitors and supervises compliance with environmental quality standards. This national cabinet agency maintains a registry of all persons and entities with technical expertise in pollution control and environmental management, and the manufacturers and suppliers of pollution control equipment. It also has responsibility for protecting areas and matters that are the subject of international agreements or responsibilities.⁸⁴⁶

⁸⁴³ Brazil's NEPL, *supra* note 832, arts. 6, 7 & 8; Brazil's NEPL Regulation, *supra* note 832, art. 3; Brazil's CONAMA Decree, *supra* note 832, arts. 4-7, 10 & 11. *See* Capelli, *supra* note 696, at 50.

⁸⁴⁴ Brazil's NEPL, *supra* note 832, arts. 8-10.

⁸⁴⁵ Brazil's NEPL Regulation, *supra* note 832, art 3; "Decreto No. 3.833 de 2001" (Braz.). IBAMA replaced the Special Environmental Agency (SEMA) of the Ministry of the Interior, initially created pursuant to the NEPL. *See* Brazil's NEPL, *supra* note 832, art. 5.

⁸⁴⁶ Nolon, *supra* note 424, at 717 (footnotes omitted) (citing to Brazil's NEPL arts. 6-9, 10, 11, 17 & 18). *See also* Capelli, *supra* note 696, at 50.

The National Water Resources Council (*Conselho Nacional de Recursos Hídricos*) formulates policy for water resources and coordinates the planning activities of national, state, and municipal levels related to water use.⁸⁴⁷ The National Water Agency (*Agência Nacional de Águas*) is the implementing federal agency for water resources.⁸⁴⁸ Among the duties assigned to the National Water Agency are “supervising and controlling, actions and activities related to the enforcement of federal legislation pertaining to water resources,” and “granting, by means of authorizations, the right to use water resources of water bodies controlled by the Federal Government.”⁸⁴⁹

Not within the Brazilian National Environmental System, the Brazilian Technical Standards Association (*Associação Brasileira de Normas Técnicas*) serves an important role in environmental management because it has the ability to issue technical norms and standards on environmental matters. The content of these standards is generally considered “best management practices”, but they have also been incorporated as legal requirements by specific legislation. For instance, these standards may be used in the environmental review processes, as discussed in the next section.⁸⁵⁰

At the state level, the environmental responsibility for executing environmental policy and issuing environmental licenses falls under the corresponding state’s environmental agency.⁸⁵¹ At the municipal level, the corresponding municipal environmental authority is typically responsible for land-use planning and other local

⁸⁴⁷ “Lei No. No. 9.984 de 2000,” D.O.U., 18.07.2000, art. 2 (Braz.) [Brazil’s Water Resources Law II]; “Decreto No. 4.613 de 2003,” D.O.U., 12.03.2003, art. 1 (Braz.).

⁸⁴⁸ Brazil’s Water Resources Law II, *supra* note 847, arts. 1 & 3.

⁸⁴⁸ *Id.* art. 4 (I & IV).

⁸⁴⁹ *Id.*

⁸⁵⁰ See Brazil’s CONAMA Environmental Licensing Regulations *infra* note 868, art.1.

⁸⁵¹ Brazil’s NEPL, *supra* note 832, art. 6; Brazil’s NEPL Regulations, *supra* note 832, art. 3.

issues.⁸⁵² Other sectoral agencies within the federal, state, and local governments with oversight of environmental issues are deemed part of the National Environmental System.⁸⁵³

After twenty of years of operation “[t]he National Environmental System – SISNAMA is in crisis,” argues Cappelli.⁸⁵⁴ Cappelli notes that the biggest problems have to do with the lack of action by the entities in charge of executing environmental policies and with the overlap of functions between the different entities, particularly between IBAMA and the states. She concludes that the system has proven to be inefficient, due to different conflicts at the institutional level: “The long awaited cooperative federalism does not apply. There is no coordination between the different administrative spheres and even among the administrative spheres of the same hierarchical level.”⁸⁵⁵

5.8 ENVIRONMENTAL MANDATES IN THE ENERGY POLICY LAW

The 1997 Energy Policy Law includes among its purposes “the protection of the environment” and “the promotion of energy conservation.”⁸⁵⁶ The Brazilian legislature’s concern with the environment is evident in this law.⁸⁵⁷ Furthermore, the federal agencies created by the Energy Policy Law (the National Energy Policy Council and the National Petroleum Agency), have specific mandates to take care of the environment.⁸⁵⁸ As such, these agencies are part of the Brazilian National Environmental System (SISNAMA).⁸⁵⁹ In addition, the Energy Policy Law specifically requires that energy-related concession

⁸⁵² Brazil’s NEPL, *supra* note 832, art. 6.

⁸⁵³ *Id.* See Capelli, *supra* note 696, at 46.

⁸⁵⁴ See Capelli, *supra* note 696, at 51.

⁸⁵⁵ *Id.*

⁸⁵⁶ Brazil’s Energy Policy Law, *supra* note 739, art. 1 ¶ IV.

⁸⁵⁷ BAKER & MCKENZIE, *supra* note 421, at 46.

⁸⁵⁸ *Id.* arts. 2 ¶ I & 8 ¶ IX.

⁸⁵⁹ Brazil’s NEPL, *supra* note 832, art. 6. See Capelli, *supra* note 696, at 46.

contracts include an obligation for concessionaires to take the necessary measures to protect and preserve the environment and natural resources.⁸⁶⁰

The National Petroleum Agency is empowered to adopt and enforce ordinances (*Portuarias*). These *Portuarias* are aimed at preventing environmental degradation from oil and gas activities, as well as encouraging “good practices” in the development of hydrocarbon activities.⁸⁶¹ For instance, the National Petroleum Agency has established reporting requirements, corrective measures, and procedures to be followed by the concessionaires for oil spills and operational accidents;⁸⁶² and, it has issued specific and detailed guidance for the abandonment of oil and gas fields.⁸⁶³

5.9 BRAZIL’S ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

General Environmental Review Process

The National Environmental Policy Law provides not just the principles and institutions to implement Brazil’s environmental policy, but the tools to carry it out as well.⁸⁶⁴ The NEPL’s main tools for implementing environmental policy are: environmental quality standards; environmental zoning; the environmental assessment process; and the prior approval of projects, that is, environmental licensing for polluting activities or those actions that may have potential significant environmental impacts.⁸⁶⁵ In 2003, federal legislation complemented this set of tools by establishing rules for accessing information held by environmental authorities. These rules are aimed at

⁸⁶⁰ *Id.* art. 44. ¶ I.

⁸⁶¹ Brazil’s Energy Policy Law, *supra* note 739, art. 8 (IX).

⁸⁶² “Portuaria No. 14 de 2000, Agência Nacional do Petróleo,” D.O.U., 02.02.2000 (Braz.).

⁸⁶³ “Portuaria No. 25 de 2002, Agência Nacional do Petróleo,” D.O.U., 02.02.2000 (Braz.).

⁸⁶⁴ See Brazil’s NEPL, *supra* note 832, arts. 6 & 7.

⁸⁶⁵ *Id.* arts. 9 (¶ I-IV) & 10.

facilitating public involvement in environmental matters.⁸⁶⁶

The National Environmental Council's regulations define the basic content of the environmental impact study and the requirements for public participation in the environmental approval process.⁸⁶⁷ An environmental impact assessment is specifically required for projects listed in the CONAMA's regulations.⁸⁶⁸ The list enumerates oil ports, extractive hydrocarbon activities, pipelines, gas lines, and ducts, as well as power stations capable of generating over 10 megawatts, transmission lines over 230 kilovolts, and ethanol distilleries.⁸⁶⁹ An environmental review may also be required for any other activity on a case-by-case basis if it poses potential significant environmental impacts.⁸⁷⁰

In 1987, the CONAMA outlined public participation procedures in the environmental impact assessment process.⁸⁷¹ The NEPL provides that states are to issue most environmental licenses, except those necessary for petrochemical, chemical, and nuclear facilities; these licenses are issued by the federal environmental agency, IBAMA.⁸⁷² IBAMA also oversees the environmental approval process for activities that impact more than one state, may have transboundary consequences, or may impact federal lands or protected areas.⁸⁷³ Other governmental entities may be involved, typically for consultation, during the environmental review process. For instance, archeological and historical resources are the responsibility of the National Institute for

⁸⁶⁶ "Lei 10.650 de 2003," D.O.U., 10.04.2003 (Braz.).

⁸⁶⁷ "Resolução CONAMA No. 001 de 1986," D.O.U., 17.02.1996, arts. 1 & 11 (Braz.) [Brazil's EIA Regulations]; Brazil's NEPL Regulation, *supra* note 832, art. 17; "Resolução CONAMA No. 237 de 1997," D.O.U., de 22.12.1997 (Braz.) [Brazil's Environmental Licensing Regulations].

⁸⁶⁸ Brazil's Environmental Licensing Regulation, *supra* note 867, "Anexo 1"; Brazil's EIA Regulations, *supra* note 867, art. 2. See Nolon, *supra* note 424, at 717.

⁸⁶⁹ Brazil's EIA Regulations, *supra* note 867, art. 2.

⁸⁷⁰ Brazil's Environmental Licensing Regulations, *supra* note 867, art. 2.

⁸⁷¹ "Resolução CONAMA No. 009 de 1987," D.O.U., de 05.07.1990 (Braz.).

⁸⁷² Brazil's NEPL, *supra* note 832 art. 10; Brazil's NEPL Regulations, *supra* note 832, art 3.

⁸⁷³ BAKER & MCKENZIE, *supra* note 421, at 31.

Historic Heritage (*Instituto do Patrimônio Histórico e Artístico Nacional*).

The Brazilian environmental permitting system is a three-step process, requiring potentially polluting activities to receive the following approvals: a preliminary license (*Licença Prévia*), an installation license (*Licença de Instalação*), and an operating License (*Licença de Operação*).⁸⁷⁴ The preliminary license is granted based upon governmental approval of the environmental study and the *Relatório de Impacto Ambiental* (RIMA), which is a summary of the study.⁸⁷⁵ The approval of a project-specific environmental and social management plan (*Projeto Básico Ambiental*) is required for the approval of the installation license. The installation license incorporates specific requirements regarding the mitigation and monitoring of environmental and social impacts and constitutes the governmental authorization to start the construction of the proposed project.⁸⁷⁶ The operating license must be obtained prior to project operation.⁸⁷⁷ To verify compliance with these licenses, Brazil (as well as other countries in the region), rely, to a large extent, on independent environmental auditing. In 2002, the CONAMA established minimum requirements and terms of reference for environmental auditors to follow.⁸⁷⁸

Environmental licensing must also take into consideration norms for the management of Brazil's protected areas. The Brazilian program for habitat protection is based on "Nature Conservation Units" (*Unidades de Conservação da Natureza*), and

⁸⁷⁴ See Brazil's Environmental Licensing Regulations, *supra* note 867, art. 8; Brazil's NEPL Regulations, *supra* note 832, art. 19.

⁸⁷⁵ Brazil's CONAMA EIA Regulations, *supra* note 867, arts. 2 & 9.

⁸⁷⁶ Brazil's NEPL Regulations, *supra* note 832, art. 19 (Braz.); Brazil's CONAMA Environmental Licensing Regulation, *supra* note 868, art. 8.

⁸⁷⁷ Brazil's NEPL Regulations, *supra* note 832, art. 19 (Braz.); Brazil's CONAMA Environmental Licensing Regulation, *supra* note 868, art. 8.

⁸⁷⁸ "Resolução CONAMA No. 306 de 2002," D.O.U., 19.07.2002 (Braz.).

surrounding areas.⁸⁷⁹ At the discretion of the environmental agency responsible for the permitting process, CONAMA's rules require that projects with significant environmental impact include as mitigation measure the creation of a conservation unit.⁸⁸⁰ At a minimum 0.5 percent of the total cost of the project must be invested in a new area or an existing conservation unit.⁸⁸¹ Alternatively, also at the discretion of the environmental regulatory agency, the investment of complementary funds may be required in either infrastructure or monitoring activities within the area.⁸⁸² CONAMA's regulations also include special provisions to minimize impacts on indigenous people living in protected areas. Indigenous people must be compensated for environmental damage to these areas, or even relocated, if this measure is considered necessary.⁸⁸³

Power Stations, Substations, and Transmission Lines

As noted above, energy generation projects larger than 10 megawatts and transmission lines above 230 kilovolts are required to prepare an environmental study. In 1987 CONAMA established a specific three-stage environmental licensing process for power stations (including both hydro and thermal facilities), substations, and transmission lines.⁸⁸⁴ According to this specific power sector licensing system, the corresponding environmental agency must request the preliminary license (*Licença Prévia*) at the beginning of the feasibility study of the project, and it will grant the license depending on

⁸⁷⁹ See Brazil's NEPL Regulation, *supra* note 832, art. 25; "Lei No. 9.985 de 2000," D.O.U, 19.07.2000 (Braz.) [Brazil's Law for Protected Areas]; "Decreto No. 4.340 de 2002," D.O.U, 23.08.2002, art. 31 (Braz.) [Brazil's Regulation for Protected Areas]; "Resolução CONAMA No. 13 de 1990," D.O.U, 28.12.90 (Braz.).

⁸⁸⁰ "Resolução CONAMA No. 002 de 1996," D.O.U., 25.04.1996 (Braz.).

⁸⁸¹ *Id.*

⁸⁸² *Id.*

⁸⁸³ Brazil's Regulations for Protected Areas, *supra* note 879, arts. 35-39 & 42-45.

⁸⁸⁴ "Resolução CONAMA No. 6 de 1987," D.O.U., 22.10.1987 (Braz.) [Brazil's EIA Resolution for the Power Sector].

the approval of the environmental impact study.⁸⁸⁵ The governmental approval of the project-specific environmental and social management plan is required for the issuance of the installation license (*Licença de Instalação*).

For hydroelectric projects, the operating license (*Licença de Operação*) must be issued prior to the completion of the dam, typically before the reservoir is filled or flooded. In the case of thermal power stations, the license must be issued upon completion of construction. In both cases, granting of the operating license is based upon verification of compliance with the environmental requirements established in the installation license, including the implementation of the environmental and social management plans.

Hydrocarbon Operations

In 1994 the CONAMA established specific assessment requirements and procedures for exploration, drilling, and production of oil and gas.⁸⁸⁶ The regulation created a sector-specific four-step system for environmental licensing: a preliminary license for drilling (*Licença Prévia Para Perfuração*), a preliminary license for exploration (*Licença Prévia de Produção para Pesquisa*), an installation license (*Licença de Instalação*), and an operating license (*Licença de Operação*).⁸⁸⁷

To obtain these licenses the following documents have to be prepared and approved: environmental impact assessment (*Estudo de Impacto Ambiental*), pursuant to CONAMA's general requirements; a summary of the environmental management plan (*Relatório de Controle Ambiental*), describing specific drilling activities, environmental

⁸⁸⁵ *Id.* art. 4.

⁸⁸⁶ "Resolução CONAMA No. 23 de 1994," D.O.U., 30.12.1994 (Braz.) [Brazil's EIA Regulations for Hydrocarbon Activities].

⁸⁸⁷ *Id.* arts. 5 & 7.

risks and mitigation measures; an environmental viability study (*Estudio de Viabilidad Ambiental*), describing production activities, environmental impacts and mitigation measures; a summary of the environmental evaluation (*Relatório de Avaliação Ambiental*), describing environmental impacts and mitigation measures for new or additional activities required by the developer; and, an environmental control project (*Projeto de Controle Ambiental*), describing specific mitigation projects.⁸⁸⁸

5.10 WATER AND COASTAL RESOURCES LEGISLATION

Brazil framed its federal water resources policy pursuant to legislation passed in 1997, known as the Water Resources Law.⁸⁸⁹ The National Water Resources Council and the National Water Agency are charged with formulating and implementing such policy, respectively, as noted earlier under section 5.7. The Water Resources Law is based on the idea that the water is a common good (*res communes*) as well as a limited natural resource with economic value.⁸⁹⁰ Any grant for the use of water is set in accordance with the nature and the size of the undertaking, taking into account, where applicable, the period required for a return on the investment.⁸⁹¹ Thirty-five years is the maximum term of validity for the grant to use water, but it may be renewed by the National Water Agency, in accordance with priorities set forth in the long-term planning goals for the resource.⁸⁹²

Prior to granting a concession or authorization for the use of the hydroelectric power potential from a water resource controlled by the federal government, ANEEL

⁸⁸⁸ *Id.* art. 6.

⁸⁸⁹ “Lei No. 9.433 de 1997,” D.O.U., 09.01.1997 (Braz.) [Brazil’s Water Resources Law I].

⁸⁹⁰ BAKER & MCKENZIE, *supra* note 421, at 34; Brazil’s Water Resources Law I, *supra* note 889, art. 1.

⁸⁹¹ Brazil’s Water Resources Law II, *supra* note 847, art. 5 (III § 1).

⁸⁹² *Id.* art. 5 (III § 1 & 3).

must arrange with the National Water Agency for a declaration of water availability.⁸⁹³ When the hydraulic potential is located in a water resource controlled by the states or the Federal District, the declaration of water availability is obtained in cooperation with the relevant body managing the water resources.⁸⁹⁴ The declaration of water availability automatically turns into a water right for any entity that receives a concession or authorization for the use of hydroelectric power potential from ANEEL.⁸⁹⁵ The National Water Agency must publicize the requests for a grant for the use of water resources controlled by the Federal Government and the administrative acts resulting from it.⁸⁹⁶ Water rights of concessionaires and permit-holders providers for hydroelectric power remain in effect as long as necessary to coincide with the corresponding concession by the ANEEL.⁸⁹⁷

Brazil's federal coastal management legislation was passed in 1988.⁸⁹⁸ The 1988 law only provides general directives, requiring, for instance, that states be responsible for coastal zoning and that the federal and state governments monitor coastal areas for environmental abuses. It was not implemented until early 2005, when a presidential decree set specific guidelines for executing the law.⁸⁹⁹ The 2005 decree creates a coastal zone covering the coasts and coastal waters within 12 nautical miles of Brazil's Atlantic shoreline.⁹⁰⁰ The coastal area encompasses about 124,000 square miles (320,000 square kilometers), includes about 400 coastal municipalities, and is inhabited by approximately

⁸⁹³ *Id.* art. 7.

⁸⁹⁴ *Id.* art. 7 (§ 1).

⁸⁹⁵ *Id.* art. 7 (§ 2).

⁸⁹⁶ *Id.* art. 8.

⁸⁹⁷ *Id.* art. 5 (III § 4).

⁸⁹⁸ "Lei No. 7.661 de 1988," D.O.U. 18.5.98 (Braz.) [Brazil's Coastal Management Law].

⁸⁹⁹ "Decreto No. 5.300, de 2004," D.O.U. 8.12.2004 (Braz.) [Brazil's Coastal Management Regulation].

⁹⁰⁰ *Id.* art. 3.

25 percent of Brazil's total population.⁹⁰¹ Specifically, in connection with hydrocarbon developments, the decree contains provisions requiring the National Petroleum Agency, which auctions offshore oil exploration concessions, to coordinate with the Environmental Ministry to prevent that areas with coral reefs are included in concession areas.⁹⁰²

5.11 LEGISLATION ON OIL SPILLS AND THE ENVIRONMENTAL PENAL LAW

Oil spills have been a frequent occurrence in Brazil in recent years, causing severe environmental damage. Particularly, *Petrobrás* has become notorious for a series of oil spills and accidents.⁹⁰³ These spills prompted the Brazilian Congress to pass legislation in 2000 establishing basic principles and rules for the transportation of oil and for the operation of ports, platforms, and ships involved in petroleum activities.⁹⁰⁴ Furthermore, Brazil has ratified several environmental treaties related to oil spills, mainly the *Civil Liability Convention* and MARPOL, both of which the legislature sought to implement.⁹⁰⁵ To prevent oil spills the legislation passed in 2000 requires a technical study to verify that the operator fulfills the requirements on safety, control, emergencies, and remediation.⁹⁰⁶ Strict penalties and other sanctions are provided for non-compliance with these provisions.⁹⁰⁷ In furtherance of this legislation, CONAMA has provided criteria to combat spillage of oil and oil products into Brazilian waters.⁹⁰⁸

Brazilian environmental law was strengthened in 1998 with the adoption of an

⁹⁰¹ See *Brazil approves coastal-management rules*, ECOAMÉRICAS, February 2005, Vol. 7. No. 4, at 5.

⁹⁰² *Id.*

⁹⁰³ See EIA, Brazil, *supra* note 449.

⁹⁰⁴ “Lei 9.966 de 2000,” D.O.U., 24.04.2000 (Braz.) [Brazil’s Oil Pollution Prevention Law].

⁹⁰⁵ *Id.* arts. 1 & 2. See *Civil Liability Convention*, *supra* note 146, and MARPOL 73/78, *supra* note 148.

⁹⁰⁶ Brazil’s Oil Pollution Prevention Law, *supra* note 904, arts 5-24.

⁹⁰⁷ *Id.* arts. 25 & 26.

⁹⁰⁸ “Resolução CONAMA No. 269 de 2000,” D.O.U., 12.01.2000 (Braz.).

Environmental Penal Law that provides criminal and administrative sanctions for damages caused to the environment.⁹⁰⁹ Specific behaviors that damage or may damage the environment are defined, as well as responsible parties, which include individuals and corporate entities.⁹¹⁰ Corporations may be held responsible for environmental crimes where such crimes result from decisions taken by their legal representatives for the benefit of the corporate entity. Specifically for energy sector activities, the law provides penalties for responsible parties that cause oil spills or discharge oil substances in breach of environmental legislation, whether on water or land.⁹¹¹

5.12 ENVIRONMENTAL STANDARDS

For several decades, Brazil has been using environmental standards as another tool for environmental management in connection with energy-related issues, particularly for dealing with emissions originating in the transportation sector. In 1986, the CONAMA created the National Program for Controlling Vehicular Air Pollution (PROCONVE), which is administered by IBAMA. The first step, based on U.S. Environmental Protection Agency (USEPA) standards, phased in progressively tighter tailpipe-emissions limits for new light vehicles in 1988, 1992 and 1997 to help cut carbon-monoxide, hydrocarbon and nitrogen oxide pollution.⁹¹²

A subsequent measure provides for further tightening of tailpipe standards over a four-year period beginning in 2006.⁹¹³ The CONAMA also has issued a resolution requiring that all new cars be outfitted with on-board diagnostic systems to monitor

⁹⁰⁹ “Lei No. 9.605 de 1998,” D.O.U., 12.02.1998 (Braz.); “Decreto No. 3.179 de 1999” (Braz.).

⁹¹⁰ See National Law Center for Inter-American Free Trade, *Summary of Brazilian Law 9,605 - Brazilian Environmental Crimes*, at <http://www.natlaw.com/pubs/spbren2.htm>

⁹¹¹ *Id.*

⁹¹² *OBD rule is Brazil's latest car-emissions step*, ECOAMÉRICAS, December 2005, Vol. 7. No. 2, at 1 & 10.

⁹¹³ *Id.* at 10.

emissions-control performance.⁹¹⁴ The application tailpipe-emissions standards have prompted manufacturers to install catalytic converters and electronic fuel-injection systems, which since 1997 have been standard equipment on light vehicles sold in Brazil. In addition, the CONAMA has enacted limits aimed at reducing truck and bus emissions, including the particulates emissions by the diesel engines.

Regrettably, Brazil has not implemented a mandatory vehicle-emissions testing and penalties for non-compliance. The lack of federal mandatory emissions testing and penalties for non-compliance, however, does not limit the ability of the states to do so. Brazil's Congress passed legislation in 1995 that empowered the states to implement mandatory emissions testing for cars, vans, buses and trucks. But only one of the Brazilian states, Rio de Janeiro, has adopted mandatory testing thus far. But even in Rio de Janeiro, failure to pass the emissions test, which is performed as part of required annual auto-safety inspections, currently does not result in a penalty.

5.13 ENFORCEMENT

The Brazilian Constitution includes a special public interest proceeding appropriate for environmental claims, and to enforce environmental collective rights. These proceedings are initiated by filing a special collective action termed *Ação Popular*.⁹¹⁵ Any citizen has standing to file an *Ação Popular* seeking to prevent an act injurious to the public patrimony, to the environment, and to historical and cultural monuments, among others protected interests.⁹¹⁶ By definition, the *Ação Popular* is expressly limited to injurious actions; omissions are not actionable. Additionally, the

⁹¹⁴ *Id.*

⁹¹⁵ CONST. art. 5 (74) (Braz.). *See supra* § 2.6.

⁹¹⁶ CONST. art. 5 (XXIII) (Braz.)

legislature has provided for class actions to seek damages in public interest lawsuits.⁹¹⁷

Therefore, two types of actions in connection with the enforcement of environmental rights are allowed in Brazil: a popular action and a collective class action. The former is interposed to prevent, and the latter to redress, the interference with such rights.⁹¹⁸

The Brazilian statute establishing class actions predated the Federal Constitution of 1988. Passed in 1985, the statute, known as the Public Civil Action Law, created a procedure to protect the environment and the rights of consumers.⁹¹⁹ The legislature later extended the use of class actions to the protection of any kind of collective right.⁹²⁰ The Public Civil Action Act created the concept of a “Special Fund Account in Protection of Diffuse Rights” that “serves as a repository for damages awarded in class actions.”⁹²¹

In 1990, the legislature enacted the Consumer Code, which includes detailed procedures for all class action suits.⁹²² The rules set forth in the Consumer Code are applicable to every kind of group litigation.⁹²³ The procedure for the protection of collective rights, however, continues to be ruled by the Public Civil Action Law.⁹²⁴ Both the Consumer Code and the Public Civil Action Law are said to complement each other, but some scholars call for consolidation of both matters in a single statute.⁹²⁵ The following passage illustrates the main features of the current system:

In a class action for the protection of diffuse rights, the court may issue

⁹¹⁷ See *supra* § 2.6.

⁹¹⁸ CONST. art. 5 (LXXIII) (Braz.).

⁹¹⁹ “Lei No. 7.347 de 1985” (Braz.) [Brazilian Public Civil Action Law].

⁹²⁰ See Antonio Gidi, *Class Actions in Brazil - A Model for Civil Law Countries*, 51 AM. J. COMP. L. 311, 326.

⁹²¹ *Id.* at 339.

⁹²² “Lei No. 8.078 de 1990,” (Braz.) [Brazilian Consumer Code].

⁹²³ See Gidi, *supra* note at 920 (citing the Brazilian Consumer Code, arts. 110 & 117, and noting that the Code itself makes clear that its rules are available to solve controversies in other areas of the law).

⁹²⁴ *Id.*

⁹²⁵ *Id.*

various kinds of orders. Examples might include an injunction to avoid future harm, an order to reinstate the status quo ante, or a damage award to compensate for the global harm caused to the community, or all of these remedies, according to the needs of the specific case. Brazilian class action statutes favor the remedy of specific performance, enforced by daily fines. Only when specific performance is not possible is there a damage award. The damage award reverts to a governmental fund. In the example of environmental litigation, the court may enjoin a polluter from depositing chemical waste into a bay, as well as compel the defendant to install a filter, order cleaning of the waters following past pollution, or demand payment of damages for the global harm caused to the environment.⁹²⁶

Brazil's Constitution also provides for a writ of mandamus (*mandado de segurança*).⁹²⁷ Writs are issued to require a public official or an agent of a corporate legal entity exercising public duties to perform legally required actions. The writ of mandamus is a valuable means to require governmental entities to actually enforce environmental laws and regulations or to carry out their responsibilities as stewards of the environment.

Despite the constitutional and legal opportunities for enforcing environmental rights, a fundamental concern in Brazil, as elsewhere in the region, is the lack of enforcement of environmental legislation. Cappelli has noted that, “[e]ven if Brazilian Environmental Legislation is considered good, it is not enough to improve environmental quality in the country.”⁹²⁸ She notes coordination problems between the different entities, and even within the same entity, in the implementation of the environmental impact assessment process. For instance, there is either a lack of any action by environmental

⁹²⁶ *Id.* at 355.

⁹²⁷ CONST. art. 5 (LXIX), (LXX) (Braz.).

⁹²⁸ See Cappelli, *supra* note 696, at 51.

authorities and agencies, or competition between them for the exercise environmental licensing or the enforcement of the administrative penalties: Either no agency or authority wants to get involved, or they all want to license and apply penalties.⁹²⁹ In her view, part of the solution is to encourage private sector enforcement actions. Also, establishing environmental planning by zones, beyond the municipal level, “could contribute to change this panorama.”⁹³⁰

The root of the problems seems to stem from the Constitutional scheme under which environmental enforcement is “a parallel competence of the Union, the States, the Federal District and the municipalities.”⁹³¹ Professor Nolon further comments on this notion, as follows:

Enforcement, the administration of fines and other sanctions, is shared with local and state governments. National enforcement responsibility is given to the cabinet agency [IBAMA], which may also intervene when the states and municipalities do not enforce standards within their jurisdictions. The interdisciplinary agency [CONAMA] has final review authority over the fines and sanctions imposed by the cabinet agency. Liability for violations of standards is strict; violators are held accountable for damages caused irrespective of fault.⁹³²

In addition, the Office of the Attorney General, both at the federal and state level, oversee the environmental practices of government agencies and of private actors in all sectors of the economy.⁹³³ Empowered with investigative and prosecuting powers, the Office of the Attorney General, at both levels, may bring civil and criminal actions

⁹²⁹ *Id.*

⁹³⁰ *Id.*

⁹³¹ Capelli, *supra* note 696, at 47. See CONST. art. 23 (Braz.).

⁹³² Nolon, *supra* note 424, at 717 (footnotes omitted) (citing to Brazil’s NEPL, arts. 6-9 & 14).

⁹³³ CONST. arts. 127-128 (Braz.).

against polluters and those who violate environmental legislation.⁹³⁴

Many enforcement actions in connection with oil spills have been necessary in Brazil. In some cases, enforcement actions have been brought by states. For instance, in February 2002, the state of Rio de Janeiro fined a cruise ship after it released about 7,500 gallons of gasoline into the Guanabara Bay in Rio de Janeiro.⁹³⁵ In other occasions, enforcement actions have been taken by the federal level. For example, in 2000 and 2002, the federal government fined *Petrobrás* for oil spills into the Guanabara Bay and for running oil platforms without a license (US\$24 million and US\$9 million, respectively).⁹³⁶ In some instances, however, enforcement actions have been taken by both federal and state agencies, as illustrated below.

In 2004, an explosion aboard a tanker in the southern Brazilian state of Paraná caused an oil spill that covered 19 miles (30 kilometers) of coastline, including mangrove areas in the shores of a national park. The federal environmental agency (IBAMA) investigated four potential responsible parties: the company legally responsible for the tanker; the insurer of the tanker; the company responsible for the terminal where the tanker was off-loading; and, the freight company that contracted the tanker.⁹³⁷ Initially, the IBAMA assessed each party about US\$70,000 a day for failing to take adequate precautions that might have helped contain the spill. Once responsibility for the spill was determined and the extent of the damage assessed, IBAMA levied the maximum fine totaling US\$21 million on the Brazilian company legally responsible for the tanker. For its part, the state environmental agency imposed a similar fine on the Brazilian company

⁹³⁴ *Id.* art. 129.

⁹³⁵ EIA, Brazil, *supra* note 449.

⁹³⁶ *Id.*; *Oil triggers regulatory action in Brazil*, ECOAMÉRICAS, February 2000.

⁹³⁷ *Oil spill in Brazil takes toll on Paraná's coast*, ECOAMÉRICAS, December 2004, Vol. 7. No. 2, at 2.

responsible for the terminal.⁹³⁸ The IBAMA levied an additional US\$411,000 fine on the port authority where the explosion occurred.⁹³⁹

The Office of the Attorney General—both federal and state level—are also charged with enforcing environmental law and regulations in connection with energy projects. The construction of natural gas pipelines and large dams has prompted such interventions. In 2003, the Office of the Attorney General in the State of Amazonas filed a complaint requesting an injunction in connection with the environmental licensing process for a natural gas pipeline proposed by the state oil company *Petrobrás*.⁹⁴⁰ The natural gas pipeline would be located in Rondônia state, to connect *Petrobrás*' oil fields to the city of Porto Velho. The prosecutor asked a state court to suspend licensing for the pipeline on the grounds that *Petrobrás* had not considered how it would minimize the impact of the pipeline in spurring colonization of areas already highly deforested. The court granted the injunction. Subsequently, the prosecutor offered to withdraw the injunction and negotiate with *Petrobrás* the adoption of several preventive and mitigation measures.

Enforcement pressure against *Petrobrás* has prompted the company to take extraordinary measures in projects slated for the Amazon region and other sensitive ecosystems. An example is the construction of a gas pipeline through mostly untouched Amazon rainforest from the city of Coari to Manaus.⁹⁴¹ The Coari-Manaus project won preliminary environmental license in early 2004 from the State of Amazonas environmental agency, based on the determination that *Petrobrás* had submitted an

⁹³⁸ *Three companies fined in Brazilian oil-spill case*, ECOAMÉRICAS, August 2005, Vol. 7. No. 10, at 11.

⁹³⁹ *Id.*

⁹⁴⁰ *See Two Amazon gas lines get very different reviews*, ECOAMÉRICAS, May 2004, Vol. 6, No. 7, at 9.

⁹⁴¹ *Id.* See OLADE, Report 2004, Brazil, *supra* note 2.

adequate environmental impact statement. The proposed project included plans to minimize the environmental impact of the pipeline, such as: burying the pipeline, refraining from building permanent access roads to the pipeline and dismantling whatever bridges and other infrastructure for construction.

Turning to enforcement in hydro projects, in 2001, the Federal Office of the Attorney General filed for injunctive relief in connection with the damming the Xingú River in the eastern Amazon for hydropower, alleging that the project lacked the required consultations with the affected indigenous people. A federal judge in the State of Pará ruled that Brazil's constitution prohibits construction of dams in indigenous areas without the informed, prior consent of the affected communities. The federal agency for electricity, ANEEL, first hatched the idea of damming the Xingú in the early 1980s. Initially, the project (named Belo Monte) called for a staircase series of dams that would have inundated vast areas of Amazon forest. But intense environmental opposition forced authorities to scale back the project, first to a single-dam plan featuring a 1,225 square kilometer reservoir, then to a further-reduced single-dam 440 square kilometer reservoir.

The revised project would divert the Xingú away from a 112.7 square kilometer reserve of the Paquçamba, a 70-member indigenous group, and from non-demarcated land occupied by other indigenous groups. Under the revised plan, Belo Monte will be an 11,200-megawatt hydropower complex, the second largest in Brazil after Itaipú (a 12,600-megawatt complex co-owned by Brazil and Paraguay), although it is unclear whether the reservoir is large enough to ensure the maximum, 11,200-megawatt power generation year round.⁹⁴²

⁹⁴² See OLADE, Report 2004, Brazil, *supra* note 2.

In an attempt to move the long-stalled project, in July 2005, both houses of Congress voted to authorize the project provided it survives an array of feasibility studies.⁹⁴³ Congress stipulated in that economic, technical, environmental and “anthropological studies,” involving consultation with indigenous groups, must be undertaken in the feasibility review. But the legislation does not seem to satisfy the federal Attorney General’s office that in 2001 won a court injunction to halt the project. Moreover, it does not seem to withstand the constitutional requirement of prior informed consent.

Another controversial hydroelectric project is the 708-megawatt Barra Grande reservoir, which is proposed by a private consortium in the southern states of Santa Catarina and Rio Grande do Sul. The IBAMA awarded an operating license for the project in July 2005.⁹⁴⁴ It did so even though the dam would inundate critical areas for endangered species, and that IBAMA admitted that the project’s environmental impact statement, issued before the dam’s construction permit was approved, failed to report forests containing endangered species in the reservoir area.⁹⁴⁵ The environmental impact study erroneously stated that the reservoir area consisted mainly of low vegetation when it in fact included extensive forestland containing endangered species.⁹⁴⁶ Citing this inconsistency, IBAMA levied a US\$4.1 million fine on the document’s author (a consulting firm), but ultimately decided to approve the project.⁹⁴⁷

⁹⁴³ See *New Momentum for Amazon Dam Project?*, ECOAMÉRICAS, August 2005, Vol. 7. No. 10, at 4. The legislative act is available at <http://www.camara.gov.br/sileg/integras/320232.htm> (in Portuguese).

⁹⁴⁴ See *Barra Grande dam gets operating license*, ECOAMÉRICAS, July 2005, Vol. 7. No. 9, at 3 (noting that IBAMA’S granting of the Barra Grande operating license has been challenged in court by environmental groups asking that the license be canceled).

⁹⁴⁵ *Id.*

⁹⁴⁶ *Id.*

⁹⁴⁷ *Id.*

CHAPTER 6 – CHILE

6.1 CONSTITUTIONAL ISSUES

The hallmark of Chile's 1981 Constitution is the principle that the State has a subsidiary role in the economy.⁹⁴⁸ This means that, pursuant to this constitutional mandate, individuals and private companies play a primary role in the economy, whereas the State assists or supplements private sector initiatives. The State and its bodies may undertake entrepreneurial activities or participate in them, provided, however, that such activities or participation have been authorized by legislation passed by a special quorum.⁹⁴⁹

As a general rule, the same legislation applies both to state-owned companies and to private enterprises. However, “for justifiable motives” established by the legislature and subject to approval by a qualified quorum, state-owned entrepreneurial activities may have special treatment.⁹⁵⁰ For instance, based on these constitutional provisions, the Chilean Congress decided to authorize governmental control of the upstream hydrocarbons sector, but to divest itself and withdraw from participating in the electricity sector. The legislature has also stated that geothermal and hydro energy resources belong to the entire Nation, and has regulated the use of concessions over these energy resources.⁹⁵¹

The Constitution guarantees the right to private property, including the right “to acquire ownership over all types of property, except over that which nature has made

⁹⁴⁸ CONST. art. 19 (21) (Chile).

⁹⁴⁹ *Id.*

⁹⁵⁰ *Id.*

⁹⁵¹ “Ley No. 19.657 de 1999,” D.O., 7 de enero de 2000 (Chile) [Chile's Geothermal Energy Law]; “Decreto con Fuerza de Ley No 1.122 de 1981,” D.O., 29 de octubre de 1981 (Chile) [Chile's Water Code].

common to all men or which belongs to the entire Nation, and that the law so declares.”⁹⁵² This provision incorporates ancient Roman law concepts; that which nature has made common to all men is the Roman concept of *res communes*, while things which belongs to the entire Nation is the Roman concept of *res publicae*, as discussed in Chapter 2, section 2.1. Specifically, mineral and hydrocarbon resources are expressly determined to belong to the Nation as a whole, notwithstanding the ownership held by individuals or corporate entities over the land where these hydrocarbon resources are located.⁹⁵³ Accordingly, private ownership is generally recognized subject to the obligations and limitations prescribed by law to facilitate exploration, exploitation, and development of mines and hydrocarbon deposits.⁹⁵⁴

The Nation holds exclusive rights over the exploration and production of hydrocarbons, as noted above.⁹⁵⁵ These activities must be directly performed by state-owned entities or for the State by private parties under oil operation contracts (*Contratos de Operación Petrolera*), subject to the requirements and conditions set forth by the President on a case-by-case basis.⁹⁵⁶ With respect to non-hydrocarbons resources, the Congress is authorized to determine what mineral substances may be subject to exploration or exploitation concessions.⁹⁵⁷

6.2 OIL AND GAS LAW

Oil and gas regulation in Chile began as soon as oil was discovered in the southern tip of the country, which is known as Tierra del Fuego. In 1926, the Chilean

⁹⁵² CONST. art. 19 (23) (Chile).

⁹⁵³ *Id.* art. 19 (24).

⁹⁵⁴ *Id.*

⁹⁵⁵ *Id.*

⁹⁵⁶ *Id.*

⁹⁵⁷ *Id.*

Congress passed a law exclusively reserving for the Nation all hydrocarbon resources.⁹⁵⁸

The first commercial oil field in Tierra del Fuego came onstream in 1945, however. Five years later, the government created Chile's national oil company (*Empresa Nacional de Petróleo*, ENAP) to exploit the country's hydrocarbon resources.⁹⁵⁹

Since 1950, the ENAP has been expressly authorized to conduct the exploration and production of hydrocarbons directly, and to enter into oil operating contracts with private actors to carry out these activities.⁹⁶⁰ No private participation in the upstream hydrocarbons sector has been allowed, except under the so-called oil operating contracts. The ENAP has also been authorized to carry out the transportation, refining, and commercialization of oil and natural gas, but private participation is allowed in these areas.⁹⁶¹ Nonetheless, the ENAP not only controls the supply of the domestic oil demand but owns all the refineries in the country. The transportation of hydrocarbons is done under ENAP's subsidiary *Sociedad Nacional de Oleoductos S.A., Sonacol*.

The ENAP's authorization to contract with private actors for upstream oil developments was implemented in 1975, under the "Norms for Special Operation Oil Contracts" (*Normas sobre Contratos Especiales de Operación Petrolera*), later revised in 1986.⁹⁶² Using this type of contractual agreement, the ENAP has sought to establish joint venture partners to reactivate its idle and declining fields in Chilean territory.⁹⁶³ In addition, the ENAP has partnered with other oil companies to pursue oil exploration and

⁹⁵⁸ "Ley No. 4.109 de 1926," (Chile).

⁹⁵⁹ "Ley No. 9.618 de 1950," D.O., 19 de enero de 1991, art. 1. (Chile) [Chile's ENAP Law].

⁹⁶⁰ *Id.* art. 2. See CONST. art. 19 (24) (Chile).

⁹⁶¹ Chile's ENAP Law, *supra* note 959, art. 1.

⁹⁶² "Decreto con Fuerza de Ley No. 2 de 1986, Ministerio de Minería," D.O., 30 de marzo de 1987 (Chile).

⁹⁶³ EIA, Chile, *supra* note 449.

production outside of Chile.⁹⁶⁴ In 1990, the ENAP created a foreign exploration subsidiary (*Sociedad Internacional Petrolera S.A., Sipetrol*) responsible for international activities.

The history of natural gas regulation dates back to 1931, when a decree governing the downstream natural gas industry was issued.⁹⁶⁵ Since that time, private sector participation in downstream natural gas activities is permitted under concessions granted by the State.⁹⁶⁶ The 1931 decree is still in effect, subject to amendments introduced in 1989.⁹⁶⁷ The current regulations governing the process to obtain concessions for natural gas distribution and transmission were issued in 1995, and regulations governing distribution services were issued in 2004.⁹⁶⁸

In summary, the sectoral reforms set up since 1975 established a normative framework that regulated the functions and activities of the following actors:⁹⁶⁹

Production Company: The National Petroleum Company (*Empresa Nacional del Petróleo, ENAP*), which operate individually or in partnership with third parties, extract natural gas from reservoirs located in Chilean territory and control 80 percent of all fuel demand, while the other 20 percent is covered with independent imports. There is freedom to import natural gas, complying with certain administrative and legal requirements.

Transportation Companies: provide the natural gas transportation service from the point of entry to the transportation system to the point of delivery to distribution companies. For consumers contracting directly with

⁹⁶⁴ *Id.*

⁹⁶⁵ “Decreto con Fuerza de Ley No. 323 de 1931, Ministerio de Minería,” D.O., 30 de mayo de 1931 (Chile).

⁹⁶⁶ *Id.*

⁹⁶⁷ “Ley No. 18.856 de 1989,” D.O., 2 de diciembre de 1989 (Chile).

⁹⁶⁸ “Decreto Supremo No. 263 de 1995, Ministerio de Economía, Fomento y Reconstrucción,” D.O., 8 de julio de 1995 (Chile); “Decreto No. 67 de 2004, Ministerio de Economía, Fomento y Reconstrucción,” D.O., 25 de febrero de 2004 (Chile).

⁹⁶⁹ See OLADE, POWER SECTOR, *supra* note 209, at 201.

production companies, and warehouses, the ENAP and private companies intervene. These are natural monopolies through non-exclusive concessions, and there may be several for the same point of origin and destination of transportation, with regulated tariffs.

Marketing Companies: are those who purchase and sell natural gas on behalf of third parties.

Distribution Companies: provide the service of gas supply to final users that do not contract their supply independently. They constitute a natural monopoly based on non-exclusive concessions, and there may be several for the same distribution area or points of origin and destination of transportation. Distribution companies purchase natural gas directly from production companies or marketing companies.

Consumers: are small and large final users. Large users may contract their supply of natural gas independently for self-consumption, negotiating the transaction conditions freely, without prejudice to the rights granted to distribution companies.

6.3 ELECTRICITY LAW

Chile was the first Latin American country to restructure the power sector on the basis of unbundling electric generation, transmission, and distribution activities, privatizing government-owned facilities in the power sector, and creating a competitive market.⁹⁷⁰ The reforms took place in the period from 1982-1996.⁹⁷¹ Generation, transmission, and distribution activities were unbundled vertically and horizontally into several independent geographically based entities.⁹⁷² As a result, the State deprived itself of its commercial interests in the power sector and concentrated on its policy-making and

⁹⁷⁰ Armstrong, *supra* note 477, at 542 & endnote No. 12.

⁹⁷¹ *Id.* See also IDB, *Power Sector, Chile*, *supra* note 477, at I & III.

⁹⁷² IDB, *Power Sector, Chile*, *supra* note 477, at III.

regulatory functions.⁹⁷³

The Electricity Law, adopted in 1982, was the starting point for the restructuring of the sector.⁹⁷⁴ This law sets forth rules for sector structure, operations, markets and pricing at the various levels of the power industry. As a general rule, the law allows participation in sector activities without the need to obtain concessions from the government, and mandates competition in the electrical generation subsector.⁹⁷⁵ Concessions must be obtained, however, for the construction and operation of hydropower stations, transmission lines and distribution assets.⁹⁷⁶ Sector enterprises are not prohibited from undertaking more than one area of commercial activity in the sector, though separate accounts for each activity are required.⁹⁷⁷

A fundamental aspect of the Electricity Law is that generators have open access to transmission and distribution grids. With respects to market rules, the government does not fix electricity rates for large consumers (those using more than 0.5 megawatts); it is the market that sets prices.⁹⁷⁸ This law also sets forth quality and safety guidelines for the operation of the electrical services, among other aspects of the sector's regime.⁹⁷⁹

An independent center for load dispatch coordinates transmission and distribution grids.⁹⁸⁰ Additional legislation regulating the dispatch of electricity, also adopted in

⁹⁷³ *Id.*

⁹⁷⁴ "Decreto con Fuerza de Ley No. 1 de 1982, Ministerio de Minería," D.O., 13 de septiembre de 1982 (Chile) [Chile's Electricity Law].

⁹⁷⁵ *Id.* arts. 2-3.

⁹⁷⁶ *Id.* See also "Decreto Supremo No. 327 de 1997, Ministerio de Minería," D.O., 10 de septiembre de 1997 (Chile); "Decreto Supremo No. 158 de 2003, Ministerio de Economía, Fomento y Reconstrucción," D.O., 9 de octubre de 2003 (Chile).

⁹⁷⁷ See IDB, *Power Sector, Chile*, *supra* note 477, at I.

⁹⁷⁸ Chile's Electricity Law, *supra* note 974, art. 90 (defining large customer those using more than 2-MW). But see *infra* note 985, Chile's 2004 Amendment to the Electricity Law (defined large customer those using more than 0.5 MW).

⁹⁷⁹ Chile's Electricity Law, *supra* note 974, arts. 72-89.

⁹⁸⁰ *Id.* art. 51.

1982, defines the criteria under which the interconnected systems are operated.⁹⁸¹ The criteria include technical standards for transmission as well as connection and participation standards for generators. The rules require that dispatch centers set coordinated operating rules according to minimal cost and other guidelines established by the government.⁹⁸² Any electricity system with more than 100 megawatts of installed capacity must have its own dispatch center to coordinate the operation of the interconnected system.⁹⁸³ The government does not participate in the dispatch centers, which are operated by the different private companies in the generation sector.⁹⁸⁴

After two decades of power sector reform, in 2004, the Congress passed an amendment to the Electricity Law. The main purpose of the amendment was to address controversies among participants in the sector on what portion of the transmission fees should be allocated between the generator and the consumers.⁹⁸⁵ In addition, the amendment expanded the tariff-free consumer segment by defining “large customers” as those using more than 0.5 megawatts (down from 2 megawatts).⁹⁸⁶ Significantly, the 2004 Amendments to the Electricity Law promote the development of modern renewable energy technologies by means of reducing or exempting transmission tariffs for these generators, pursuant to criteria set forth in the law.⁹⁸⁷ Finally, the amendment facilitates dispute resolutions by providing for a mechanism that calls for the intervention of a panel of experts in the field to resolve transmission-fee related controversies in the power

⁹⁸¹ See “Decreto con Fuerza de Ley No. 6 de 1982, Ministerio de Minería” (Chile); IDB, *Power Sector, Chile*, *supra* note 477, at II.

⁹⁸² See IDB, *Power Sector, Chile*, *supra* note 477, at II.

⁹⁸³ *Id.* Members of the dispatch centers are generators with more than 2 percent of the system’s capacity.

⁹⁸⁴ *Id.*

⁹⁸⁵ “Ley No. 19.940 de 2004,” D.O., 13 de marzo de 2004 (Chile).

⁹⁸⁶ *Id.*

⁹⁸⁷ *Id.* art. 71-77 (taking into account transmission mileage and the amount of electricity carried).

sector.⁹⁸⁸

The current legal framework, which has been in effect since the 1982, as modified in 2004—by the so-called “second generation reform”—to improve certain problematic aspects deriving from experience with market operations, is as follows:⁹⁸⁹

The Economic Load Dispatch Center (*Centro de Despacho Económico de Carga*, CDEC): is in charge of the joint operation of generator plants and lines of the electric system, for the purpose of achieving the minimum cost possible in power supply, with an established security. It is made up of the generation and transmission companies that have an installed capacity and length of transmission lines above prefixed amounts. The board of directors is made up of one representative from each company.

Free Customers: Although free customers were those above 2 megawatts of installed power and represented 55 percent of the market, recent reforms reduced the limit to 500 kilowatts with the idea of expanding the space for free negotiation.

Regulated Market: is made up of the distribution companies and customers with an installed power below the limit for free customers. The so-called Node Prices are the maximum transactions in each bar of the system, determined by the National Energy Commission (*Comisión Nacional de Energía*, CNE, see *infra* section 6.5) every six months, which should not have a difference greater than 5 percent of the average prices for the last four months of the free market (the reforms of 2004 reduced the limit from 10 percent to 5 percent).

Competition Tribunal: was established on the basis of Decree Law 211 of 1973, amended by Law No. 19,911 of November 2003 that came into effect in February 2004 and began to operate in July 2004.

Besides what has already been pointed out, the amendments of 2004 regulated

⁹⁸⁸ *Id.* “Título VI”.

⁹⁸⁹ See OLADE, POWER SECTOR, *supra* note 209, at 200-201.

four key topics in the sector.⁹⁹⁰ First, the reform specified procedures for determining transmission tolls, in order to enable the development and remuneration of 100 percent of the transmission system to the extent that it is efficient. In addition, it specified toll norms, particularly for sub-transmission, to enable bidders other than distribution companies access to free customers located in the concession areas of the latter. Second, the reform introduced the market of supplementary services, establishing the transaction and valuation of technical resources and making it possible to improve the quality and security of services. Third, as mentioned above, it created a mechanism for solving disputes within the power sector—both between companies and the authority, and among companies—by establishing a highly specialized panel of experts made up of seven professionals, two of which will be lawyers and the other five engineers and/or economists with much expertise in the sector. Finally, conditions were improved for developing small, non-conventional power plants, mostly using renewable energy, by opening the electric markets to this type of plants, establishing the right to dispatch energy through the distribution systems, and exemption from payment of tolls for the use of the trunk transmission system.

6.4 RENEWABLE ENERGY AND ENERGY EFFICIENCY

Chile has enacted no specific legislation for solar, wind or biomass energy resources, but has adopted comprehensive legislation on geothermal energy concessions.⁹⁹¹ The Geothermal Energy Law, passed in 2000, provides a legal definition of geothermal energy and governs the exploration or exploitation of geothermal energy.

⁹⁹⁰ *Id.*

⁹⁹¹ Chile's Geothermal Energy Law, *supra* note 951. *See also* "Decreto No. 142 de 2000, Ministerio de Minería," D.O., 28 de junio de 2000 (Chile).

In particular, the following matters are covered in this law: the process for tenders and granting concessions for the exploration or exploitation of geothermal energy; the constitution of the necessary easements required for the exploration or exploitation of geothermal energy; safety conditions for carrying out geothermal activities; the relationships between concessionaires, the government, owners of surface lands, holders of mining properties, companies authorized by law to prospect or develop hydrocarbons, and holders of water exploitation rights; and governmental responsibilities related to geothermal energy.⁹⁹²

The Geothermal Energy Law defines geothermal energy as “the energy obtained from the natural heat of the earth, which may be drawn from steam, water, gases (except for hydrocarbons) or through fluids artificially injected for such purposes.”⁹⁹³ Further, it declares that geothermal energy, regardless of the location, form, or condition, is the State’s property. Nonetheless, it is susceptible to exploration and exploitation by private developers, upon obtaining a concession under its provisions.⁹⁹⁴ The concession of geothermal energy “is a property right *in rem*, different and independent from the property of the land.”⁹⁹⁵ Therefore, the holder of a geothermal energy concession holds a constitutionally protected property right over such concession. The geothermal energy concession may be for exploration or exploitation.⁹⁹⁶ As of 2006, ten exploratory concessions for geothermal energy had been granted by the government under this legal framework, while a single exploitation concession had been given in the country.⁹⁹⁷

⁹⁹² Chile’s Geothermal Energy Law, *supra* note 951, art. 1.

⁹⁹³ *Id.* art. 3.

⁹⁹⁴ *Id.* art. 4.

⁹⁹⁵ *Id.* art. 5 (emphasis added).

⁹⁹⁶ *Id.* art. 6.

⁹⁹⁷ See CNE’s web site at <http://www.cne.cl>; See OLADE, Report 2004, Chile, *supra* note 2.

Energy efficiency in Chile is still in an early stage, compared to other countries in the region. Energy efficiency programs are coordinated by a small department of the National Energy Commission (CNE), the country's top energy agency (as discussed in the next section).⁹⁹⁸ These programs are mainly focused on evaluations of mining sector activities, standards for the construction sector, and standards for electric appliances.⁹⁹⁹ Other efforts have concentrated mostly on assessing efficiency potentials, information campaigns and promoting voluntary standards.

Specifically, in 1996, the Chilean government established a program for regulating thermal insulation in new residential construction.¹⁰⁰⁰ Starting in 2000, energy efficiency standards for electrical appliances are being developed jointly by the National Energy Commission and the National Institute of Standardization (*Instituto Nacional de Normalización*).¹⁰⁰¹ By 2003 standards had been issued for electric home appliances, for lighting equipment, for air conditioning and heating equipment, for electric motors and pumps, and for transformers and cables. However, most of the industrial sector and the electricity utilities have yet to incorporate energy efficiency in their practices.¹⁰⁰²

One notable exception has been the National Copper Corporation (CODELCO), which has developed corporate directives for energy efficiency on a voluntary basis. The copper mining industry accounts for 10 percent of final energy consumption and more than 30 percent of electricity consumption in Chile, and is by far the main industrial

⁹⁹⁸ See ASIA PACIFIC ENERGY RESEARCH CENTER, ENERGY EFFICIENCY PROGRAMMES IN DEVELOPING AND TRANSITIONAL APEC ECONOMIES 25-27 (2003).

⁹⁹⁹ *Id.* at 25.

¹⁰⁰⁰ *Id.* at 25 (in coordination with the Ministry of Housing and Urban Development).

¹⁰⁰¹ *Id.* at 26.

¹⁰⁰² *Id.* at 27.

energy consumer.¹⁰⁰³ The National Copper Corporation, which is the world's biggest copper producer, is implementing a series of energy efficiency programs, which include improvements to reduce energy consumption, diversification of energy sources, introduction of energy-efficient technologies and the establishment of energy indicators.

6.5 ENERGY AUTHORITIES AND REGULATORY AGENCIES

Chile's institutional framework for the energy sector involves two ministries: the Ministry of Economy (*Ministerio de Economía, Fomento y Reconstrucción*) and the Ministry of Mines (*Ministerio de Minería*). Two specialized agencies, the National Energy Commission (*Comisión Nacional de Energía*, CNE) and the Office of the Superintendent of Electricity and Fuels (*Superintendencia de Electricidad y Combustibles*), operate under the former, while the State oil company (ENAP) operates under the latter.¹⁰⁰⁴

The Ministry of Mines oversees Chile's huge mining industry, including the extraction of hydrocarbons by the ENAP.¹⁰⁰⁵ Formerly, the Ministry of Mines was the highest-ranking authority for the energy sector as well, but this function was transferred to the Ministry of Economy and Energy in the late 1980s.¹⁰⁰⁶ Currently, the Ministry of Economy is in charge of the energy sector. It authorizes concessions for energy sector activities and generally provides the economic regulation of the sector. As such, with respect to the power sector, its duties include approving rates proposed by the National Energy Commission. In addition, with respect to the oil and gas industry, the Ministry of

¹⁰⁰³ *Id.* at 26.

¹⁰⁰⁴ Chile's ENAP Law, *supra* note 959, arts. 2-3.

¹⁰⁰⁵ "Decreto con Fuerza de Ley No. 16 de 1953," D.O., 21 de marzo de 1953 (Chile); "Decreto con Fuerza de Ley No. 231 de 1953," D.O., 5 de agosto de 1953 (Chile). *See also* "Decreto con Fuerza de Ley No. 302 de 1960, Ministerio de Hacienda," D.O., 31 de marzo de 1960 (Chile).

¹⁰⁰⁶ *See* "Ley 18.899 de 1989," D.O., 30 de diciembre de 1989 (Chile).

Economy issues operation and safety requirements for the various phases and activities, including refining, storage, transportation, and distribution of oil products or natural gas.¹⁰⁰⁷ The Ministry of Economy also determines quality standards for petroleum products.¹⁰⁰⁸

The National Energy Commission performs the basic policy formulation, regulatory framework and proposing tariffs for the energy sector, while the Office of the Superintendent of Electricity and Fuels oversees the technical, operating, and financial performance of sector players, as discussed further below. With respect to hydropower, however, neither of these ministries nor agencies have the authority to allocate water rights necessary for hydroelectric generation. Under Chile's Water Code of 1981, the General Directorate of Water (*Dirección General de Aguas*), a self-standing independent agency, grants and supervises water rights in the country, including water rights for hydropower generation.¹⁰⁰⁹

The National Energy Commission is an inter-ministerial agency, established in 1978, to perform energy regulatory and policy-making functions.¹⁰¹⁰ The Commission has ministerial rank, and consists of 7 members, mostly cabinet ministers, a secretary general and a chairman appointed by the President. The subject matter of its competence

¹⁰⁰⁷ See "Decreto Supremo No. 254 de 1995, Ministerio de Economía, Fomento y Reconstrucción," D.O., 30 de octubre de 1995 (Chile); "Decreto Supremo N° 90 de 1996, Ministerio de Economía, Fomento y Reconstrucción," D.O., 5 de agosto de 1996 (Chile); "Decreto No. 739 de 1994, Ministerio de Economía, Fomento y Reconstrucción," D.O., 9 de diciembre de 1994 (Chile); "Decreto No. 379 de 1986, Ministerio de Economía, Fomento y Reconstrucción," D.O., 1 de marzo de 1986 (Chile).

¹⁰⁰⁸ See "Decreto Supremo 541 de 1979, Ministerio de Minería," D.O., 10 de noviembre de 1979 (Chile). See also "Decreto Supremo No. 541 de 1980, Ministerio de Economía, Fomento y Reconstrucción"; "Decreto Supremo No. 180 de 1985, Ministerio Economía, Fomento y Reconstrucción"; "Decreto Supremo No. 178 de 1992, Ministerio Economía, Fomento y Reconstrucción"; "Decreto Supremo No. 198 de 1994, Ministerio de Economía, Fomento y Reconstrucción".

¹⁰⁰⁹ Chile's Water Code, *supra* note 951, arts. 5-7 and 130.

¹⁰¹⁰ "Decreto con Fuerza de Ley No. 2.224, de 25 de mayo de 1978," D.O., 8 de junio de 1978, arts. 1-4 (Chile) [Chile's CNE Law].

encompasses all energy sources and includes the promotion of energy efficiency. The Commission formulated and implemented the power sector's restructuring program. Its ongoing duties with regard to the power sector can be summarized as follows: The Commission undertakes most of the normative and regulatory functions for the energy sector, "including proposing policies and strategies for the sector, undertaking rate structure studies, proposing rates to the Ministry of Economy (which sets the rates) and self-regulating pricing formulas, establishing regulations, service standards, and operating criteria for sector enterprises; and overseeing the dispatch entities."¹⁰¹¹ It has been noted, however, that "the [Electricity] law is very detailed, which leaves the regulator little discretionary power."¹⁰¹²

In addition, the National Energy Commission is charged with designing the country's energy efficiency program, in coordination with the National Institute of Standardization (*Instituto Nacional de Normalización*). Working collaboratively, these entities have made important progress developing energy efficiency standards for the country. During the period 2000-2003, after receiving public input, standards for home appliances, lighting devices, motors and pumps, and cables and transformers, were adopted.¹⁰¹³ Further, since 1996, in coordination with the Ministry of Housing and Urban Development (*Ministerio de Vivienda y Urbanismo*), the Commission has modified buildings codes to incorporate weatherization requirements for constructions in the country, as noted in the preceding section.¹⁰¹⁴

The other specialized agency for the energy sector, established in 1985, is the

¹⁰¹¹ IDB, *Power Sector, Chile*, *supra* note 477, at II.

¹⁰¹² *Id.*

¹⁰¹³ The norms are available at the National Institute of Standardization's web site (<http://www.inn.cl>).

¹⁰¹⁴ *Id.* (See e.g., "Reglamentación sobre Acondicionamiento Térmico de Viviendas").

Office of the Superintendent for Electricity and Fuels.¹⁰¹⁵ Primarily, this entity is in charge of oversight functions, although it also has minor regulatory functions.¹⁰¹⁶ It oversees and enforces the laws and regulations with regard to the production, storage, transportation, and distribution of liquid fuels and natural gas, as well as to the generation, transmission, and delivery of electricity.¹⁰¹⁷ The entity's oversight authority includes the supervision of technical, operating, and safety regulation implementation, and the power to impose penalties; it also has the power to recommend the termination of concession contracts.¹⁰¹⁸

While the National Energy Commission and the Office of the Superintendent for Electricity and Fuels have succeeded in making integral reforms to the power sector, analysts have noted some lack of coordination between the two agencies.¹⁰¹⁹ In addition, the agencies have been criticized on the grounds that “[f]inancially, they depend on budget allocations by ministry officials and lack an independent source of income such as that of fees collected from regulated enterprises.”¹⁰²⁰ Financing the operation of the regulatory agency using fees from regulated enterprises would be preferable, as is done in Brazil for example.

6.6 INSTITUTIONAL AND LEGAL ENVIRONMENTAL FRAMEWORK

Chile's 1994 Environment Framework Law

In 1994, the legislature passed the Chilean Environmental Framework Law (*Ley*

¹⁰¹⁵ “Ley No. 18.410 de 1985,” D.O., 22 de mayo de 1985 (Chile); “Ley No. 19.613 de 1999,” D.O., 8 de junio de 1999 (Chile) [Chile's SE Law].

¹⁰¹⁶ Chile's SE Law, *supra* note 1015, art. 1; IDB, *Power Sector, Chile*, *supra* note 477, at I & II.

¹⁰¹⁷ Chile's SE Law, *supra* note 1015, arts. 2 & 3

¹⁰¹⁸ *Id.*

¹⁰¹⁹ IDB, *Power Sector, Chile*, *supra* note 477, at I & II.

¹⁰²⁰ *Id.*

Sobre Bases Generales del Medio Ambiente).¹⁰²¹ This law sets forth general criteria for the country's environmental policy and the instruments to implement such policy. It requires public participation in environmental decision-making and mandates technical and scientific research as well as education campaigns to encourage environmental protection.¹⁰²² Further, it defines and regulates environmental damage and liability, determines sanctions and provides procedural rules on these matters.¹⁰²³ As for the Chilean approach to liability, “[t]he liability of offending parties under this system is based only on intentional or willful violations, not strict liability based on ownership or operation.”¹⁰²⁴

Professor Nolon takes the position that “the [Chilean Environmental Framework] law evidences little attempt to channel growth and development forces and to balance them with open space and natural resource conservation.”¹⁰²⁵ But there are several positive aspects of this law, notes the same author. In particular, he notes that “[t]he two principal features of the Chilean [Environmental Framework] law are the creation of a centralized national agency, the National Commission on the Environment (CONAMA), and the extensive use of environmental impact assessments.”¹⁰²⁶ Other notable features of the Chilean law are the mandate for the adoption of environmental standards and market mechanisms, and for the implementation of regional or localized plans to achieve these standards in priority areas.¹⁰²⁷ These features are discussed further below.

¹⁰²¹ “Ley No. 19.300 de 1994”, D.O., 9 de marzo de 1994 (Chile) [Chile’s Environmental Law].

¹⁰²² *Id.* arts. 4-7.

¹⁰²³ *Id.* arts. 3 & 51-63. See Nolon, *supra* note 424, at 712.

¹⁰²⁴ See Nolon, *supra* note 424, at 712. (citing to Chile’s Environmental Law, art. 16).

¹⁰²⁵ *Id.*

¹⁰²⁶ *Id.* at 711.

¹⁰²⁷ Chile’s Environmental Law, *supra* note 1028, arts 32, 40 & 41.

Environmental Authorities

Established in 1994, the National Commission on the Environment (*Comisión Nacional del Medio Ambiente*, CONAMA) is Chile's environmental protection agency.¹⁰²⁸ It is the country's environmental policy-maker and supervisory body on environmental affairs.¹⁰²⁹ The CONAMA also serves as the coordinating body on environmental protection within the administration, with several ministries participating in its directive board.¹⁰³⁰

The Board of Directors of the CONAMA is composed of officials of the national government. In addition, "[t]he Commission has an interdisciplinary advisory board, however, composed of scientists, representatives of nongovernmental organizations, universities, businesses and labor organizations. Its role, as the name implies, is strictly advisory to the Commission."¹⁰³¹ The CONAMA operates through twelve Regional Environmental Commissions (*Comisiones Regionales del Medio Ambiente*, COREMAs), which encompass the entire territory of the country.¹⁰³² The CONAMA and the region's COREMAs have jurisdiction over environmental issues of the energy sector.

6.7 ENVIRONMENTAL STANDARDS, PLANNING AND ECONOMIC INSTRUMENTS

An outstanding aspect of Chile's Environmental Framework Law is that it calls for the adoption of environmental standards and plans for "priority areas". It also calls for the use of taxes on emissions and tradable emission permits, among other techniques, to

¹⁰²⁸ *Id.* art. 69.

¹⁰²⁹ *Id.* art. 70.

¹⁰³⁰ *Id.* art. 71. See Nolon, *supra* note 424, at 711.

¹⁰³¹ Nolon, *supra* note 424, at 711 (footnotes omitted, citing to Chile's Environmental Law, tit. VI, para. 2).

¹⁰³² Chile's Environmental Law, *supra* note 1028, art. 80.

achieve compliance.¹⁰³³ The CONAMA is authorized to issue the environmental quality standards and emissions standards.¹⁰³⁴ Detailed rules governing the process for issuing environmental quality standards and emissions limits were promulgated in 1995.¹⁰³⁵

The rules for issuing environmental standards distinguish between primary quality standards, secondary quality standards and emission standards.¹⁰³⁶ The purpose of primary environmental quality standards, which are uniform for the entire country, is to protect the health of the population.¹⁰³⁷ Secondary environmental quality standards are aimed at the protection of natural resources. Emission standards are issued to set maximum permissible levels of emissions into the air or water for the entire country or for a specified region, as appropriate, to restore certain stressed areas or prevent further deterioration in others.¹⁰³⁸

The CONAMA conducts the rulemaking process to set standards. The process is set up so that it involves all sectors of the economy through consultation and public participation.¹⁰³⁹ In brief, CONAMA develops a draft norm that is circulated among the various stakeholders and the general public, receives input, and subsequently issues the final regulation. Environmental quality standards and emission limits must be revised every five years.¹⁰⁴⁰

Chile's environmental quality standards and emission limits can be catalogued in three groups, according to the CONAMA's own summary of environmental norms in

¹⁰³³ *Id.* arts. 32, 40 & 41; Nolon, *supra* note 424, at 712.

¹⁰³⁴ Chile's Environmental Law, *supra* note 1028, arts. 32 & 40.

¹⁰³⁵ "Decreto Supremo No. 93 de 1995," D.O., 15 de mayo de 1995 (Chile)

¹⁰³⁶ *Id.* arts. 2-4.

¹⁰³⁷ *Id.* art. 24.

¹⁰³⁸ *Id.* arts. 24-35.

¹⁰³⁹ *Id.* arts. 9-23.

¹⁰⁴⁰ *Id.* art. 36.

Chile.¹⁰⁴¹ The first group of environmental standards includes primary environmental quality standards for air resources, including for particulate matter, carbon monoxide, lead, nitrogen dioxide and ozone.¹⁰⁴² The second group includes emission standards for discharges into the ambient air from light and medium vehicles, buses and motorcycles, as well as emission limitations for discharges of arsenic from all sources.¹⁰⁴³ The third group includes emission standards for discharges into water bodies, including water discharges into ground water, into sewage systems, and into marine waters.¹⁰⁴⁴

With regards to environmental planning the key aspect of the Chilean law is the possibility of crafting plans for “priority areas”, termed Prevention and Decontamination Plans (*Planes de Prevención y Descontaminación*), are prepared by the CONAMA with input from the corresponding COREMA. These plans are mandatory in areas declared in non-attainment with emission standards or otherwise “latent or saturated” (“*latentes o saturadas*”) areas.¹⁰⁴⁵ Various economic instruments, including tradable emission credits, can be used in carrying-out these plans.¹⁰⁴⁶

¹⁰⁴¹ See GOBIERNO DE CHILE, COMISION NACIONAL DE MEDIO AMBIENTE, NORMAS AMBIENTALES DICTADAS BAJO LA LEY DE BASES DE MEDIO AMBIENTE (2003).

¹⁰⁴² “Decreto Supremo No. 59 de 1998, del Ministerio Secretaría General de la Presidencia,” (Chile); “Decreto Supremo No. 115 de 2002, del Ministerio Secretaría General de la Presidencia,” (Chile); “Decreto Supremo No. 136 de 2000, del Ministerio Secretaría General de la Presidencia,” (Chile); “Decreto Supremo No. 114 de 2002, del Ministerio Secretaría General de la Presidencia de la República,” (Chile); “Decreto Supremo No. 112 de 2002, del Ministerio Secretaría General de la Presidencia de la República,” (Chile); “Decreto Supremo No. 113 de 2002, del Ministerio Secretaría General de la Presidencia de la República,” (Chile); “Decreto Supremo No 110 de 2001, del Ministerio Secretaría General de la Presidencia de la República,” (Chile).

¹⁰⁴³ “Decreto Supremo No. 103 de 2000, del Ministerio de Transportes y Telecomunicaciones y Comisión Nacional del Medio Ambiente,” (Chile); “Decreto Supremo No. 130 de 2002, del Ministerio de Transportes y Telecomunicaciones, Subsecretaría de Transportes,” (Chile); “Decreto Supremo No. 104 de 2000, del Ministerio de Transportes y Telecomunicaciones Subsecretaría de Transportes,” (Chile); “Decreto Supremo No. 4 de 1994, del Ministerio de Transportes y Telecomunicaciones,” (Chile); “Decreto Supremo No. 165 de 1999, del Ministerio Secretaría General de la Presidencia,” (Chile).

¹⁰⁴⁴ “Decreto Supremo No. 46 de 2002, del Ministerio Secretaría General de la Presidencia,” (Chile); “Decreto Supremo No. 609 de 1998, del Ministerio de Obras Públicas,” (Chile); “Decreto Supremo No. 90 de 2000, del Ministerio Secretaría General de la Presidencia,” (Chile).

¹⁰⁴⁵ Chile’s Environmental Law, *supra* note 1028, art. 43-47.

¹⁰⁴⁶ *Id.* arts. 47-48. See Nolon, *supra* note 424, at 711.

Chile has implemented a pollution-offset system involving tradable permits that exclusively address emissions from industrial boilers in the Santiago area, the source of almost half of the capital's non-transportation related air pollution.¹⁰⁴⁷ The Congress, however, has failed to pass an emissions trading bill that has been pending before it since 1996. The bill would lay the legal groundwork for a national emissions trading system. The legislation, would—starting with an air emissions regimen for Santiago—allow trading of permits authorizing air, water and soil emissions.

The emissions trading bill delineates rules for an emissions-trading market that would allow companies operating below legal limits to sell pollution-reduction credits called decontamination bonds.¹⁰⁴⁸ Companies that do not meet government emissions limits would buy these bonds, which would entitle them to legally exceed the limits by the emissions volume of the bonds they purchase. In addition, the bill would require that new or expanded industrial plants offset their added air emissions by reducing air pollution by 150 percent of that amount at other plants in their local air shed.¹⁰⁴⁹ Such a restriction already is in place in Santiago as part of the environmental impact assessment process. But, under the proposed law, this scheme eventually would be applied throughout Chile. Also, under the proposed legislation, the purchase of emissions permits would be used to satisfy the 150 percent requirement.

Under the current system, compensation for excess air emissions generated by new and modified plants has been carried out by a variety of means other than offsets, such as paying to shut down polluting factories and to retire old diesel buses or taxis.

¹⁰⁴⁷ See *An Uphill Battle for Chilean Emissions-Trading Bill*, ECOAMÉRICAS, August 2004, Vol. 6. No. 10, at 9.

¹⁰⁴⁸ *Id.*

¹⁰⁴⁹ *Id.*

From 1992 to 2002, mobile-source emissions in Santiago tripled and industrial activity doubled; yet over the same period, air pollution in the city was lowered by half through such methods as widening the use of natural gas in industry and transportation, requiring that new cars be outfitted with catalytic converters and revamping fuel standards.¹⁰⁵⁰

6.8 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The most meaningful contribution of Chile's Environmental Framework Law has been the creation of an environmental impact review system (*Sistema de Evaluación de Impacto Ambiental*) for the country, "which coordinates environmental review with the permitting of projects."¹⁰⁵¹ The system requires that developers wishing to initiate projects or to modify certain projects having significant environmental impacts be subject to the environmental review system.¹⁰⁵² "Projects that present a certain level of environmental risk are subject to a full environmental impact study. Projects with less impact are subject to an environmental impact declaration, involving a lower level of study and review," explains Professor Nolon.¹⁰⁵³

An environmental study must be submitted and approved if it is anticipated that a project will have any of the following impacts: risk to human health; significant adverse effects on the quantity and quality of natural resources, including soil, water and air; relocation of human communities or significant alteration of their living conditions; proximity to protected areas, or to an area defined as being of environmental value; significant alteration of the scenic value of an area; and, alteration of sites with anthropological, archeological or historical value and, in general, those national

¹⁰⁵⁰ *Id.*

¹⁰⁵¹ Nolon, *supra* note 424, at 711. See Chile's Environmental Law, *supra* note 1028, arts. 8-31.

¹⁰⁵² Chile's Environmental Law, *supra* note 1028, art. 10.

¹⁰⁵³ Nolon, *supra* note 424, 712 (citing to Chile's Environmental Law, art. 11 (a)-(f) & 18).

monuments and sites which form part of the cultural heritage of the country.¹⁰⁵⁴

Activities or works specifically required to undergo the environmental evaluation process include many energy developments and infrastructure projects. For hydro energy projects, such as aqueducts, dams, ditches, dredging or significant alteration of natural water courses; for electricity projects, such as high voltage electric transmission lines and electric power plants higher than 3 megawatts; and, for hydrocarbon developments, including the exploitation of oil and gas, and the construction of oil or gas pipelines.¹⁰⁵⁵

The respective regional environmental agency (COREMA) undertakes the environmental review when the project impacts only the respective region; the CONAMA takes over the process when the project impacts more than one region.¹⁰⁵⁶ “Permits are issued by the reviewing commission if the project complies with applicable environmental standards established by the National Commission on the Environment [CONAMA].”¹⁰⁵⁷ Further, if the proposed project is located in a non-attainment or “saturated” area having a Prevention and Decontamination Plan in effect, the environmental review process includes must also verify that the developer satisfies the requirements of such plan.¹⁰⁵⁸

The Environmental Framework Law provides meaningful opportunities for public involvement in the environmental approval process.¹⁰⁵⁹ Citizens and non-governmental organizations may be involved in the environmental review system directly. They are permitted to submit observations regarding projects under review, and allowed an

¹⁰⁵⁴ Chile’s Environmental Law, *supra* note 1028, art. 11. See BAKER & MCKENZIE, *supra* note 421, at 56.

¹⁰⁵⁵ *Id.* art. 10 (a), (b), (c), (i) & (j).

¹⁰⁵⁶ *Id.* art. 9. See Nolon, *supra* note 424, at 712.

¹⁰⁵⁷ Nolon, *supra* note 424, at 712 (footnote omitted, citing to Chile’s Environmental Law, art. 16).

¹⁰⁵⁸ Chile’s Environmental Law, *supra* note 1028, art. 46.

¹⁰⁵⁹ *Id.* art. 54.

administrative remedy to challenge the issuance of a permit if their observations are not appropriately considered.¹⁰⁶⁰

The actual implementation of the environmental review process was delayed until 1997. Indeed, the Chilean 1994 Environmental Framework Law provided that the environmental evaluation system would take effect only at the time when implementing regulations were issued.¹⁰⁶¹ The process to adopt such regulations was completed in 1997, and the environmental assessment system became mandatory at that time.¹⁰⁶² Subsequently, the government comprehensively reviewed the system and reissued the regulations in 2002.¹⁰⁶³ The regulations provide further criteria for determining which projects require submission of environmental studies as well as criteria on the review process and public participation.¹⁰⁶⁴

Parties undertaking or modifying projects that are subject to the environmental evaluation system must submit an environmental impact assessment or an environmental impact declaration to CONAMA or the corresponding COREMA.¹⁰⁶⁵ Under the regulations, an environmental impact assessment is a detailed document requiring substantial analysis on the environmental impacts of the project. The environmental impact declaration, on the other hand, is a simpler format that sets forth only a description of project and background information.¹⁰⁶⁶ The environmental impact declaration must also indicate that the project complies with all environmental laws and

¹⁰⁶⁰ Nolon, *supra* note 424, at 713 (footnote omitted, citing to Chile's Environmental Law, art. 54).

¹⁰⁶¹ Chile's Environmental Law, *supra* note 1028, "Artículos Transitorios, art. 1".

¹⁰⁶² "Decreto Supremo No. 30 de 1997, Ministerio Secretaría General de la Presidencia," D.O., 3 de abril de 1997 (Chile).

¹⁰⁶³ "Decreto Supremo No. 95 de 2002, Ministerio Secretaría General de la Presidencia," D.O., 7 de diciembre de 2002 (Chile) [Chile's EIA Regulations].

¹⁰⁶⁴ Chile's EIA Regulations, *supra* note 1063, arts. 3, 5-11, 29-33 & 49-54.

¹⁰⁶⁵ Chile's Environmental Law, *supra* note 1028, art. 9.

¹⁰⁶⁶ *Id.* arts. 11 & 12; Chile's EIA Regulations, *supra* note 1063, arts. 4 & 12-15.

that it will not produce any environmental impact that would require the submission and approval of full environmental impact assessment.¹⁰⁶⁷

The environmental assessment regulations also implement the public involvement requirements of the Environmental Framework Law. Following its submission to the CONAMA or the corresponding COREMA, an excerpt from the environmental impact assessment or the environmental impact declaration, including a description of the environmental effects of the project, must be published in the Chilean Official Gazette (*Diario Oficial*) and a regional or national newspaper of general circulation.¹⁰⁶⁸ Further, the decision-making process is made a matter of public record.¹⁰⁶⁹

Community organizations and individuals that are directly affected by the project may submit comments regarding the environmental studies. The corresponding decision-maker must consider these comments when rendering the decision on the study's approval.¹⁰⁷⁰ Community organizations and individuals directly affected by the project may challenge the decision when they believe that their observations have not been duly considered.¹⁰⁷¹ The exercise of this action will not stay the effects of the project's environmental approval; the project or activities can continue while the issue is resolved.¹⁰⁷²

The environmental review system applies to all licenses or permits required under law that involve an environmental review process, whether issued by an environmental

¹⁰⁶⁷ Chile's EIA Regulations, *supra* note 1063, art. 14-15. See BAKER & MCKENZIE, *supra* note 421, at 56.

¹⁰⁶⁸ Chile's EIA Regulation, *supra* note 1063, art. 27.

¹⁰⁶⁹ *Id.* arts. 48 & 55-56 (Except proprietary or trademark protection regarding technical features of the project).

¹⁰⁷⁰ *Id.* arts. 25, 29 & 49-54.

¹⁰⁷¹ *Id.* art. 45.

¹⁰⁷² *Id.*

authority (CONAMA or COREMA), or any other governmental authority.¹⁰⁷³ The latter are termed sectoral environmental permits (*permisos ambientales sectoriales*). For instance, licenses or permits required pursuant to the Navigation Law (which implements MARPOL) must follow the environmental impact assessment procedures.¹⁰⁷⁴

6.9 ENFORCEMENT

Pursuant to the Environmental Framework Law and the regulations, all environmental authorities are required to monitor compliance with the provisions and requirements of the environmental laws and with any conditions set forth in the decision approving an environmental evaluation.¹⁰⁷⁵ In case of a violation, CONAMA or the corresponding COREMA, may issue a warning, impose a fine or, in more aggravated circumstances, revoke the approval.¹⁰⁷⁶

In order to file an environmental lawsuit the Chilean Environmental Framework Law requires an injured plaintiff.¹⁰⁷⁷ While citizens and non-governmental organizations are permitted to participate in the environmental review system by submitting comments regarding projects under review and are allowed an administrative remedy to challenge the issuance of a permit if their observations are not appropriately considered, they are generally not permitted to sue offending polluters unless injury can be demonstrated. Nevertheless, “they may petition the municipality with jurisdiction over the offender to enforce applicable standards. If the municipality refuses, it is deemed to be jointly and

¹⁰⁷³ *Id.* arts. 65-106.

¹⁰⁷⁴ *Id.* arts. 68-75; *See* MARPOL 73/78, *supra* note 134; “Decreto Supremo No. 1.689 de 1994, Ministerio de Relaciones Exteriores,” D.O., 4 de mayo de 1995 (Chile); “Decreto Supremo No. 476 de 1977, Ministerio de Relaciones Exteriores,” (Chile); “Decreto Supremo No. 24 de 1983, Ministerio de Relaciones Exteriores,” (Chile); “Decreto Supremo No. 16 de 1992, Ministerio de Relaciones Exteriores,” (Chile).

¹⁰⁷⁵ *Id.* art. 64.

¹⁰⁷⁶ *Id.* art. 56.

¹⁰⁷⁷ *Id.* art. 54. *See* Nolon, *supra* note 424, at 712-713.

severally liable for the violations.”¹⁰⁷⁸

Despite Chile’s successful economic performance in comparison to other countries in the region, the country’s environmental compliance and enforcement is far from acceptable. A 2005 study by the Organization for Economic Cooperation and Development (OECD) has called for an environmental policy overhaul, a stronger fiscal commitment and tightened enforcement.¹⁰⁷⁹ While the OECD study commended Chile for making progress in tackling mining-sector air emissions and improving air quality in metropolitan Santiago, the study recommended urgent reforms.

The OECD’s most urgent recommendation is that Chile strengthens environmental enforcement both at the national and regional levels. To that end, the OECD report suggested the country create an environmental inspectorate devoted to monitoring enforcement. The recommendations also call for energy efficiency steps and a review of the energy-supply mix to address such environmental problems as air pollution in Santiago; information-system improvements such as the development of environmental indicators to encourage government accountability and public information; and land-use planning that incorporates biodiversity concerns, among others. The OECD report also spotlights two key problems that are endemic throughout the region: a lack of independence among enforcement agencies and the influence of politics on environmental decisions.

¹⁰⁷⁸ Nolon, *supra* note 424, at 712-713.

¹⁰⁷⁹ See *OECD recommends green upgrades in Chile*, ECOAMÉRICAS, June 2005, Vol. 7. No. 8, at 4.

CHAPTER 7 – COLOMBIA

7.1 CONSTITUTIONAL ISSUES

Under the Colombian Constitution of 1991, “the State is the owner of the subsoil and non-renewable natural resources, without prejudice to private rights acquired pursuant to preexisting laws.”¹⁰⁸⁰ The Constitutional Assembly purposefully used the term “State” instead of “Nation” in order to allow allocation of royalties from the exploitation of non-renewable natural resources between the central government and the territorial entities (*departamentos*).¹⁰⁸¹ Further, the Constitution explicitly provides that exploitation of non-renewable resources creates a right to royalties in favor of the State, and empowers the Congress to determine royalties for the territorial entities where the resources are found.¹⁰⁸²

Hydropower resources also belong to the State (*res publicae*), whereas rivers and streams are common goods (*res communes*) that fall within the public domain.¹⁰⁸³ The Constitution specifically stipulates that resources within the public domain cannot be transferred or appropriated by anyone.¹⁰⁸⁴ Therefore, pursuant to the Constitution, the Colombian State controls all renewable and non-renewable natural resources.

While the 1991 Constitution assigns the ownership of energy resources to the State, it includes several provisions supporting private participation in all economic activities. Those provisions require the promotion of competition as a means to achieve

¹⁰⁸⁰ CONST. art. 332 (Colom.). *See also* CONST. art. 110 (Colom.). *See also* LLERAS DE LA FUENTE ET AL., *supra* note 296, at 164.

¹⁰⁸¹ AMAYA NAVAS, *supra* note 294, at 198.

¹⁰⁸² CONST. art. 360 (Colom.). *See* AMAYA NAVAS, *supra* note 294, at 209.

¹⁰⁸³ CONST. art. 63 (Colom.).

¹⁰⁸⁴ CONST. art. 63 (Colom.); AMAYA NAVAS, *supra* note 294, at 156; LLERAS DE LA FUENTE ET AL., *supra* note 296, at 164.

greater economic efficiency; the reform of public enterprises to make them more accountable and efficient in their operations; the redirection and decentralization of regulatory activities; an emphasis on deregulated pricing in public service activities and regulated pricing based on economic costs; and a refocusing of the Government's involvement in economic areas to policy, regulatory, oversight, and standard-setting functions.¹⁰⁸⁵

7.2 OIL AND GAS LAW

In contrast with other countries of the region, the Colombian legal system allows private ownership of hydrocarbon resources in the subsoil. In practice, however, few individuals have demonstrated title that would enable such a claim. This is because the State appropriated the hydrocarbon resources in the subsoil when the country was established as a unitary system at the end of the 19th Century—after several failed attempts to establish a federal system.¹⁰⁸⁶ Accordingly, private ownership of hydrocarbon resources in the subsoil is recognized only to the owner of the surface land who can demonstrate title over the land dating back to 1873.¹⁰⁸⁷ Otherwise, the Colombian State owns all hydrocarbon deposits in the country.¹⁰⁸⁸

Colombia's first Petroleum Law, passed in 1919, was regarded as “very restrictive, requiring excessive taxes and royalties, limiting the concession to 30 years, and providing for state takeover at the end of the term.”¹⁰⁸⁹ The takeover at the expiration of the concession was an innovation favorable to the national government, “and one that

¹⁰⁸⁵ See IDB, *Power Sector, Colombia*, *supra* note 477, § II.

¹⁰⁸⁶ See REYNOLDS & FLOREZ, *supra* note 422, at 1 Colombia 1-2.

¹⁰⁸⁷ “Decreto No. 1053 de 1953,” D.O., 16 de mayo de 1953 (Colom.) [Colombia's Petroleum Code], art. 5.

¹⁰⁸⁸ CONST. arts. 110 & 332 (Colom.).

¹⁰⁸⁹ Jonathan C. Brown, *Jersey Standard and Latin American Oil Production*, in LATIN AMERICAN OIL COMPANIES, *supra* note 429, at 28.

oilmen had not yet encountered on entry into a Latin American country.”¹⁰⁹⁰ Indeed, Colombia’s national oil company—*Empresa Colombiana de Petróleos (Ecopetrol)*—was formed in 1951 to take over the oil developments of U.S.-based Standard Oil in Colombia after its concession expired on August 25, 1951.¹⁰⁹¹ *Ecopetrol* was charged with developing Colombia’s hydrocarbon resources. It was granted administrative and decision-making power as well as its own independent capital. Two years after the creation of *Ecopetrol*, Colombia’s Congress passed the main statute for the hydrocarbons sector: the 1953 Petroleum Code (*Código Petrolero*).¹⁰⁹²

The 1953 Petroleum Code declares the oil industry to be in the public interest and sets forth a comprehensive regulation of the sector.¹⁰⁹³ Initially, the Petroleum Code reserved oil and gas upstream activities for *Ecopetrol*, but this restriction was lifted in 2003, as discussed below. In contrast, the Code allows private sector participation in downstream oil and natural gas activities.¹⁰⁹⁴ Regulations implementing the Code, issued in 1990, establish conditions for storage, transportation, and distribution of crude oil and liquid oil products, as well as safety and technical regulations for such activities.¹⁰⁹⁵

In 1997, the legislature transferred *Ecopetrol*’s assets related to the transportation of natural gas to a newly created entity, termed *Empresa Colombiana de Gas (Ecogás)*.¹⁰⁹⁶ As a result the Colombian State, through *Ecogás*, is the largest owner and operator of Colombia’s domestic gas pipeline networks, even though private entities

¹⁰⁹⁰ *Id.*

¹⁰⁹¹ *Id.* See “Decreto No. 30 de 1951” (Colom).

¹⁰⁹² See Colombia’s Petroleum Code, *supra* note 1087.

¹⁰⁹³ *Id.* art. 4.

¹⁰⁹⁴ *Id.* arts. 45 & 58.

¹⁰⁹⁵ “Decreto No. 283 de 1990,” D.O., 30 de enero de 1990 (Colom.).

¹⁰⁹⁶ “Ley 401 de 1997,” D.O., 20 de agosto de 1997 (Colom).

participate in these activities.¹⁰⁹⁷ The transportation and the distribution of natural gas are regulated pursuant to the Public Service Law, which was passed in 1994.¹⁰⁹⁸ The Public Service Law states that gas distribution is an essential public service that can be served by both public and private entities.¹⁰⁹⁹

For fifty years (1953-2003), *Ecopetrol* was both administrator and operator of hydrocarbon resources. As such, *Ecopetrol* was able to grant concessions, carry on upstream activities directly or enter into joint ventures with private participants, subject to the legal requirements for such endeavors.¹¹⁰⁰ In 2003, Colombia changed the regulatory scheme for managing hydrocarbon resources, and adopted a formula that similar to the Brazilian system for managing the oil and gas sector.¹¹⁰¹ Pursuant to legislation authorizing the national government to carry out a reorganization of the structure of the State, the National Hydrocarbons Agency (*Agencia Nacional de Hidrocarburos*) was created to manage hydrocarbon resources, which has similar functions as Brazil's National Petroleum Agency (*Agência Nacional do Petróleo*).¹¹⁰²

The new regulatory scheme for the sector required splitting *Ecopetrol's* assets, whereby the National Hydrocarbons Agency took control of all untapped hydrocarbon resources, while *Ecopetrol* kept its producing fields and infrastructure.¹¹⁰³ It also meant depriving *Ecopetrol* of its exclusive rights to explore, exploit, and grant concessions over

¹⁰⁹⁷ See EIA, Colombia, *supra* note 449.

¹⁰⁹⁸ "Ley No. 142 de 1994," D.O., 11 de julio de 1994 (Colom.) [Colombia's Public Service Law].

¹⁰⁹⁹ *Id.* art. 1.

¹¹⁰⁰ Prior to 2000, *Ecopetrol* was legally required to hold at least a 50 percent share in joint ventures operating upstream. That year *Ecopetrol's* mandatory share in joint ventures was reduced to 30 percent. See EIA, Colombia, *supra* note 449.

¹¹⁰¹ See Brazil's Energy Policy Law, *supra* note 739.

¹¹⁰² "Decreto Ley No. 1.760 de 2003," D.O., 26 de junio de 2003, art. 2, 4 & 5. (Colom.) [Colombia's 2003 Hydrocarbons Decree].

¹¹⁰³ *Id.* art. 1.

such resources as of December 31, 2003.¹¹⁰⁴ Starting in 2004, the National Hydrocarbons Agency grants exploration and exploitation contracts, evaluates the hydrocarbons potential of the country and promotes investment in the sector.¹¹⁰⁵ Exploration and production contracts, executed by *Ecopetrol* until December 31, 2003, continue to be governed by the old regime. Under the new regime, *Ecopetrol* is “dedicated to the exploration, exploitation, production, refining, transportation and commercialization of hydrocarbons,” but it has to compete with private actors.¹¹⁰⁶ The government has pledged not to privatize or liquidate *Ecopetrol*.

7.3 ELECTRICITY LAW

The Public Service Law and the Electricity Law, both passed in 1994, provide the regulatory framework for the power sector in Colombia.¹¹⁰⁷ The Public Service Law allows private sector participation and promotes competition in public service areas.¹¹⁰⁸ Further, all enterprises dedicated to public service activities, whether publicly or privately owned, are governed by the same regulatory and tax regime.¹¹⁰⁹ The Public Service Law safeguards against monopolistic behavior by unbundling activities and giving consumers the right to choose their service provider.¹¹¹⁰

The Electricity Law both restructured the sector and outlined the process for divesting central government-owned enterprises.¹¹¹¹ The restructuring process created a

¹¹⁰⁴ *Id.* See also “Decreto No. 2.394 de 2003,” D.O., 25 de agosto de 2003 (Colom.)

¹¹⁰⁵ Colombia’s 2003 Hydrocarbons Decree, *supra* note 1102, art. 5.

¹¹⁰⁶ *Id.* art. 33.

¹¹⁰⁷ Colombia’s Public Service Law, *supra* note 1098; “Ley No. 143 de 1994”, D.O., 11 de julio de 1994 (Colom.) [Colombia’s Electricity Law].

¹¹⁰⁸ Colombia’s Public Service Law, *supra* note 1098. See IDB, *Power Sector, Colombia*, *supra* note 477, § II.

¹¹⁰⁹ Colombia’s Public Service Law, *supra* note 1098, art. 15.

¹¹¹⁰ *Id.* art. 9.

¹¹¹¹ Colombia’s Electricity Law, *supra* note 1107, Chapters I (arts. 1, 3-8) and XII (arts. 69, 397). See IDB, *Power Sector, Colombia*, *supra* note 477, § II; OLADE, *POWER SECTOR*, *supra* note 209, at 202-203.

market structure in the electric sector by unbundling activities, enabling private participation in all activities, dictating open access to transmission and distribution networks, and establishing independent regulatory and oversight authorities. The law established the basic rules for generation, transmission, interconnection, distribution and sale of electricity. It maintained price regulation for electricity sales, except sales involving users that consume more than 2 megawatts (termed “unregulated users”). These unregulated users are free to procure electricity at contractually negotiated prices.¹¹¹²

Private investors currently control most of the country’s installed capacity and around half of the distribution market.¹¹¹³ The State’s holding company for generation and transmission (*Interconexión Eléctrica S.A.*) was split into a generation unit (ISAGEN) and a transmission unit (ISA).¹¹¹⁴ Reportedly, open access to transmission and distribution networks is functioning well.¹¹¹⁵ The unbundling process, however, has not been totally achieved.¹¹¹⁶ Several regional vertically integrated utilities remain, and the government (under ISA) maintains control of transmission.¹¹¹⁷ It is expected that some local governments will continue to own their public utilities.¹¹¹⁸

As a result of the reform, there is competition at the wholesale level in Colombia. The wholesale electricity market is composed of two parts: the spot market and a contract market.¹¹¹⁹ Distribution companies, “unregulated users” and marketers all shop for power among different generators through financial bilateral contracts or directly from the spot

¹¹¹² Colombia’s Electricity Law, *supra* note 1107, art. 11 & Chapter IX (arts. 42-49).

¹¹¹³ See EIA, Colombia, *supra* note 449; IDB, *Power Sector, Colombia*, *supra* note 477, § III.

¹¹¹⁴ Colombia’s Electricity Law, *supra* note 1107, art. 32.

¹¹¹⁵ IDB, *Power Sector, Colombia*, *supra* note 477, § III.

¹¹¹⁶ *Id.* § I.

¹¹¹⁷ *Id.*

¹¹¹⁸ *Id.* § III.

¹¹¹⁹ *Id.* § V.

market.¹¹²⁰ The National Dispatch Center (*Centro Nacional de Despacho*), an entity controlled by the government-owned company for the transmission of electricity (ISA), coordinates the spot market.¹¹²¹ In the spot market, the lowest cost bid is dispatched over the system first.¹¹²²

The Electricity Law includes environmental protection and sustainability among the guiding principles governing the power sector and devotes an entire chapter to environmental management of the sector.¹¹²³ The law mandates that participants in the electricity subsector comply with all environmental laws and regulations. Specifically, it requires participants to mitigate environmental impacts and to obtain an environmental license for any project of generation, transmission, interconnection and distribution of electricity that might degrade the environment.¹¹²⁴

To obtain an environmental license in the power sector, an applicant must perform an environmental impact statement and develop a budget for mitigation as well as potential remedial actions.¹¹²⁵ During the environmental review process, the promoters of electric projects must inform and consult with the affected communities concerning the environmental impacts, the mitigation measures, and the resources necessary to implement the mitigation measures.¹¹²⁶

7.4 RENEWABLE ENERGY AND ENERGY EFFICIENCY LAW

Renewable energy and energy efficiency are at an early stage of development in

¹¹²⁰ *Id.* § I.

¹¹²¹ Colombia's Electricity Law, *supra* note 1107, arts. 34-37. The technical aspects are determined by an entity composed by representatives of private and public generators (*Consejo Nacional de Operación*).

¹¹²² See IDB, *Power Sector, Colombia*, *supra* note 477, § I.

¹¹²³ Colombia's Electricity Law, *supra* note 1107, Chapters I (arts. 2 & 4) & X (arts. 50-54).

¹¹²⁴ *Id.* arts. 50-51.

¹¹²⁵ *Id.* art. 52.

¹¹²⁶ *Id.* art. 53.

Colombia. In 1994, the Electricity Law declared that, “energy efficiency is a goal to be pursued by the State.”¹¹²⁷ Yet, the government has not, until recently, taken action to carry out this mandate. In 2001, Congress passed legislation which declares that energy efficiency and the promotion of non-conventional energy sources are matters of public interest and a national priority.¹¹²⁸ The 2001 legislation outlines a “carrot and stick” approach for their promotion by outlining incentives and penalties that can be implemented.¹¹²⁹ That same year, the Congress also required the use of ethanol as a component of fuels used in vehicles and buses for cities of more than 500,000.¹¹³⁰ In 2003, the government implemented this mandate by requiring 10 percent ethanol for gasoline used in the largest cities beginning in 2005.¹¹³¹

7.5 ENERGY AUTHORITIES AND REGULATORY AGENCIES

The principal energy authority in Colombia is the Ministry of Mines and Energy (*Ministerio de Minas y Energía*), which is ultimately responsible for setting the overall energy policy.¹¹³² The Ministry of Mines and Energy is also charged with establishing the necessary programs to promote renewable energy and energy efficiency.¹¹³³ In particular, legislation promoting the use of ethanol, passed in 2001, authorizes the Ministry of Mines and Energy to regulate the quantity and quality of ethanol use in the country.¹¹³⁴

Within the Ministry of Mines and Energy, there are several bodies and agencies to

¹¹²⁷ *Id.* art. 67.

¹¹²⁸ “Ley 697 de 2001,” D.O., 3 de octubre de 2001, art. 1 (Colom.) [Colombia’s Renewable Energy Law].

¹¹²⁹ *Id.* art. 7.

¹¹³⁰ “Ley 693 de 2001,” D.O., 27 de septiembre de 2001 (Colom.) [Colombia’s Ethanol Law].

¹¹³¹ “Resolución No. 180687 de 2003,” D.O., 17 de junio de 2003, arts. 1, 5 & 7. (Colom.).

¹¹³² “Decreto No. 70 de 2001,” D.O., 17 de enero de 2001, art. 3 (Col.).

¹¹³³ Colombia’s Renewable Energy Law, *supra* note 1128, art. 5

¹¹³⁴ Colombia’s Ethanol Law, *supra* note 1130, art. 1.

oversee the hydrocarbons sector. The Mineral and Energy Planning Unit (*Unidad de Planeación Minero Energética*, UPME) has the duty to prepare the planning of the sector. The Environmental Council for Mining and Energy (*Consejo Ambiental Minero-Energético*) is charged with coordinating environmental policies of the sector. The Energy and Gas Regulatory Commission (*Comisión Reguladora de Energía y Gas*) has regulatory and supervisory authority over electricity and the transportation and distribution of natural gas.¹¹³⁵ In addition, the National Hydrocarbons Agency (*Agencia Nacional de Hidrocarburos*), and the national oil and gas companies (*Ecopetrol* and *Ecogás*) are also within the purview of the Ministry of Mines and Energy.¹¹³⁶

A separate entity, termed the Office of the Superintendent of Public Services (*Superintendencia de Servicios Públicos Domiciliarios*), is charged with overseeing the compliance of public service providers with the legal and regulatory framework.¹¹³⁷ Organized under the structure of the Ministry of Economic Development (*Ministerio de Desarrollo Económico*), this office adopts procedures for the adequate provision of natural gas and electricity services to consumers and to ensure market competition between providers.¹¹³⁸ This entity also controls, inspects, and supervises the performance of entities providing public services.¹¹³⁹ It has been noted that both the Energy and Gas Regulatory Commission and the Office of the Superintendent of Public Services “operate relatively independently of the central government’s commercial interests.”¹¹⁴⁰

¹¹³⁵ Colombia’s Electricity Law, *supra* note 1107, arts. 12 -19 & 21-23.

¹¹³⁶ Colombia’s 2003 Hydrocarbons Decree, *supra* note 1102, art. 2.

¹¹³⁷ Colombia’s Electricity Law, *supra* note 1107, art. 9.

¹¹³⁸ Colombia’s Public Service Law, *supra* note 1098, arts. 69, 73, 74 & 76.

¹¹³⁹ *Id.* art. 75.

¹¹⁴⁰ IDB, *Power Sector, Colombia*, *supra* note 477, § II.

7.6 INSTITUTIONAL AND LEGAL ENVIRONMENTAL FRAMEWORK

In 1974, two years after the *Stockholm Declaration* and clearly influenced by its principles, Colombia adopted a Natural Resources Code to comprehensively regulate the management of the country's natural resources.¹¹⁴¹ With regard to energy resources, the Natural Resources Code provides that the exploitation of non-renewable energy resources must be regulated to protect the environment.¹¹⁴² The Code enumerates the main environmental impacts resulting from activities that require further regulation, and mandates the adoption of preventive and responsive measures, particularly in case of oil spills.¹¹⁴³ In addition, this statute specifically mandates that prior licensing is necessary for the production, transportation, storage, utilization, and importation of natural gas.¹¹⁴⁴

Colombia's Environmental Framework Law of 1993 implements the provisions of the 1991 Constitution relating to the environment and complements the Natural Resources Code.¹¹⁴⁵ Those provisions of the Natural Resources Code that contradict the Environmental Framework Law were repealed; nonetheless, most provisions of the Code remain in full force. Moreover, to a great extent, the Environmental Framework Law facilitated the applicability of the Natural Resources Code by creating an institutional framework for environmental protection and by providing mechanisms for its implementation.

The institutional framework for "the management and conservation of the environment and renewable natural resources," pursuant to the 1993 legislation, is called

¹¹⁴¹ "Decreto Ley No. 2.811 de 1974," (Colom.) [Colombia's Natural Resources Code].

¹¹⁴² *Id.* art. 39.

¹¹⁴³ *Id.* The list includes, for instance, solid waste and wastewater discharges from such operations.

¹¹⁴⁴ *Id.* art. 40.

¹¹⁴⁵ "Ley No. 99 de 1993," D.O., 22 de diciembre de 1993 (Col.) [Colombia's Environmental Law].

the National Environmental System (*Sistema Nacional Ambiental*).¹¹⁴⁶ The National Environmental System is coordinated by the Ministry of the Environment, Housing and Territorial Development (*Ministerio de Medio Ambiente, Vivienda y Desarrollo Territorial*), which serves as the top national environmental authority.¹¹⁴⁷

Regional Environmental Corporations (*Corporaciones Autónomas Regionales*), which are “autonomous” agencies with environmental authority over a geographic region or an ecosystem, implement environmental laws within their jurisdictions.¹¹⁴⁸ Regional Environmental Corporations have an “autonomous” nature because they have the power to issue emissions standards and regulations to take effect in their jurisdictions, subject to guidelines established by the Ministry of the Environment. These standards and requirements, however, cannot be less stringent than those adopted for the nation as a whole.¹¹⁴⁹ Municipalities with populations of more than one million are given limited environmental authority, such as the power to issue environmental licenses for certain types of projects.¹¹⁵⁰

The Environmental Framework Law governs “the environment and renewable natural resources.”¹¹⁵¹ But it is clear that environmental management of non-renewable energy resources is governed by the Environmental Framework Law, and is supervised by the Ministry of the Environment. In order to coordinate policies and actions on environmental management, the law created the National Environmental Council (*Consejo Nacional Ambiental*) composed of various Ministries and public entities,

¹¹⁴⁶ *Id.* art. 4.

¹¹⁴⁷ *Id.* art. 2.

¹¹⁴⁸ *Id.* art. 23-32.

¹¹⁴⁹ *Id.* art. 31 (10).

¹¹⁵⁰ *Id.* art. 55.

¹¹⁵¹ *Id.* art. 4.

including the Ministry of Mines and Energy and *Ecopetrol*, as well as representatives from the private sector.¹¹⁵² Other entities participating in the Council with involvement in the development of energy resources include, for instance, the Ministry of the Interior, in charge of matters pertaining to indigenous people and their territories.

Provincial governments, municipalities and territories of indigenous people have certain environmental authority within their jurisdiction pursuant to the Constitution and various statutes.¹¹⁵³ Taking this into account, the Environmental Framework Law established three legal principles to avoid contradictions between provisions issued by national authorities and those issued by regional corporations or local agencies.¹¹⁵⁴ The first is the Regional Harmony Principle (*Principio de Armonía Regional*), which requires territorial entities to exercise their constitutional and legal functions related to the environment and natural resources in coordination with the national environmental policy.¹¹⁵⁵ Second, the Supremacy Principle (*Principio de Gradación Normativa*) dictates that provisions issued by territorial entities relative to the environment and natural resources must respect the higher nature and preeminence of norms dictated by authorities and agencies of superior hierarchy or having a broader territorial jurisdiction.¹¹⁵⁶ The third is the Subsidiary Implementation Principle (*Principio de Rigor Subsidiario*), which allows the creation of stricter environmental norms at the regional and local level.¹¹⁵⁷

¹¹⁵² *Id.* art. 13.

¹¹⁵³ *Id.* art. 64-68.

¹¹⁵⁴ *Id.* art. 63.

¹¹⁵⁵ *Id.* See also BAKER & MCKENZIE, *supra* note 421, at 78.

¹¹⁵⁶ Colombia's Environmental Law, *supra* note 1145, art. 63.

¹¹⁵⁷ *Id.*

7.7 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The 1974 Natural Resources Code introduced the requirement of an environmental Declaration of Impact (*Declaración de Efecto Ambiental*).¹¹⁵⁸ But this requirement was not strictly enforced. In fact, among the few provisions of the Natural Resources Code that were specifically repealed by the Environmental Framework Law were those dealing with the Declaration of Impact.¹¹⁵⁹ In its place, the law imposed an environmental licensing system in the country.¹¹⁶⁰

The environmental licensing system applies to activities that cause significant damage to the environment and are expressly listed in the law and implementing regulations.¹¹⁶¹ The environmental review process involves several phases leading to the granting or denial of the environmental license. The process requires the preparation, submission and approval of the following documents: a Study of Alternatives (*Diagnóstico Ambiental de Alternativas*); an Environmental Impact Study (*Estudio de Impact Ambiental*); an Environmental Management Plan (*Plan de Manejo Ambiental*); and, a Social Management Plan (*Plan Social*).¹¹⁶²

Since the inception of the environmental impact review system, the central government has tried to simplify and scale back the requirements. The courts have stepped in, however. In particular, the Colombian Constitutional Court has struck down regulations that undermine the main requirements set forth in the Environmental

¹¹⁵⁸ Colombia's Code of Natural Resources, *supra* note 1141, art. 27-29 (repealed).

¹¹⁵⁹ Colombia's Environmental Law, *supra* note 1145, art. 118.

¹¹⁶⁰ *Id.* arts. 1, 49-50, 62 & 118; "Decreto No. 1728 de 2002," D.O., 6 de agosto de 2002, arts. 1 & 2 (Colom.) [Colombia's EIA Regulations].

¹¹⁶¹ Colombia's EIA Regulations, *supra* note 1160, arts. 1, 3 & 17.

¹¹⁶² *Id.* arts. 1, 3 & 14-18; Colombia's Environmental Law, *supra* note 1145, arts. 56-58.

Framework Law.¹¹⁶³

The competent environmental authorities involved in the review process are the Ministry of the Environment, the Regional Environmental Corporations, and municipalities with a population larger than one million inhabitants, depending on the type of project and the territorial jurisdiction over the project or activity.¹¹⁶⁴ No governmental concession, permit or approval is valid or effective unless the holder obtains an environmental license prior to exercising the rights conferred therein.¹¹⁶⁵ Moreover, it is an environmental crime to pursue hydrocarbon activities without an environmental license.¹¹⁶⁶

There are two types of licenses: unitary and global.¹¹⁶⁷ The unitary license (*licencia única*) authorizes construction and operation of the project from an environmental standpoint, and, at the same time, encompasses all other permits and concession required for the exploitation of the renewable natural resources involved.¹¹⁶⁸ The regulations expressly provide that this license will “include all permits, authorizations or concessions for the use or exploitation of the renewable natural resources, which are necessary for the construction and operation of the project.”¹¹⁶⁹

The global license (*licencia global*) is exclusively for hydrocarbon

¹¹⁶³ See e.g., Constitutional Court Decision C-433 (1996) (Colom.).

¹¹⁶⁴ Colombia’s Environmental Law, *supra* note 1145, arts. 51-58; Colombia’s EIA Regulations, *supra* note 1160, arts. 2, 8, 9 & 11-13.

¹¹⁶⁵ Colombia’s EIA Regulations, *supra* note 1160, art. 5.

¹¹⁶⁶ Colombia’s Environmental Law, *supra* note 1145, art. 19 (amending art. 244 of the Penal Code).

¹¹⁶⁷ *Id.* art. 52. See ESPERANZA ÁVILA DE TISSOT, LICENCIAS AMBIENTALES: APROXIMACIÓN PRÁCTICA (Fescol, 1996), at 42.

¹¹⁶⁸ Colombia’s Environmental Law, *supra* note 1145, art. 59. See ÁVILA DE TISSOT, *supra* note 1167, at 42-43 (noting that there were initial difficulties with the application of the unitary license, such as lack of information on regional environmental information and regulations).

¹¹⁶⁹ Colombia’s EIA Regulations, *supra* note 1160, art. 3.

developments.¹¹⁷⁰ Only the Ministry of the Environment can issue this type of license.¹¹⁷¹ It is termed “global” because the license covers all activities “within the authorized oil or gas production field.”¹¹⁷² As with the unitary license, it includes all permits, authorizations or concessions necessary for the use or exploitation of the particular resource. It does not, however, include the concession required for the exploitation of the hydrocarbon resources involved.¹¹⁷³

In contrast with the requirements for the unitary license, prior approval of the environmental management plan for individual projects or activities within the hydrocarbon development is not required for the holder of a global license.¹¹⁷⁴ In other words, once the holder of a global license submits the environmental management plan for a specific project or activity within the field to the Ministry for its review, such project or activity can commence without awaiting formal approval. However, the permit-holder must comply with the terms of the environmental management plan and is subject to monitoring and enforcement by the environmental authorities.

The regulations specifically require that an environmental license be obtained from the Ministry of the Environment for the following hydrocarbon projects or related activities: seismic exploration activities requiring the construction of roadways; drilling outside of existing oil or gas fields; ancillary and complementary infrastructure for the exploitation, transportation and storage of hydrocarbons within the oil or gas fields; infrastructure for the transportation and storage of hydrocarbons outside of the oil or gas

¹¹⁷⁰ Colombia’s Environmental Law, *supra* note 1145, art. 51 para. 2.

¹¹⁷¹ *Id*; Colombia’s EIA Regulations, *supra* note 1160, art. 8. *See also* AVILA DE TISSOT, *supra* note 1167, at 42-43

¹¹⁷² Colombia’s Environmental Law, *supra* note 1145, art. 51 para. 2.

¹¹⁷³ *Id*; Colombia’s EIA Regulations, *supra* note 1160, art. 4.

¹¹⁷⁴ Colombia’s EIA Regulations, *supra* note 1160, art. 4. *See* AVILA DE TISSOT, *supra* note 1167, at 43-44.

fields (including pumping stations and the like); terminals and transfer stations for hydrocarbons; and, refineries and petrochemical complexes.¹¹⁷⁵

The Ministry of the Environment, the Regional Environmental Corporation, or municipalities having more than one million inhabitants, share authority to oversee the environmental review of other energy projects or activities. The Ministry conducts the licensing process of power generating stations having a capacity of over 100 megawatts; potentially polluting non-conventional energy projects; and, transmission lines connected to the electrical grid with a capacity equal to or more than 220 kilovolts which cross the jurisdictions of two or more Regional Environmental Corporations.¹¹⁷⁶ Regional Environmental Corporations and municipalities with more than one million inhabitants conduct the licensing process for power generating stations with a capacity ranging between 10 megawatts and 100 megawatts, as well as for transmission lines within their jurisdiction.¹¹⁷⁷

The requirement of a “Study of Alternatives” is a significant feature of the Colombian environmental review process.¹¹⁷⁸ At the pre-feasibility stage, potential applicants for an environmental license must inquire of the corresponding authority whether a Study of Alternatives is necessary for the project.¹¹⁷⁹ If such a study is mandated, it must include an analysis of alternatives for the project, including information on the geographic, environmental, and social characteristics of the alternative

¹¹⁷⁵ *Id.* art. 8 (1) (a)-(f).

¹¹⁷⁶ *Id.* art. 8 (4) (a)-(c).

¹¹⁷⁷ *Id.* art. 9 (3) (a)-(c) & 12.

¹¹⁷⁸ Colombia’s Environmental Law, *supra* note 1145, art. 56; Colombia’s EIA Regulations, *supra* note 1160, arts. 1 & 14-16. See AVILA DE TISSOT, *supra* note 1167, at 49-57.

¹¹⁷⁹ Colombia’s EIA Regulations, *supra* note 1160, art. 15.

sites, control technologies, and mitigation possibilities.¹¹⁸⁰ The environmental authority decides which alternative is preferred and provides specific the terms of reference for its preparation, in the event that there are no general terms of reference for such projects.¹¹⁸¹ The coordination of environmental licensing with comprehensive land use planning as well as the requirement of environmental insurance (*seguro ambiental*) and environmental auditing (*auditoria ambiental*), are also notable aspects of the Colombian system.¹¹⁸²

Colombia's review process includes special provisions for energy developments in forest reserves and national parks.¹¹⁸³ In general, the regulations forbid the granting an environmental license in these designated areas; except in forest reserves if the public interest so requires; and, in national parks, if there is no significant impact to the environment in the park, as determined by the National Parks Directorate (*Dirección de Parques Nacionales*).¹¹⁸⁴

Finally, the Environmental Framework Law requires public participation in the review process.¹¹⁸⁵ The project developer, on an ongoing basis, is required to inform impacted and surrounding communities about the project and the environmental management plan.¹¹⁸⁶ The Constitution, specific legislation, and the regulations also mandate prior consultation when the project or activity affects indigenous people and Afro-Colombian communities.¹¹⁸⁷

¹¹⁸⁰ *Id.* art. 14 & 16.

¹¹⁸¹ Colombia's EIA Regulations, *supra* note 1160, art. 19.

¹¹⁸² *Id.* arts. 11 & 31; "Ley 491 de 1999," D.O., 13 de enero de 1999, art. 3 (Colom.).

¹¹⁸³ *Id.* art. 32.

¹¹⁸⁴ *Id.* art. 32 (a)-(c).

¹¹⁸⁵ Colombia's Environmental Law, *supra* note 1145, arts. 30-31.

¹¹⁸⁶ Colombia's EIA Regulations, *supra* note 1160, art. 32.

¹¹⁸⁷ See CONST. art. 330 (Col.); "Ley 70 de 1993" (Col.); Colombia's EIA Regulations, *supra* note 1160, art. 30.

7.8 ENFORCEMENT

Like its neighbors, Colombia's authorities have failed to enforce the environmental statutes, although it has advanced legislation facilitating the enforcement of collective rights, particularly in connection with energy and the environment.¹¹⁸⁸ The Constitution provides, "[t]he law will regulate popular actions for the protection of collective rights and interests related to public goods and resources, public open space, public safety and health, the morality of the administration, the environment, free economic competition, and others of a similar nature."¹¹⁸⁹ Further, the Constitution expressly indicates that the list is non-exhaustive and can be augmented by laws or treaties.

In 1998, the Congress passed legislation (Law No. 472 of 1998) to implement this constitutional provision.¹¹⁹⁰ "Eight years of discussions mainly backed by scholars and public interest groups preceded the adoption of the Law 472, making the process an interesting example of political and policy reconciliation."¹¹⁹¹ Significantly, most, if not all, collective rights recognized in Colombia directly relate to energy and the environment.¹¹⁹² Particularly important, access to public services and their efficient delivery is enumerated as a collective right.

The Colombian public interest action for the protection of collective rights, termed Popular Action (*Acción Popular*), is similar to the Brazil's *Ação Popular*.¹¹⁹³ The Colombian Constitution also authorizes class actions (*Acciones de Grupo*) to seek

¹¹⁸⁸ See Madden, Davis & Tafur, *supra* note 293, at 2.

¹¹⁸⁹ CONST. art. 88 (Colom.).

¹¹⁹⁰ *Id.*; Colombia's Collective Rights Law, *supra* note 403, art. 9.

¹¹⁹¹ Madden, Davis & Tafur, *supra* note 293, at 9.

¹¹⁹² See Colombia's Collective Rights Law, *supra* note 403, art. 4.

¹¹⁹³ CONST art. 88 (Colom.); CONST. art. 5 (74) (Braz.); AMAYA NAVAS, *supra* note 294, at 162-165, 224.

damages in public interest lawsuits.¹¹⁹⁴ The popular action is interposed to prevent, whereas the collective class action is used to redress, the interference with collective rights.¹¹⁹⁵ The Colombian concept of a collective action is broader than the Brazilian and Chilean formats. Colombia's collective action may be used to challenge actions and omissions that interfere or threaten to interfere with a collective right, while in the Brazilian and Chilean jurisdictions these types of actions are expressly limited to injurious actions; omissions are not actionable.¹¹⁹⁶

As defined in Law 472, popular actions "are the procedural means for the protection of collective rights and interests."¹¹⁹⁷ The legislative intent was to create a procedure having a broad scope and minimum limitations for the plaintiff. Further, there is no statute of limitation and no need to exhaust other legal remedies.¹¹⁹⁸ The popular action may seek an injunction, the adoption of preventive measures to protect the *status quo*, or the restitution to the *status quo ante* whenever possible.¹¹⁹⁹ It can be interposed, with or without attorney, by individuals, corporations, organization or other group entities, and by the attorney general or governmental ombudsman.¹²⁰⁰

In Colombia, as in Brazil, if the collective plaintiff prevails, the outcome of the collective class action is an award of damages. Damages are awarded, not to the plaintiff, but go into a fund that is earmarked for certain projects and activities related to the

¹¹⁹⁴ CONST. art. 88 (Colom.); Colombia's Collective Rights Law, *supra* note 403, art. 9.

¹¹⁹⁵ See AMAYA NAVAS, *supra* note 294, at 162-165, 224.

¹¹⁹⁶ Colombia's Collective Rights Law, *supra* note 403, art 9; CONST. art. 5 (XXIII) (Braz.); CONST. art. (Chile).

¹¹⁹⁷ Colombia's Collective Rights Law, *supra* note 403.

¹¹⁹⁸ *Id.* arts 10, 11 &12 (Colom.). See Colombian Constitutional Court, Decision C-215, April 14, 1999 (striking down a five years statute of limitations inserted in Law 472).

¹¹⁹⁹ Colombia's Collective Rights Law, *supra* note 403, arts. 2 & 9.

¹²⁰⁰ *Id.* art 13.

protection of collective interests, as is done in Brazil.¹²⁰¹ The Colombian legislation defines “group actions” or “class actions” as those interposed by twenty or more persons suffering from a similar harm.¹²⁰² Each claimant’s condition must also be uniform with respect to all the elements of the harm.¹²⁰³ A class action can only seek money damages as the remedy.¹²⁰⁴ Class actions can be interposed only through an attorney.¹²⁰⁵ In addition, the Colombian Constitution allows a constitutional writ of mandamus (*Acción de Cumplimiento*), which is similar to Brazil’s *mandado de segurança*.¹²⁰⁶ The Colombian mandamus action is permissible to request the performance of a mandatory or ministerial duty required from a public official.¹²⁰⁷

A case involving the U’wa indigenous people in Colombia, the U.S.-based Occidental Petroleum Company (Occidental), and the Colombian government, demonstrates the interplay between collective rights and enforcement of environmental law in the energy sector.¹²⁰⁸ The U’wa people inhabit land in the foothills of the Andes in Colombia. Occidental wanted to drill for oil exploration in parts of the U’wa territory, and the Colombian government granted such right in 1992.¹²⁰⁹

Of the original area designated for oil drilling, about 30 percent was located in national parks and about 20 percent in U’wa territory. Not until 1995 did the Colombian government require, as mandated under its Constitution and the Environmental

¹²⁰¹ *Id.* art. 65.

¹²⁰² *Id.* art. 3. See Madden, Davis & Tafur, *supra* note 293, at 2.

¹²⁰³ Colombia’s Collective Rights Law, *supra* note 403, arts. 3 & 46.

¹²⁰⁴ *Id.* See Madden, Davis & Tafur, *supra* note 293, at 2, 10 & 11.

¹²⁰⁵ Colombia’s Collective Rights Law, *supra* note 403, art. 49.

¹²⁰⁶ CONST. art. 5 (LXIX), (LXX) (Braz.); CONST. art. 87 (Colom.).

¹²⁰⁷ CONST. art. 87 (Colom.).

¹²⁰⁸ See Jenny R. Culler, *The U’wa Struggle to Protect their Cultural Lands: A Framework for Reviewing Questions of Sovereignty and the Right to Environmental Integrity for Indigenous Peoples*, 29 GA. J. INT’L & COMP. L. 335, 335-338 (2001). The population of U’wa’s is estimated at about 5,000. *Id.* at 335.

¹²⁰⁹ *Id.* at 335.

Framework Law, that Occidental consult with the U'wa people on such grants.¹²¹⁰ Article 330 of the Colombian Constitution expressly guarantees that the natural resources of indigenous people will not be exploited in a way that damages the culture, economy, or society of the people. Significantly, the U'wa people consider that oil extraction is a threat to their spiritual wellbeing as well as to their natural environment.¹²¹¹ Overriding objections from the U'wa leadership, the government granted Occidental a license to begin operations in the U'wa territory. But the U'wa people threatened mass suicide if Occidental continued with its plans to drill for oil.

The U'wa people brought legal actions, resulting in conflicting rulings between the highest administrative tribunal and the Constitutional court.¹²¹² The Constitutional Court held that the U'wa people were properly consulted about the project. On the other hand, the highest administrative law tribunal (*Consejo de Estado*) held that public consultation was insufficient because, although there had been public meetings to discuss plans for oil exploration, the U'wa leadership was not present.

In addition to constitutional and legal provisions mandating public consultation, the Congress passed legislation in 1991 adopting Convention No. 169 of the International Labour Organization (*Indigenous People Convention*).¹²¹³ This convention also required the Colombian government to consult with the U'wa people before licensing the oil drilling, as discussed in Chapter 1, sections 1.6 and 1.7. The U'wa claimed that the consultation process was inadequate and did not address the needs of their people, both under domestic legislation and under the *Indigenous People Convention*. Although the

¹²¹⁰ *Id.* at 336.

¹²¹¹ *Id.* at 335.

¹²¹² *Id.* at 335-336.

¹²¹³ See *Indigenous People Convention*, *supra* note 155.

U'wa people could not get relief in Colombian courts, they gained support from the Inter-American Commission of Human Rights of the Organization of American States.¹²¹⁴ The resulting recommendation of the Commission was that Colombia enlarge the protected areas for the U'wa people, and in 1999 the government agreed to the extension.¹²¹⁵ As part of the compromise, Occidental was awarded an enlargement of its exploratory grant to a nearby area.¹²¹⁶

¹²¹⁴ See Culler, *supra* note 1208, at 336.

¹²¹⁵ *Id.*

¹²¹⁶ *Id.* at 336-337.

CHAPTER 8 – ECUADOR

8.1 CONSTITUTIONAL ISSUES

The 1998 Constitution of Ecuador, which replaced the 1979 constitutional enactment, includes several provisions related energy and the environment, in addition to those granting a right to environmental quality (discussed *supra* in Chapter 2). These provisions relate to the exploitation of hydrocarbon and water resources, as is typical in Latin American countries. The constitution stands out, however, for requiring consultation with the affected communities, and—clearly influenced by the *Convention on Biological Diversity*—for claiming sovereignty over Ecuador’s biological diversity.

To begin, it declares that all subsurface non-renewable resources belong to the State.¹²¹⁷ In particular, it describes hydrocarbon resources as “inalienable” and provides that they must be exploited according to the national interest.¹²¹⁸ Nevertheless, “[t]heir rational exploration and exploitation may be carried out by public, mixed or private entities, pursuant to the law.”¹²¹⁹

Secondly, under the Constitution, all water resources also belong to the State, and are deemed to serve a public purpose, although concessions to private parties are permissible.¹²²⁰ Thirdly, the Constitution expressly requires consultation with the affected communities “for their conservation and sustainable use.”¹²²¹ Finally, evidently influenced by *Convention on Biological Diversity*, the Constitution claims sovereignty over Ecuador’s biological diversity, natural reserves, protected areas and national

¹²¹⁷ CONST. art. 247 (Ecuador).

¹²¹⁸ *Id.*

¹²¹⁹ *Id.*

¹²²⁰ *Id.*

¹²²¹ *Id.*

parks.¹²²²

8.2 OIL AND GAS LAW

Ecuador was the last oil producing country in the region to establish a national oil company. In the 1960s, a group of Latin American national oil companies formed an organization, under the name ARPEL (*Asistencia Recíproca Petrolera Estatal Lationoamericana*), mainly to interchange technical information, provide assistance, and promote collaboration among the members.¹²²³ The ARPEL provided assistance in setting up the Ecuadorian oil company *Corporación Estatal Petrólera Ecuatoriana* (CEPE), which was later transformed into *Empresa Estatal Petroléos del Ecuador* (*PetroEcuador*).¹²²⁴ Under CEPE, and later *PetroEcuador*, the Ecuadorian government developed its oil reserves, but it allowed foreign oil concessions until 1977, when the oil industry was nationalized.¹²²⁵

In 1978, a Hydrocarbon Law was passed declaring the oil industry “a public interest sector”, and requiring that the State explore and exploit its hydrocarbon deposits directly through *PetroEcuador*.¹²²⁶ In addition, *PetroEcuador* was authorized to enter into joint ventures and service contracts with private oil companies.¹²²⁷ Subsequently, the 1979 Constitution declared that the exploitation of non-renewable resources was an economic activity exclusively reserved for the Ecuadorian State.¹²²⁸

¹²²² CONST. art. 248 (Ecuador).

¹²²³ See LATIN AMERICAN OIL COMPANIES AND THE POLITICS OF ENERGY, *supra* note 429, at xxviii.

¹²²⁴ *Id.* at xix.

¹²²⁵ *Id.*

¹²²⁶ “Decreto Supremo No. 2978 de 1978,” Registro Oficial (R.O.), 15 de noviembre de 1978, art. 4 (Ecuador) [Ecuador’s Hydrocarbon Law].

¹²²⁷ See Ecuador’s Hydrocarbon Law, *supra* note 1226; “Ley 101 de 1982,” R.O., 13 de agosto de 1982 (Ecuador); “Ley 45 de 1989,” R.O., 26 de septiembre de 1989, art. 24 (Ecuador); “Ley 44 de 1993,” R.O., 29 de noviembre de 1993, art. 24 (Ecuador); “Ley 49 de 1993,” R.O., 29 de noviembre de 1993, art. 24 (Ecuador).

¹²²⁸ Constitution of Ecuador of 1979, art. 46 (1) (amended by the 1998 Constitution).

The 1998 Constitutional framers reversed course again: under the new enactment, the State oil monopoly over hydrocarbons ceased.¹²²⁹ Certainly, the 1998 Constitution also opened the way for other contractual agreements between *PetroEcuador* and private investors, and allowed private parties to share in discoveries, as well.¹²³⁰ To implement the 1998 constitutional provisions, amendments were introduced to the Hydrocarbons Law in the 1999 and 2000. As amended, this law authorizes private companies, including foreign entities, participate in domestic transportation, distribution, and refining of hydrocarbons.¹²³¹ Nevertheless, oil and gas resources are still tightly controlled. In addition, the Hydrocarbons Law was amended to include environmental provisions, discussed further below, which reflect the environmental mandates set forth in the 1998 Constitutional.¹²³²

The oil sector has represented Ecuador's main source of income for decades.¹²³³ As of 2006, *PetroEcuador* produced about 40 percent of the country's total output, and private companies produced the remaining 60 percent.¹²³⁴ Since the passing of the 1998 Constitution, the Ecuadorian government has attempted to increase private participation in the oil industry. The government even conceived plans that would have allowed private companies to take operational control of *PetroEcuador's* top five oil fields.¹²³⁵ However, in December of 2000, the Constitutional Tribunal of Ecuador struck down

¹²²⁹ CONST. art. 247 (Ecuador).

¹²³⁰ *Id.*; EIA, Ecuador, *supra* note 449.

¹²³¹ Ecuador's Hydrocarbon Law, *supra* note 1226, art 3. *See* EIA, Ecuador, *supra* note 449.

¹²³² "Ley No. 37 de 1999," R.O., 30 de julio de 1999, (Ecuador); "Ley 4 de 2000," R.O., 13 de marzo de 2000 (Ecuador); "Ley 10 de 2000," R.O., 31 de marzo de 2000 (Ecuador); "Decreto Ley 2000-1 de 2000," Registro Oficial Suplemento (R.O.S.), 18 de agosto de 2000, art. 37 (Ecuador).

¹²³³ EIA, Ecuador, *supra* note 449.

¹²³⁴ *Id.*

¹²³⁵ *Id.*

these plans.¹²³⁶

8.3 ELECTRICITY LAW

Ecuador is one of the few countries in Latin America that has determined, at the constitutional level, that the State is obliged to secure universal access to essential public services, which includes access to energy services.¹²³⁷ Further, Ecuador's 1998 Constitution requires the government to guarantee universal access to basic public services at affordable tariffs.¹²³⁸ The Constitution authorizes the government to provide basic public services, either directly or by delegation, to mixed or private companies.¹²³⁹

Prior to the enactment of the current Constitution, Ecuador restructured its electricity sector pursuant to the 1996 Law of the Electric Sector.¹²⁴⁰ As a result of the Electricity Law and the Fundamental Law for the Transformation of Ecuador (*Ley Fundamental para la Transformación del Ecuador*) passed in 2000, the government's monopoly in the sector was broken, and all assets of the former state utility monopoly INECEL (*Instituto Ecuatoriano de Electrificación*) were transferred to a new power sector authority, termed CONELEC (*Consejo Nacional de Electricidad*).¹²⁴¹ The CONELEC serves as the State's holding entity in the power sector, has regulatory functions, and prepares electrification plans to expand electricity services.¹²⁴²

The Electricity Law declares that electricity is a strategic commodity, and that "[t]he State is holder of the non-transferable and non-prescriptible natural resources that enable

¹²³⁶ *Id.*

¹²³⁷ CONST. art. 249 (Ecuador).

¹²³⁸ *Id.*

¹²³⁹ *Id.*

¹²⁴⁰ "Ley del Sector Eléctrico," R.O.S., 10 de octubre de 1996 (Ecuador) [Ecuador's Electricity Law].

¹²⁴¹ "Ley Fundamental para la Transformación del Ecuador," R.O., 13 de marzo de 2000 (Ecuador) [Ecuador's Fundamental Law for Economic Transformation], arts. 12-21.

¹²⁴² Ecuador's Electricity Law, *supra* note 1240, art. 13.

electricity to be generated.”¹²⁴³ Nonetheless, with the passage of this law and the formation of CONELEC, private firms are allowed to participate in the electrical market by winning concessions approved by CONELEC.¹²⁴⁴ In 2001, the government began a privatization program in the electrical sector. It began with the offering of government-owned companies participating in the electricity market for partial privatization, “but there was strong opposition from the workers as well as local governments.”¹²⁴⁵ A government-owned transmission power company conducts transmission activities nationwide.¹²⁴⁶

Implementation of the Electricity Law came about in 1997, when the government issued regulations to govern “power generation activities and the public service of power transmission and distribution and marketing.”¹²⁴⁷ These regulations echo the Electricity Law in that electricity is a strategic commodity, and that the State is the owner of the natural resources that enable electricity to be generated.¹²⁴⁸ While the regulations make clear that electricity produced belongs to whomever generates it, sales of electricity are regulated. The government establishes tariffs for end-users, but prices can be negotiated freely in bulk power purchase agreements authorized under the Electricity Law.¹²⁴⁹

8.4 ENERGY AUTHORITIES AND REGULATORY AGENCIES

The executive branch is responsible for the country’s hydrocarbon policy through two main governmental agencies: the Ministry of Energy and Mines (*Ministerio de*

¹²⁴³ *Id.* arts. 2 & 8.

¹²⁴⁴ *Id.*

¹²⁴⁵ See OLADE, POWER SECTOR, *supra* note 209, 168

¹²⁴⁶ EIA, Ecuador, *supra* note 449.

¹²⁴⁷ “Decreto Ejecutivo No. 754 de 1997,” R.O.S. 28 de octubre de 1997, art. 1. (Ecuador) [Ecuador’s Regulations for the Power Sector].

¹²⁴⁸ *Id.* art. 5.

¹²⁴⁹ *Id.*

Energía y Minas);¹²⁵⁰ and the State's holding/regulatory company for the electric sector CONELEC.¹²⁵¹ The Ministry of Energy and Mines is the top policymaking body for the Hydrocarbons sector.¹²⁵² Under the Deputy Secretariat for Hydrocarbons (*Subsecretaría de Hidrocarburos*), the National Office of Hydrocarbons (*Dirección Nacional de Hidrocarburos*) is the technical branch of the Ministry of Energy and Mines in charge of overseeing compliance with the hydrocarbons law, "directly or by means of specialized consultants, whether national or foreign."¹²⁵³

Under the Deputy Secretariat for Electricity (*Subsecretaría de Electrificación*), the National Office of Renewable Energy and Energy Efficiency (*Dirección Nacional de Energías Renovables y Eficiencia Energética*) is the technical branch of the Ministry of Energy and Mines in charge of promoting both renewable energy generation and use as well as energy efficiency.¹²⁵⁴ In addition, there is a power sector authority, the CONELEC, mentioned previously, which has three key functions: it serves as the holding entity for state-assets in the power sector; it regulates the sector; and, it is charged with preparing electrification plans to expand electricity services throughout the country.¹²⁵⁵

8.5 INSTITUTIONAL AND LEGAL ENVIRONMENTAL FRAMEWORK

Ecuador has several environmental laws of general applicability to all economic sectors: the 1976 Law for the Prevention and Control of Environmental Degradation (*Ley de Prevención y Control de la Contaminación Ambiental*),¹²⁵⁶ the 1994 Environmental

¹²⁵⁰ Ecuador's Hydrocarbon Law, *supra* note 1226, art 6.

¹²⁵¹ Ecuador's Electricity Law, *supra* note 1240, art. 13.

¹²⁵² Ecuador's Hydrocarbon Law, *supra* note 1226, arts. 7 & 9.

¹²⁵³ *Id.* art. 11.

¹²⁵⁴ See "Acuerdo Ministerial No. 176, Ministerio de Energía y Minas," (Ecuador).

¹²⁵⁵ Ecuador's Electricity Law, *supra* note 1240, art. 13.

¹²⁵⁶ "Decreto Supremo No. 374 de 1976," R.O., 31 de mayo de 1976 (Ecuador) [Ecuador's Pollution Prevention and Control Law].

Policy Law (*Políticas Básicas Ambientales*),¹²⁵⁷ and the 1999 Environmental Management Law (*Ley de Gestión Ambiental*).¹²⁵⁸ The 1999 Environmental Management Law implemented the 1998 Constitutional environmental provisions. This law imposed the environmental impact assessment requirement for activities impacting the environment. It also repealed several provisions of the 1976 Law and amended several sectoral laws, including the Hydrocarbons Law, to add a general mandate to protect the environment.¹²⁵⁹ In addition, the Penal Code was also amended to include several environmental crimes.¹²⁶⁰ Other environmental laws and regulations have been passed on the following topics: conservation of natural areas, wildlife, forestry, and indigenous people;¹²⁶¹ National Air Emissions Standards;¹²⁶² Solid Waste;¹²⁶³ Water Resources;¹²⁶⁴ and Noise.¹²⁶⁵

Ecuador has a Ministry of the Environment (*Ministerio del Medio Ambiente*), responsible for implementing environmental policy generally.¹²⁶⁶ Notwithstanding, the 1999 Environmental Management Law states that the each sectoral Ministry is the top environmental authority in that specific sector.¹²⁶⁷ Consequently, the principal

¹²⁵⁷ “Decreto Ejecutivo No. 1802 de 1994,” R.O., 7 de junio de 1994 (Ecuador).

¹²⁵⁸ “Ley No. 37 de 1999,” R.O., 30 de julio de 1999 (Ecuador) (“Ley de Gestión Ambiental”) [Ecuador’s Environmental Management Law] (repealed arts. 1-10 & 26-28 of Ecuador’s Pollution Prevention and Control Law).

¹²⁵⁹ *Id.* art. 20. *See* Ecuador’s Hydrocarbons Law, *supra* note 1226, “Disposición General Primera.”

¹²⁶⁰ “Ley 49 de 1999,” (Ecuador).

¹²⁶¹ “Ley No. 81 de 1974,” R.O., 24 de agosto de 1981 (Ecuador); “Decreto Ejecutivo No. 1529 de 1983,” R.O., 22 de febrero de 1983 (Ecuador); “Decreto Ejecutivo No. 551 de 1999,” R.O.S., 2 de febrero de 1999 (Ecuador); “Decreto Ejecutivo No. 552 de 1999,” R.O. (suplemento), 2 de febrero de 1999 (Ecuador).

¹²⁶² “Acuerdo No. 883 de 1993,” R.O.S., 25 de octubre de 1993 (Ecuador); “Acuerdo No. 11.338-A de 1991,” R.O., 15 de junio de 1991 (Ecuador).

¹²⁶³ “Acuerdo No. 14.629 de 1992,” R.O., 30 de julio de 1992 (Ecuador).

¹²⁶⁴ “Acuerdo Ministerial No. 2.144 de 1989,” R.O., 5 de junio de 1989 (Ecuador).

¹²⁶⁵ “Acuerdo No. 7.789 de 1990,” R.O., de 12 de noviembre de 1990 (Ecuador).

¹²⁶⁶ Ecuador’s Environmental Management Law, *supra* note 1258, art. 8.

¹²⁶⁷ *Id.*

environmental authority for the energy sector is the Ministry of Energy and Mines.¹²⁶⁸

This Ministry has instituted the Deputy Secretary for Environmental Protection (*Subsecretaría de Protección Ambiental*) and a National Office of Environmental Protection (*Dirección Nacional de Protección Ambiental*) to oversee environmental protection in the energy sector.¹²⁶⁹ These offices are charged with promoting public participation and adequate access to information in the sector.¹²⁷⁰

This sectoral approach, somewhat similar to Argentina's, weakens the sphere of the Ministry of the Environment, generates conflicts between energy and environmental authorities, and it complicates environmental compliance and enforcement in the energy sector.¹²⁷¹ Indeed, as discussed further below, Ecuador has developed specific provisions for the oil sector, but has entrusted its energy authorities, rather than the Ministry of the Environment, to oversee their implementation and enforcement thereof.

8.6 ENVIRONMENTAL LAWS AND REGULATIONS FOR THE OIL AND GAS SECTOR

It is worth noting that, as early as 1982, the legislature passed norms for the protection of the environment in oil and gas operations. Specifically, Congress amended the Hydrocarbons Law to require that the operators in the sector—whether *PetroEcuador*, its partners or contractors—proceed “according to environmental and safety laws and regulations, and utilize best practices for the conservation of wildlife and agricultural resources.”¹²⁷² Moreover, the legislature required *PetroEcuador* and its associates to

¹²⁶⁸ “Decreto Ejecutivo No. 1215 de 2001,” R.O., 13 de febrero de 2001, art. 3 (Ecuador) [Ecuador's Environmental Regulations for Hydrocarbon Operations]; “Acuerdo Ministerial No. 176, Ministerio de Energía y Minas,” *supra* note 1254, art. 26.

¹²⁶⁹ “Acuerdo Ministerial No. 176, Ministerio de Energía y Minas,” *supra* note 1254, art. 26.

¹²⁷⁰ *Id.* arts. 29-30.

¹²⁷¹ See Xavier Sisa Cepeda, *Legal Perspectives on the Debate Concerning Social-Environmental Issues and Petroleum Development in Ecuador*, 10 SW. J. OF L. & TRADE AM. 41 (2003 / 2004).

¹²⁷² See Ecuador's Hydrocarbon Law, *supra* note 1226, art. 31 (t).

submit to governmental oversight of their programs and projects, specifically to prevent that exploration and production activities adversely affect the communities settled in areas impacted by these activities.¹²⁷³

In 1987, the Ministry of Energy and Mines issued general regulations for the oil and gas sector, implementing the environmental mandates embedded in the 1982 amendment to the Hydrocarbons Law.¹²⁷⁴ These regulations extended protection to archeological, religious, and tourist sites.¹²⁷⁵ Subsequently, a provision was added to the Hydrocarbons Law requiring that all state agencies (not just *PetroEcuador*) strive to prevent social and environment damage resulting from hydrocarbon developments and mandating periodic audits to verify this goal.¹²⁷⁶ In 2000, the legislature amended the Hydrocarbons Law to required that *PetroEcuador* and its associates prepare environmental management and remediation plans.¹²⁷⁷ The 2000 amendments to the Hydrocarbons Law also authorized the Ministry to impose sanctions (up to US\$3,000 per violation), in addition to orders for corrective actions and payment of damages.¹²⁷⁸

PetroEcuador has been required to internalize a concern for environmental protection. The Special Law for *PetroEcuador* (*Ley Especial de PetroEcuador*) sets forth that the company's duties include the prevention and control of environmental degradation resulting from its activities.¹²⁷⁹ *PetroEcuador's* law further requires the creation of a special unit within the company responsible for pursuing these objectives.

¹²⁷³ *Id.* art. 31 (s).

¹²⁷⁴ "Acuerdo Ministerial No. 1311 de 1987, Ministerio de Energía y Minas," R.O., 8 de mayo de 1987, art. 62 (Ecuador).

¹²⁷⁵ *Id.*

¹²⁷⁶ "Ley 44 de 1993," *supra* note 1227.

¹²⁷⁷ "Decreto Ley 2000-1 de 2000," *supra* note 1232, art. 37.

¹²⁷⁸ *Id.* art. 38.

¹²⁷⁹ "Ley No. 45", art. 2, para. 2 (Ecuador).

This special unit is responsible for preventing that the company's activities adversely impact the economic and social well-being of communities settled in its areas of operation.¹²⁸⁰ Further, regulations governing *PetroEcuador's* activities provide that the company must issue internal rules and adopt systems and management practices for the protection of the environment and the communities affected by its operations.¹²⁸¹

Ecuador has detailed rules governing environmental and social issues related to oil and gas activities.¹²⁸² Environmental regulations for hydrocarbon operations in Ecuador (*Reglamento Ambiental para las Operaciones Hidrocarburíferas en el Ecuador*) were first adopted in 1995 and later amended in 2001.¹²⁸³ These regulations provide a comprehensive set of environmental rules for the sector.¹²⁸⁴ The Ministry of Energy and Mining, through its Office for Environmental Protection, is charged with “controlling, enforcing and auditing” environmental management of hydrocarbon activities carried out by *PetroEcuador*, its subsidiaries and subcontractors, associates, or private companies authorized to operate in the sector.¹²⁸⁵ Importantly, hydrocarbon activities taking place within environmentally protected areas require prior approval and compliance with “technical conditions” set forth by the Ministry of the Environment.¹²⁸⁶

The environmental regulations for oil and gas operations spell out the environmental approval process for the sector, which is coordinated by the Office for Environmental Protection of the Ministry of Energy and Mines.¹²⁸⁷ This process

¹²⁸⁰ *Id.* art. 2, para 3.

¹²⁸¹ “Decreto No. 1420 de 2001,” R.O., 19 de abril de 2001, arts. 2 (i) & 12-14 (Ecuador).

¹²⁸² Ecuador's Environmental Regulations for Hydrocarbon Operations, *supra* note 1268, art. 27-28 & 31.

¹²⁸³ *Id.* See “Decreto Ejecutivo No. 2982 de 1995,” R.O., 24 de agosto de 1995 (Ecuador).

¹²⁸⁴ Ecuador's Environmental Regulations for Hydrocarbon Operations, *supra* note 1268, art. 1.

¹²⁸⁵ *Id.* arts. 3 & 4.

¹²⁸⁶ *Id.* art. 7.

¹²⁸⁷ *Id.* art. 13.

comprises three stages: an environmental baseline (*Diagnóstico Ambiental–Linea Base*) and environmental assessment; environmental auditing (*Auditoria Ambiental*); and a special environmental analysis (*Exámen Especial Ambiental*).¹²⁸⁸ The auditing and the special analysis are designed to inspect whether the operator is acting in conformity with environmental laws and regulations. Based on the information revealed in these analysis the Ministry of Energy and Mines can take the appropriate enforcement actions.

In addition, the regulations contain specific rules for each phase of hydrocarbon development: surveys, exploratory drilling, production, industrialization, storage and transportation, commercialization and sale, civil works (infrastructure projects, roads, etc.), and permissible emissions in the sector.¹²⁸⁹ The regulations place a strong emphasis on encouraging compliance. They require operators in the sector to prepare annual environmental plans and to report on compliance or non-compliance; additionally, they allow for governmental monitoring of their full implementation.¹²⁹⁰ The regulations also mandate that environmental authorities offer opportunities for citizens' involvement in enforcement; grant a collective action (*acción popular*) to claim violations to the regulations; and provide sanctions, penalties and related procedures.¹²⁹¹

8.7 ENVIRONMENTAL REGULATION FOR THE POWER SECTOR

Similar to the hydrocarbons sector, Ecuador has specifically-tailored environmental provisions for the power sector, and has entrusted CONELEC, the sector's authority, to oversee their implementation and the enforcement thereof. The Electricity Law mandates that all generators, transmitters and distributors of electrical power comply

¹²⁸⁸ *Id.* art. 13 & 33-46.

¹²⁸⁹ *Id.* art. 47-87.

¹²⁹⁰ *Id.* arts. 10-12, 14 & 88.

¹²⁹¹ *Id.* art. 89-91.

with environmental laws and regulations.¹²⁹² Specifically, all actors in the power sector must prepare an environmental impact assessment as well as plans to minimize adverse environmental impacts in accordance with the norms required by CONELEC for this purpose.¹²⁹³

Regulations for the power sector indicate that their purpose, in addition to regulating generation, transmission, distribution and marketing activities, is to “ensure the optimal development of natural resources.”¹²⁹⁴ Significantly, the regulations for the power sector devote an entire chapter to environmental protection.¹²⁹⁵ In this regard, CONELEC is required to work in coordination with the Ministry of Energy and Mines, the Ministry of the Environment and the other agencies in charge of regulating and monitoring the use of natural resources and the protection of the environment.¹²⁹⁶ Further, concessionaries or permit-holders authorized by the State to generate, transmit, distribute, and market electricity are “obliged to observe the provisions of Ecuadorian legislation currently in force, as well as the ones stipulated in international norms governing environmental protection and conservation that appear in or stem out from conventions ratified by Ecuador.”¹²⁹⁷

The regulations for the power sector detail further that developers are required to prepare a full environmental assessment prior to the implementation of power generation, transmission, distribution and marketing of projects capable of producing damage to the environment, and to obtain from CONELEC the environmental permits required by the

¹²⁹² Ecuador’s Electricity Law, *supra* note 1240, art. 3.

¹²⁹³ *Id.*

¹²⁹⁴ Ecuador’s Regulations for the Power Sector, *supra* note, 1247, art. 1

¹²⁹⁵ *Id.* Chapter 3.

¹²⁹⁶ *Id.* art. 12.

¹²⁹⁷ *Id.* art. 13.

norms governing this area.¹²⁹⁸ Particularly, concessionaries or permit-holders must comply with a number of requirements. First, they must prepare an environmental study and an environmental management plan to minimize adverse impacts on the physical environment (atmosphere, hydrosphere, and lithosphere), the biological environment (flora and fauna), and human settlements, in accordance with the norms required by CONELEC for this purpose.

Second, concessionaries or permit-holders must identify areas that have been degraded and propose monitoring and restoration measures that will be adopted. In addition, they are required to establish procedures to guarantee that all projects include an environmental mitigation plan to be implemented by the concessionary or permit-holder. Third, they must inform CONELEC, on a timely basis, of the environmental impacts involved in a given project and the measures and mechanisms provided for in the environmental management plan. With regard to new electrical concessions using existing installations or stations, the developer must comply with an environmental management plan based on an environmental audit of the existing installations.¹²⁹⁹ This serves the purpose of keeping the obligations of the previous owner separate from those of the new concession holder.

In addition to environmental provisions in the Electricity Law and implementing regulations, Ecuador issued environmental regulations specifically tailored for electrical activities (*Reglamento Ambiental para las Actividades Eléctricas*) in 2001.¹³⁰⁰ Just as for hydrocarbons, environmental and social issues of electrical activities are managed and

¹²⁹⁸ *Id.*

¹²⁹⁹ *Id.* art. 14.

¹³⁰⁰ See “Decreto Ejecutivo No. 1761 de 14 de agosto de 2001,” R.O., 23 de agosto de 2001 (Ecuador) [Ecuador’s Environmental Regulations for Electrical Activities].

controlled mainly by energy authorities rather than environmental authorities. The State holding company and regulatory entity for the electric sector (CONELEC) is the main environmental authority for the electric power sector.¹³⁰¹ The environmental regulations for electrical activities, however, require coordination between the CONELEC and Ministry of the Environment: the CONELEC conducts and “approves” the environmental review process, while the Ministry of the Environment “issues” the environmental license.¹³⁰²

The CONELEC reviews and approves the environmental impact assessment for electric generation projects with capacity exceeding 1 megawatt as well as transmission and distribution lines.¹³⁰³ There are two types of environmental impact assessments: draft and final.¹³⁰⁴ The former serves the purpose of preliminary consideration of the project; the latter is necessary before final approval. Public participation is required before completing the review process.¹³⁰⁵ An environmental management plan must also be incorporated into the final assessment.¹³⁰⁶ Activities or projects impacting legally protected areas require consultation with, and pre-approval from, the Ministry of the Environment.¹³⁰⁷

To encourage environmental compliance, the rules impose internal audit requirements on participants in the power sector and require them to hire an independent external auditor.¹³⁰⁸ Further, citizens are allowed to present complaints before the

¹³⁰¹ *Id.* arts. 5-8.

¹³⁰² *Id.* arts. 7(b), 9, 10(c) & 11. The Ministry of the Environment is responsible for issuing environmental licenses for “generic” electrical concessions. *Id.* arts. 10(d), 38-40.

¹³⁰³ *Id.* art. 19.

¹³⁰⁴ *Id.* arts. 22-24.

¹³⁰⁵ *Id.* art. 21.

¹³⁰⁶ *Id.* art. 25.

¹³⁰⁷ *Id.* art. 25.

¹³⁰⁸ *Id.* arts. 26-30.

CONELEC on power-sector actors' non-compliance with environmental laws and regulations.¹³⁰⁹ The complaint must be supported by the affidavit of a technical expert, and if the petitioner does not have economic means to procure the services of an expert, CONELEC may provide funds to defray such services.¹³¹⁰ The CONELEC will then investigate the complaint, give a report within fifteen days on whether to take measures, and sanction any irregular conduct as appropriate.

8.8 ENFORCEMENT

Although Ecuador's legislative initiatives concerning environmental compliance and enforcement in energy activities began in the early 1980s, lack of both environmental compliance and enforcement has been notorious, particularly in hydrocarbon activities. Since most of Ecuador's oil comes from the Amazon region and is piped across the country to ports in the Pacific, failure to enforce environmental laws for oil and gas operations adversely impacts the livelihood of indigenous communities and sensitive ecosystems, both in the Amazon and Andean regions.

This situation has been widely publicized through a high-profile case involving the U.S.-based Texaco Petroleum Company (Texaco), where Ecuadorian indigenous groups sued the company, initially in the United States, and, later, in Ecuador. During its involvement in the Amazon region of Ecuador, Texaco allegedly caused severe pollution in the area. More recently, failures in environmental enforcement have been noted in the construction of a new oil pipeline across the country.¹³¹¹ In addition, an oil spill affecting the Galapagos Islands has made clear that current domestic and international measures to

¹³⁰⁹ *Id.* art. 46.

¹³¹⁰ *Id.* arts. 46-49.

¹³¹¹ *See* Lyons, *supra* note 185, at 701.

protect this unique ecosystem are inadequate.¹³¹²

The case against Texaco has a long and complicated history concerning the company's nearly three decades of activity in the Amazon region of Ecuador.¹³¹³ Texaco merged with Chevron, and is known currently as ChevronTexaco. Texaco was the named defendant in the United States, while Chevron-Texaco is the named defendant in Ecuador. The facts of the case date back to 1964 when Texaco began exploiting oil under a concession shared with Gulf Oil Company. *PetroEcuador* joined the operation in 1974 by taking a 25-percent share of the venture. Subsequently, in 1992, *PetroEcuador* became the sole owner and operator of the concession after Texaco surrendered all of its interest.

Allegedly, during its several decades of operations in the Amazon region, Texaco caused massive dumping of toxic wastewater and crude oil affecting these people's territories.¹³¹⁴ Specifically, the plaintiffs maintain that Texaco dumped toxic materials in local rivers, pumped waste into emptied wells, and burned toxic materials and spread them in landfills and on roads. Most of the inhabitants of the impacted area were

¹³¹² See Ryan P. Lessmann, *Current Protections on the Galapagos Islands are Inadequate: the International Maritime Organization Should Declare the Islands a Particularly Sensitive Sea Area*, 15 COLO. J. INT'L ENVTL. L. & POL'Y 117 (2004).

¹³¹³ See Judith Kimerling, *The Environmental Audit of Texaco's Amazon Oil Fields: Environmental Justice or Business as Usual?*, 7 HARV. HUM. RTS. J. 199 (1994) (Kimerling I); Judith Kimerling, *Rights, Responsibilities, and Realities: Environmental Protection Law in Ecuador's Amazon Oil Fields*, 2 SW. J.L. & TRADE AM. 293, 360 (1995) (Kimerling II); Judith Kimerling, *International Standards in Ecuador's Amazon Oil Fields: The Privatization of Environmental Law*, 26 COLUM. J. ENVTL. L. 289 (2001) (Kimerling III); Kimerling, *supra* note 303 (Kimerling IV); Peggy Rodgers Kalas, *The Implications of Jota v. Texaco and the Accountability of Transnational Corporations*, 12 PACE INT'L L. REV. 47 (2000); Lisa Lambert, *At the Crossroads of Environmental and Human Right Standards: Aguinda v. Texaco, Inc. Using the Alien Tort Claims Act to Hold Multinational Corporate Violators of International Laws Accountable in U.S. Courts*, 10 J. TRANSNAT'L L. & POL'Y 109, (2000); Malcolm J. Rogge, *Towards Transnational Corporate Accountability in the Global Economy: Challenging the Doctrine of Forum Non Conveniens in In Re: Union Carbide, Alfaro, Sequihua, and Aguinda*, 36 TEX. INT'L L.J. 299, (2001); Mary Elliott Rolle, *Unraveling Accountability: Contesting Legal and Procedural Barriers in International Toxic Tort Cases*, 15 Geo. Int'l Env'tl. L. Rev. 135 (2003).

¹³¹⁴ See BOSSELMAN ET AL., *supra* note 47, at 488.

indigenous people with no legal recourse to enjoin these activities. The plaintiffs allegedly suffered injuries from exposure to toxic chemicals and from natural resources damages. “The also alleged that the Trans-Ecuadorian Pipeline, constructed by Texaco, had leaked large quantities of petroleum into the environment, all such pollution resulting in physical injuries, including poisoning and the development of pre-cancerous growths.”¹³¹⁵

In 1993, members of the indigenous people affected filed their case against Texaco in New York, where Texaco was headquartered. In fact, three separate claims were brought—two in New York and one in Texas—, and the case was a consolidation of the three claims.¹³¹⁶ The two cases filed in New York were *Aguinda v. Texaco, Inc.*,¹³¹⁷ brought by residents of the Oriente region of Ecuador, and *Ashanga v. Texaco, Inc.*,¹³¹⁸ brought by members of a downstream community in Peru. Members of another nearby community in Ecuador filed the suit in Texas, *Sequihua v. Texaco, Inc.*¹³¹⁹ The cases were grounded on claims such as negligence, public nuisance, private nuisance, strict liability, trespass, and violations actionable under the U.S. Alien Tort Act.¹³²⁰ The plaintiffs also sought equitable relief including undertaking environmental cleanup, renovating or closing the Trans-Ecuadorian Pipeline, creation of an environmental monitoring fund, among others remedies.¹³²¹ Texaco responded by submitting a motion to dismiss the cases on several grounds, including failure to join Ecuador as an

¹³¹⁵ *Id.*

¹³¹⁶ *Id.* at 487. One of the cases involved downstream communities in Peru.

¹³¹⁷ *Aguinda et al. v. Texaco, Inc.*, 945 F. Supp. 625, 626 (S.D.N.Y. 1996) [*Aguinda I*].

¹³¹⁸ *Ashanga v. Texaco, Inc. (Ashanga)*, No. 94 Civ. 9266 (S.D.N.Y. 1994) (original complaint was labeled *Ashanga*, but it is since known as *Jota, Jota I*).

¹³¹⁹ *Sequihua v. Texaco, Inc.*, 847 F. Supp. 64 (*Sequihua*).

¹³²⁰ *Aguinda I*, *supra* note 1317, at 625; *Ashanga*, *supra* note 1318, at 9266 ; *Sequihua*, *supra* note 1319, at 63. See BOSSELMAN ET AL., *supra* note 47, at 488.

¹³²¹ See BOSSELMAN ET AL., *supra* note 47, at 488.

indispensable party, international comity, and *forum non conveniens*.¹³²² The history of the three cases converged at this point.¹³²³

In 1996, the judge granted Texaco's motion to dismiss after finding that the case was inappropriate for trial in a U.S. court due to international comity and *forum non conveniens*.¹³²⁴ The court also found the case should be dismissed for failure to join *PetroEcuador* and the Republic of Ecuador, as they were indispensable to the case. The plaintiffs appealed the decision, and a unanimous panel of an appellate court vacated the lower court's decision and remanded the case.¹³²⁵ In finding the dismissal improper, the appellate court also focused on the fact that there was no mandate for Texaco to submit to Ecuadorian jurisdiction. On remand, the trial court finally dismissed the case, but compelled Texaco to abide by the Ecuadorian judgment.

After the dismissal, Texaco agreed to submit to the jurisdiction of an Ecuadorian court, and the plaintiffs took the case to Ecuador. In May 2003, the plaintiffs filed the complaint against Texaco and the proceedings began in October 2003.¹³²⁶ The case was filed in the Province of Sucumbíos, where the bulk of the controversial oil operations took place, and the litigation is being heard by the Nueva Loja Superior Court—the tribunal in the capital of the Province of Sucumbíos. Texaco moved to dismiss stating that the plaintiffs have no grounds because it fulfilled cleanup commitments it made in an

¹³²² *Forum non conveniens* means that, although the court has personal and subject matter jurisdiction in the case, it makes a determination (upon motion or *sua sponte*) that another jurisdiction may be better suited to hear the case; BOSSELMAN ET AL., *supra* note 47, at 487 ("Forum non conveniens is a judicially created doctrine designed to prevent plaintiffs from harassing defendants by filing suit in an inconvenient forum, even though personal and subject matter jurisdiction exist in that forum.").

¹³²³ Rogge, *supra* note 1313, at 299; Lambert, *supra* note 1313, at 109.

¹³²⁴ *Aguinda I*, *supra* note 1317, at 625.

¹³²⁵ See *Jota v. Texaco, Inc.*, 157 F.3d 153 (2nd Cir. 1998) [*Jota II*]; *Aguinda v. Texaco, Inc.*, 142 F.Supp.2d 534 (S.D.N.Y. May 30, 2001) (*Aguinda II*); *Judgment Affirmed as Modified by Aguinda v. Texaco, Inc.*, 303 F.3d 470 (2nd Cir. (N.Y.) Aug 16, 2002) (*Aguinda III*).

¹³²⁶ See *Probe in ChevronTexaco case going slowly*, ECOAMÉRICAS, November 2004, Vol. 7, No. 1, at 3.

agreement with the Ecuadorian government, but the court denied it and ordered a field survey to assess the environmental contamination alleged by plaintiffs.¹³²⁷ The survey alone could take beyond 2006.

Texaco's main defense seems to be the remediation work it carried out under a cleanup agreement executed in 1995 with the government of Ecuador.¹³²⁸ In 1998, Ecuadorian government authorities certified completion of the work, which involved the cleanup of waste pits. The defendant also argues that while it was managing partner of the oil consortium from 1972 to 1992, the national oil company (formerly CEPE now *PetroEcuador*) had an important percent stake in the consortium. Arguably, *PetroEcuador* assumed responsibility for cleanup of sites not included in the work plan. Thus, in June of 2004, Texaco filed an arbitration claim to have *PetroEcuador* reimburse all costs the company may face as a result of the lawsuit.¹³²⁹

Because there were no modern environmental statutes in place during most of the time of the alleged pollution, the Texaco case may be decided on the Civil Code's general liability rules.¹³³⁰ By 1979, the Constitution included a provision that established the right to "an environment free of contamination," the country had some environmental statutes in place, and even environmental provisions in the Hydrocarbons Law. But Ecuadorian environmental legislation at the time Texaco was performing its oil contract was "replete with general exhortations to protect the environment and prevent contamination."¹³³¹ Nonetheless, in keeping with these general prohibitions on

¹³²⁷ *Id.*

¹³²⁸ Texaco's legal documents are available at <http://www.texaco.com/sitelets/ecuador/en/>.

¹³²⁹ The arbitration must be settled in New York under the oil consortium's joint operating agreement. Ecuador, however, does not accept submitting itself to arbitration in the United States.

¹³³⁰ See Kalas, *supra* note 1313, at 47.

¹³³¹ Kimerling I, *supra* note 1313, at 207.

environmental degradation, Texaco and *PetroEcuador* should have been required to implement appropriate measures to protect the health of the indigenous groups and the natural resources in the Amazon.

Despite the constitutional environmental right and environmental laws for the protection of human health and the environment, at that time, Ecuador's judicial system provided no practical means for private citizens' enforcement. The administration's lack of enforcement compounded the problem. Judith Kimerling has stated that administrative agencies with jurisdiction to enforce environmental laws and regulations suffered "from a severe lack of human and financial resources, political and technical support, and coordination."¹³³² Consequently, given the underdeveloped environmental legal framework in the 1960s and 1970s, as well as the lack of enforcement mechanisms, the Ecuadorian government did not prevent or address environmental damage in the Amazon oil fields in a timely fashion.¹³³³

In response to the Texaco case, as well as the emergence of international environmental law, during the 1980s and 1990s the legislature has passed specific environmental legislation concerning the oil and gas sector, as discussed in the previous sections. Moreover, the 1998 Constitution reaffirms environmental rights and imposes environmental duties on the State. These rights and duties "echo emerging principles in international environmental law, particularly agreements to promote sustainable development."¹³³⁴ The 1998 Constitution also include a new section on the collective rights of indigenous peoples.¹³³⁵ The collective rights of indigenous peoples also echo

¹³³² *Id.*

¹³³³ *Id.* at 209.

¹³³⁴ Kimerling III, *supra* note 1313, at 309.

¹³³⁵ CONST. Art. 84 (5)(Ecuador).

emerging principles in international law, particularly the rights and duties enumerated in the International Labor Organization's *Indigenous People Convention*, which Ecuador ratified in 1998.¹³³⁶ Therefore, at least at a legislative and regulatory level, Ecuador has safeguards against the recurrence of such damage.

In spite of these improvements to the legal framework for the energy sector, Ecuador has not been effective in compliance and enforcement. The Ministry of Energy and Mines dominates environmental control of the energy sector, and the Office for Environmental Protection of the Ministry "has been seriously hamstrung by a lack of legal authority, resources, and political support from ministry officials."¹³³⁷ Although charged with responsibility for environmental oversight and control, the Environmental Office of the Ministry lacks technical capacity to fully perform its duties.

A key issue in Ecuador's hydrocarbon sector has been the commingling of heavy and lighter crude for transportation via government-owned Trans-Ecuadorian Pipeline (*Sistema Oleducto Trans-Ecuatoriano*, SOTE). Foreign oil companies produce mostly heavy oil, while *PetroEcuador* produces lighter crude. Lack of enforcement with respect to SOTE's frequent oil spills has been a problem for decades.¹³³⁸ The Fundamental Law for the Economic Transformation of Ecuador (*Ley Fundamental para la Transformación del Ecuador*), approved in March 2000, facilitated the private sector's construction of a heavy crude oil pipeline (*Oleoducto de Crudos Pesados*, OCP), to transport the heavy crude out from the Amazon region to the Pacific ports.¹³³⁹ The heavy crude oil pipeline is the country's single largest infrastructure project. It received environmental approval in

¹³³⁶ Kimerling III, *supra* note 1313, at 309. See *Indigenous People Convention*, *supra* note 155.

¹³³⁷ Kimerling III, *supra* note 1313, at 311.

¹³³⁸ *Id.* See also OLADE, Report 2004, Ecuador, *supra* note 2.

¹³³⁹ See Ecuador's Fundamental Law for Economic Transformation, *supra* note 1241.

2002, and came online in 2003.¹³⁴⁰ But the project has been the subject of many controversies, particularly regarding environmental permitting. Tough enforcement in these two pipelines, which traverse valuable ecosystems, will continue to test Ecuador's abilities to apply its environmental provisions for the oil sector.

¹³⁴⁰ See OLADE, Report 2004, Ecuador, *supra* note 2.

CHAPTER 9 – MEXICO

9.1 CONSTITUTIONAL ISSUES

Mexico has a Federal Constitution which was enacted as a result of the Mexican Revolution in 1917. Mexico's federal organization differs from that of Argentina and Brazil in that states and municipalities have fewer powers in Mexico than in both Argentina and Brazil.¹³⁴¹ Further, in contrast with Argentina (where the provinces have original ownership of their resources) and Brazil (where the states and municipalities have ownership and control their own resources, except for those reserved by the Brazilian Union, such as hydrocarbons), the Mexican Constitution provides that the Mexican has full ownership and direct dominion over all natural resources located within its boundaries.¹³⁴² Accordingly, all natural resources, including mineral deposits and waters are federal property.

The structure of the Mexican energy sector is set forth in five constitutional principles.¹³⁴³ The purpose behind these principles is to hold federal control of the energy sector, in particular of the oil and gas industry and of the supply of electricity. First, ownership of all natural resources, including hydrocarbon resources, is exclusively reserved to the Nation.¹³⁴⁴ In the case of hydrocarbon resources, the Constitution goes further and expressly prohibits concessions to private entities or even joint ventures for

¹³⁴¹ AVALOS, *supra* note 393, at 3-4.

¹³⁴² CONST. art. 27 para. 1 (Mex).

¹³⁴³ See generally SECRETARÍA DE ENERGÍA DE MÉXICO, PROSPECTIVA DEL SECTOR ELÉCTRICO (2000-2006) [SENER, PROSPECTIVA (YEAR)]; SECRETARÍA DE ENERGÍA DE MÉXICO, EL SECTOR DE ENERGÍA EN MÉXICO: ANÁLISIS Y PERSPECTIVA (2000) [SENER, SECTOR DE ENERGÍA]. See also ROBIN JANE ROFF, ET AL., COMMISSION FOR ENVIRONMENTAL COOPERATION OF NORTH AMERICA, THE CONFLICTING ECONOMIC AND ENVIRONMENTAL LOGICS OF NORTH AMERICAN GOVERNANCE: NAFTA, ENERGY SUBSIDIES, AND CLIMATE CHANGE, (2003), at 14; "Corte Suprema de Justicia, Controversia 22/2001," [Mexican Supreme Court, Constitutional Controversy 22/2001], at 67.

¹³⁴⁴ CONST. art. 27 (para. 4) (Mex.).

their exploitation.¹³⁴⁵ A 1995 amendment to the Constitution, however, made it possible to grant of concessions to private participants for downstream natural gas activities.¹³⁴⁶

Second, the Nation has an exclusive right to “generate, transmit, transform, distribute, and supply electricity as a public service.”¹³⁴⁷ Third, the energy sector is regarded as a “strategic area” subject to federal management and control.¹³⁴⁸ Specifically, the exploration and exploitation of oil and natural gas, the production of basic petrochemicals and the provision of electrical public services are strategic areas.¹³⁴⁹ Fourth, the federal government can create, organize and control entities for the management of the strategic areas.¹³⁵⁰

As a consequence of these principles, the Mexican National Assembly has exclusive power to legislate on matters related to hydrocarbons and electricity and to impose taxes on these activities.¹³⁵¹ There is federal supremacy in energy matters. Thus, no state or local government, or any other branch of the federal government, can interfere with these congressional powers. Accordingly, several decisions by the Mexican Supreme Court of Justice (*Suprema Corte de Justicia de la Nación*) have rejected direct or indirect attempts by states and municipalities to tax the consumption of electricity.¹³⁵² Nonetheless, the states have a right to a portion of the revenues received by the Nation

¹³⁴⁵ *Id.* art. 27 (para. 6) (“D.O., 28 de marzo de 1992”).

¹³⁴⁶ *Id.* art. 28 (“D.O., 2 de marzo de 1995”).

¹³⁴⁷ *Id.* art. 27 (para. 6).

¹³⁴⁸ *Id.* art. 28.

¹³⁴⁹ *Id.* art. 28 (para. 4).

¹³⁵⁰ *Id.* art. 25 (para. 4); art. 28 (para. 5).

¹³⁵¹ *Id.* art. 73 (X), (XXIX)(A)(5)(a)(e).

¹³⁵² *See, e.g.,* “Industrias Químicas de Mexico,” 163-168 J.S.C. 61 (7a época, 1a parte 1982) (Mex.)”; Inocencio Alejandro Avalos,” 181-186 J.S.C. 53 (7a época, 1a parte 1984) (Mex.)”; Jesus Gomaba Grijalva y otros,” 181-186 J.S.C. 54 (7a época, 1a parte 1984) (Mex.). *See* CONST., art. 73 (XXIX) (A) (5) (a) (Mex.)

derived from taxes and excises imposed on the use or consumption of electricity.¹³⁵³ In turn, municipalities receive whatever percentage the state law determines in each jurisdiction. In other cases decided by the Court, it has rejected attempts by states and municipalities to impose taxes and excises on the production, transmission, distribution, or sale of electricity.¹³⁵⁴ The Court, however, has allowed local property taxes on the properties of companies involved in electric activities.¹³⁵⁵

With respect to environmental matters, the Mexican Constitution has been amended several times to incorporate environmental norms and to provide a comprehensive basis for the country's sustainable development. A constitutional amendment in 1971 authorized the National Assembly to adopt general measures related to health, sanitation, and environmental protection.¹³⁵⁶ An amendment in 1982 incorporated a mandate to promote development while taking into account the environment, thereby significantly advancing the concept of sustainable development in Mexico.¹³⁵⁷ This amendment required that the State promote public and private use of productive resources in the public interest, in order to conserve resources and protect the environment.¹³⁵⁸

A constitutional amendment in 1987 provided that property rights may be limited

¹³⁵³ CONST. art. 73 (XXIX)(A)(5) (Mex.)

¹³⁵⁴ See, e.g., "Cia. Mexicana Meridional de Fuerza, S.A.," CVII J.S.C. 146 (5a época) (Mex.); "Cia. Mexicana Meridional de Fuerza, S.A.," CVII J.S.C. 146 (5a época) (Mex.); "Cia. Mexicana Meridional de Fuerza, S.A.," CVII J.S.C. 146 (5a época) (Mex.); "Cia. Mexicana de Luz y Fuerza Motriz, S.A.," CXXVIII J.S.C. 255 (5a época) (Mex.); "Cia. de Fuerza del Suroeste de Mexico, S.A.," XCVI J.S.C. 65 (6a época) (Mex.); "Cia. Mexicana de Luz y Fuerza, S.A.," CII J.S.C. 20 (6a época) (Mex.).

¹³⁵⁵ See, e.g., "Compañía de Luz y Fuerza del Sureste de México, S.A.," CXXXII J.S.C. 34 (6a época, 3a parte) (Mex.); "Compañía de Luz y Fuerza del Centro, S.A.," 121-126 J.S.C. 53 (7a época, 3a parte) (Mex.); "Compañía de Luz y Fuerza del Centro, S.A.," CXX J.S.C. 27 (7a época, 3a parte) (Mex.).

¹³⁵⁶ CONST. art. 73 (XVI) (1)-(4) (Mex.) (the amendment added section (4)) ("D.O., 6 de julio de 1971").

¹³⁵⁷ See JOSÉ JUAN GONZÁLEZ MÁRQUEZ, LA RESPONSABILIDAD POR EL DAÑO AMBIENTAL EN MÉXICO 63 (2002).

¹³⁵⁸ CONST. art. 25 (para. 6) ("D.O., 3 de febrero de 1983") (Mex.).

by the Nation to ensure environmental protection.¹³⁵⁹ It also strengthened the power of states, municipalities, and the Federal District to enact legislation regarding matters of environmental protection within their jurisdictions, and it empowered the National Assembly to coordinate the roles of the various levels of government in this area.¹³⁶⁰ Finally, an amendment in 1999 granted the right to a healthy environment,¹³⁶¹ and it explicitly incorporated the notion of sustainable development in Mexico.¹³⁶²

As a result of these amendments, Mexico's Constitution incorporates two key concepts: sustainable development and environmental equilibrium.¹³⁶³ Specifically, Articles 4, 6, 8, 25, 26 and 27 provide the constitutional basis to achieve these goals. Article 4 grants all Mexicans the right to a healthy environment for the well-being of the population and adequate development of the Nation.¹³⁶⁴ Additionally, Article 4 indicates that the protection of health is a fundamental human right.¹³⁶⁵

Articles 6 and 8 of the Constitution guarantee public access to government-held information.¹³⁶⁶ Article 6 asserts that access to information is a right guaranteed by the Nation.¹³⁶⁷ Initially, the Supreme Court of Justice issued a restrictive interpretation of this right to information, regarding it a social guarantee correlative to the freedom of

¹³⁵⁹ *Id.* art. 27 (para. 3) ("D.O. 10 de julio de 1987"); GONZÁLEZ MÁRQUEZ, *supra* note 1357, at 63.

¹³⁶⁰ CONST. art. 73 (XXIX)(G), 115, 122 ("D.O. 10 de julio de 1987.") (Mex.). *See also* GONZÁLEZ MÁRQUEZ, *supra* note 1357, at 63.

¹³⁶¹ CONST. art. 4 (para. 5) ("D.O., 28 de junio de 1999") (Mex.).

¹³⁶² *Id.* art. 25 (para. 1) ("D.O. 28 de junio de 1999") (Mex.). *See also* GONZÁLEZ MÁRQUEZ, *supra* note 1357, at 63.

¹³⁶³ The term "environmental equilibrium" is used in Articles 27 and 73 (XXIX-G) of the Constitution.

¹³⁶⁴ CONST. art. 4 (para. 4) ("D.O. 28 de junio de 1999") (Mex.).

¹³⁶⁵ *Id.* art. 4 (para. 5) (Mex.). *See* CEC Summary, *supra* note 1356. Any violation of this right is actionable through the constitutional habeas system (*Amparo*). CONST. arts. 103, 107 (Mex.). *See infra* § 10.2.

¹³⁶⁶ *See generally*, COMMISSION FOR ENVIRONMENTAL COOPERATION OF NORTH AMERICA, PUBLIC ACCESS TO GOVERNMENT-HELD ENVIRONMENTAL INFORMATION (2003) (CEC, Environmental Information).

¹³⁶⁷ CONST. art. 6 (para.) ("D.O. 6 de diciembre de 1977") (Mex.).

expression.¹³⁶⁸ Later, in 1996, the Supreme Court linked the concept to the public's right to know the truth and to the duty of public officials to refrain from manipulating information.¹³⁶⁹ In 2000, the Court broadened its interpretation, stating that the right to information also encompasses an obligation correlative to the individual guarantee of information.¹³⁷⁰

As for Article 8, it provides the right of petition (*derecho de petición*), a constitutional guarantee closely related to the right to access government-held information. Article 8 requires that public officials respect the right of citizens to petition to obtain information, provided the request is made "in writing and submitted in a peaceful and respectful manner."¹³⁷¹ Upon receiving such petition, authorities must release a prompt written answer.¹³⁷² The Constitution also grants the right to request the National Assembly to consider adopting particular legislation, but in practice it "has generally ignored such requests."¹³⁷³

Articles 25 and 26 of the Constitution instructs the federal government to adopt a planning process for Mexico's sustainable development.¹³⁷⁴ Article 25 creates the general obligation of the government to promote Mexico's sustainable development, according to principles of equity and social justice.¹³⁷⁵ Furthermore, the government may, in the public interest, regulate public and private corporations and their use of natural resources in order to encourage productivity while preserving the natural resources and the

¹³⁶⁸ CEC, Environmental Information, *supra* note 1366, at 84.

¹³⁶⁹ *Id.*

¹³⁷⁰ *Id.*

¹³⁷¹ CONST. art. 48 (Mex.).

¹³⁷² *Id.* See also CEC, Environmental Information, *supra* note 1366, at 86.

¹³⁷³ See CEC, Environmental Information, *supra* note 1366, at 85.

¹³⁷⁴ CONST. art. 25 (para. 1, 2 & 26 (Mex)); Mexican Supreme Court, Constitutional Controversy 22/2001, *supra* note 1343, at 67.

¹³⁷⁵ CONST. art. 25 (para. 1) (Mex).

environment.¹³⁷⁶ Article 26 provides that it is the federal government's responsibility to organize a democratic planning process for Mexico's national development to pursue solid, dynamic, permanent and equitable economic growth.¹³⁷⁷

Article 27 of the Constitution provides a general description of those natural resources over which the Nation has direct dominion, which includes all minerals and petroleum resources.¹³⁷⁸ But Article 27 also refers to natural resources held in private hands. Certainly, Article 27 empowers the Mexican Nation to restrict private property rights in the public interest. Article 27 reads, "the Nation shall, at all times, have the right to impose on private property the limitations that the public interest dictates."¹³⁷⁹ As a result of this provision it has been argued that Mexico awards a "social function" to private property.¹³⁸⁰ Some scholars argue that this power may include criteria such as the advancement of environmental protection and the restoration of the ecological balance.¹³⁸¹ Furthermore, with the inclusion of the right to a healthy environment in the Constitution in 1999, some scholars now argue that Mexican private property also has an "environmental function" in Mexico.¹³⁸²

The Mexican Constitution distinguishes between "natural elements that may be appropriated" (*elementos naturales susceptible de apropiacion*) and natural resources in general, a distinction based on Roman law.¹³⁸³ According to Professor Juan José González Márquez, "natural elements that may be appropriated" are what the Romans

¹³⁷⁶ *Id.* art. 25 (para. 6).

¹³⁷⁷ *Id.*

¹³⁷⁸ *Id.* art. 27 (para. 3 & 4).

¹³⁷⁹ *Id.* art. 27 (para. 3).

¹³⁸⁰ See GONZÁLEZ MÁRQUEZ, *supra* note 1357, at 81

¹³⁸¹ *Id.*

¹³⁸² *Id.*

¹³⁸³ CONST. art. 27 (para. 3 & 4) (Mex).

called *res nullius*.¹³⁸⁴ *Res nullius*, “such as wildlife (including flora and fauna), are defined in article 768 of the Mexican Civil Code.”¹³⁸⁵ The National Assembly is empowered to regulate the “natural elements that can be appropriated for their equitable use, their conservation, the achievement of a balanced development of the country and the improvement of the living conditions of the population living in urban and rural areas.”¹³⁸⁶ Furthermore, “the Nation is required to establish those measures which are necessary in order to preserve and restore the ecological balance and prevent the destruction of natural elements and damage to property.”¹³⁸⁷

Under the Constitution, private parties may participate in the exploitation and use of the natural resources through concessions granted by the federal government. Although certain resources—hydrocarbons and electricity—are exclusively reserved to the Nation, and no concessions are allowed in these areas.¹³⁸⁸ The National Assembly has the power to regulate all forms of pollution, and to coordinate the relation between the federal government, the states, and municipalities for protection of the environment.¹³⁸⁹

There is no specific constitutional provision granting the states the authority to enact environmental legislation, but all thirty-one states have enacted their own environmental law and established a local agency charged with the administration of such laws.¹³⁹⁰ Nonetheless, the Constitution assigns certain powers pertaining to environmental matters to municipalities.¹³⁹¹ These powers include “general public

¹³⁸⁴ See also GONZÁLEZ MÁRQUEZ, *supra* note 1357, at 70, 78-79.

¹³⁸⁵ *Id.* at 78.

¹³⁸⁶ CONST. art. 27 (para. 3) (Mex).

¹³⁸⁷ *Id.* art. 27 (para. 6).

¹³⁸⁸ *Id.* art. 28 (para. 6).

¹³⁸⁹ *Id.* art. 73.

¹³⁹⁰ CEC, Environmental Law, Mexico, *supra* note 312, § 2.

¹³⁹¹ CONST. art. 115 (III) (Mex).

sanitation; urban zoning and development plans; administration of territorial and ecological reserves; land use management; and issuance of building licenses and permits.”¹³⁹² The municipal environmental provisions must comply with the requirements set forth in federal and state environmental laws. Accordingly, municipal environmental authorities have residual jurisdiction over environmental issues. Similarly, the Constitution gives the Assembly of the Federal District authority to adopt environmental regulations, establish natural reserves, and take measures to protect the environment.¹³⁹³ Therefore, in the Federal District, environmental protection is governed by federal laws, as well as by specific regulations issued by the local Assembly.

9.2 OIL AND GAS LAW

Evolution of the Legal Framework for Oil and Gas

A brief overview of the evolution of Mexico’s legal framework for oil and gas is helpful to understand the country’s approach to regulating the oil and gas industry. Mexico’s oil production began in the early 1900s under the terms of the Mining Code of 1884.¹³⁹⁴ This legislation was based on the American legal concept that private ownership may include the subsoil, which is not the prevailing concept in civil law jurisdictions where the State is the owner of the subsoil. Therefore, the 1884 Mining Code allowed individuals (including foreigners) to own mineral rights.¹³⁹⁵ As a result of

¹³⁹² CEC, Environmental Law, Mexico, *supra* note 312, § 2.

¹³⁹³ CONST. art. 122 (VI) (G) (Mex); CEC, Environmental Law, Mexico, *supra* note 312, § 2. *See also* “Ley General del Equilibrio Ecológico y la Protección al Ambiente,” D.O., 28 de enero de 1988, art. 9. (Mex.) [Mexico’s Environmental Law].

¹³⁹⁴ *See* Esperanza Durán, *Pemex: The Trajectory of a National Oil Policy*, in *LATIN AMERICAN OIL COMPANIES AND THE POLITICS OF ENERGY*, *supra* note 429, at 151. *See generally* JORGE BASURTO, *EL CONFLICTO INTERNACIONAL EN TORNO AL PETRÓLEO MEXICANO* (Siglo XXI Editores, 2nd ed., 1980).

¹³⁹⁵ *See* U.S. DEPARTMENT OF COMMERCE, *DOING BUSINESS WITH PEMEX 1* (U.S. Department of Commerce, 1980).

this legislation, foreign companies pioneered the petroleum industry in Mexico.¹³⁹⁶

In 1901, the Mexican National Assembly passed the first specific petroleum legislation for the country recognizing private ownership over the subsoil, following the principle set forth in the 1884 Mining Code. This initial petroleum legislation had the objective of encouraging the oil industry principally through granting large concession to foreign investors.¹³⁹⁷ The favorable treatment given to foreign capital and private control of the petroleum industry at the beginning of the 1900s helped spark the Mexican Revolution in 1910.¹³⁹⁸

After the triumph of the Mexican Revolution, however, foreign capital still controlled the petroleum industry in uneasy relationship with the revolutionary government.¹³⁹⁹ The revolutionary government enacted a new Constitution in 1917, which “emphasized that the energy sector had a strategic and nationalistic character.”¹⁴⁰⁰ The Constitution—in its Article 27—invoked the civil law principle of public ownership over subsoil resources.¹⁴⁰¹ Foreign oil companies considered this provision a *de facto* condemnation of property and mineral rights. The government took the position that “under Article 27, the subsoil was not reclaimed by act of expropriation because the nation had *always* owned it, as the preamble to Article 27 stated.”¹⁴⁰² In 1922, the Mexican Supreme Court, hearing a challenge to the retroactivity of Article 27, held that a company’s “positive act” or other evidence that it had intended to produce oil on

¹³⁹⁶ Durán, *supra* note 1394, at 147.

¹³⁹⁷ Jose Juan Gonzalez Márquez, *Mexican Energy Security: Managing Risk in a Dynamic Legal and Regulatory Environment* (2004) (unpublished manuscript on file with author), at 2-3. *See also* Durán, *supra* note 1394, at 147-156.

¹³⁹⁸ Gonzalez Márquez, *supra* note 1397, at 2. *See also* Durán, *supra* note 1394, at 153.

¹³⁹⁹ Durán, *supra* note 1394, at 147.

¹⁴⁰⁰ Gonzalez Márquez, *supra* note 1397, at 2.

¹⁴⁰¹ Durán, *supra* note 1394, at 154; AVALOS, *supra* note 393, at 3.

¹⁴⁰² Durán, *supra* note 1394, at 154 (emphasis in the original). *See also* BASURTO, *supra* note 1394, at 57.

properties it had owned prior to 1917 created vested property rights in the subsoil.¹⁴⁰³

The 1922 Supreme Court decision, nonetheless, did not settle the issue because the Mexican government tried to limit the effect of the Supreme Court's decision. The Petroleum Law of 1925—the first law implementing Article 27—reaffirmed the principle giving the Nation direct ownership of subsoil resources.¹⁴⁰⁴ The 1925 Petroleum Law also declared that the oil industry was in the public interest, and that oil concessions were henceforth to be granted separately for exploration and for production. Further, “[c]oncerning the status of oil field predating the constitution, this new law stated the all operations or contracts signed for the express purpose of developing oil (i.e. the “positive act”) before 1917 were valid, but not for more than fifty years from the date production was started or the contracts signed.”¹⁴⁰⁵

The 1925 Petroleum Law prompted further lawsuits by foreign oil companies. The Supreme Court held that limiting the concessions to fifty years would give this law a retroactive effect and declared unconstitutional certain provisions of the law.¹⁴⁰⁶ Eventually, the National Assembly revised the law, and a decree issued in 1928 confirmed the oil concessions indefinitely.¹⁴⁰⁷ Moreover, an agreement between the governments of Mexico and the United States, determined how the 1925 Petroleum Law should be modified: “concessions without time limits would be confirmed if a company could demonstrate the performance of positive acts before May 1917,”¹⁴⁰⁸ following the Supreme Court's decision of 1922.

¹⁴⁰³ Durán, *supra* note 1394, at 162.

¹⁴⁰⁴ *Id.*

¹⁴⁰⁵ *Id.* at 166.

¹⁴⁰⁶ *Id.* at 163. See AVALOS, *supra* note 393, at 113.

¹⁴⁰⁷ Durán, *supra* note 1394, at 163.

¹⁴⁰⁸ *Id.*

In 1938, the President decreed the expropriation of the oil industry and the creation of the state oil company (*Petróleos Mexicanos, Pemex*) to take over the petroleum industrial properties.¹⁴⁰⁹ The basic legal instrument for reorganizing the oil industry was the 1941 Petroleum Law, “which declared the industry a public utility under federal jurisdiction.”¹⁴¹⁰ Therefore, “federal authorities had the sole right to tax it, to regulate its operations, and to authorize technical and administrative decisions concerning operations.”¹⁴¹¹

Subsequently, the 1941 Petroleum Law was repealed and replaced by the 1958 “Regulatory Law of Article 27 of the Constitution Concerning Petroleum Affairs” (*Ley Reglamentaria del Artículo 27 Constitucional en el Ramo del Petróleo*).¹⁴¹² This law reaffirms the federal government’s absolute monopoly over all phases of hydrocarbon development. Significantly, the 1958 Petroleum Law, which is still Mexico’s principal legislation on hydrocarbons, provides the Nation has direct and inalienable ownership over hydrocarbon resources, as well as the exclusive right to conduct the “petroleum industry”.¹⁴¹³ The 1958 Petroleum Law, as amended in 1995 and 1996, precisely defines the term “petroleum industry”.¹⁴¹⁴

Pemex and its Predecessors

During the period 1925-1938, the Mexican government made its first ventures in the oil business. In 1925 the government set up the *Control de la Administración del*

¹⁴⁰⁹ Gonzalez Márquez, *supra* note 1397, at 3; Durán, *supra* note 1394, at 176.

¹⁴¹⁰ Durán, *supra* note 1394, at 179. See “Ley de Petróleos,” D.O., 18 de junio de 1941 (Mex.).

¹⁴¹¹ Durán, *supra* note 1394, at 179.

¹⁴¹² “Ley Reglamentaria del Artículo 27 Constitucional en el Ramo del Petróleo,” D.O., 29 de noviembre de 1958, art. 10 (Mex.) [Mexico’s Petroleum Law].

¹⁴¹³ *Id.* arts. 1 & 2.

¹⁴¹⁴ *Id.* art. 3.

Petróleo Nacional (CAPN) to compete with private companies.¹⁴¹⁵ In addition to producing oil, the CAPN was allowed to enter the refining market and to regulate the internal prices of petroleum products.¹⁴¹⁶ In 1934, the government ordered the liquidation of CAPN and replaced it with *Petróleos de México* or *Petromex*, a semi-private (mixed) enterprise.¹⁴¹⁷ *Petromex* soon controlled 3 to 4 percent of national production.¹⁴¹⁸ However, *Petromex* did not attract private investors, who only acquired a portion of its total authorized capital.¹⁴¹⁹ By 1937, *Petromex*'s assets had been placed under the direct control of an agency called *Administración General del Petróleo*.¹⁴²⁰ At this point the government was ready to expropriate and nationalize the oil industry.¹⁴²¹

In 1938, the national oil company (*Pemex*) was created to take over the nationalized petroleum industry.¹⁴²² Between 1938 and 1976, the Mexican government's prime objective was to satisfy internal oil demand and to support import-substitution industrialization through subsidized prices.¹⁴²³ During this period, *Pemex* produced large quantities of oil at subsidized prices to benefit consumers and to support industrialization.¹⁴²⁴ *Pemex* became the largest and most important enterprise in Mexico. In 1976, as a consequence of massive oil discoveries, Mexico became a major oil power overnight and was able to remedy a severe national economic crisis and to further boost

¹⁴¹⁵ Durán, *supra* note 1394, at 166.

¹⁴¹⁶ *Id.* at 172.

¹⁴¹⁷ *Id.* at 173.

¹⁴¹⁸ *Id.* at 174.

¹⁴¹⁹ *Id.*

¹⁴²⁰ *Id.* at 174-175.

¹⁴²¹ See generally EDWARD WILLIAMS, MEXICAN HYDROCARBON EXPORT POLICY: AMBITION AND REALITY, INTERNATIONAL ENERGY POLICY (1980); BASURTO, *supra* note 1394, at 57; SENER, EL SECTOR DE ENERGÍA EN MÉXICO, *supra* note 1343, at 13-26. See Durán, *supra* note 1394, at 147.

¹⁴²² Gonzalez Márquez, *supra* note 1397, at 3; Durán, *supra* note 1394, at 176.

¹⁴²³ Durán, *supra* note 1394, at 147.

¹⁴²⁴ *Id.* at 179-181.

Pemex.¹⁴²⁵ Mexico placed the weight of its development strategy on oil, which became its chief export and main revenue source.¹⁴²⁶

By mid-1981, when an abrupt decline in oil prices staggered the economy, Mexico depended on *Pemex* for 75 percent of its exports.¹⁴²⁷ Further, oil reserves also started declining in 1983. By the early 1990s, Mexico moved to restructure its economy, seeking to reduce its dependence on oil exports.¹⁴²⁸ The government followed a free-market approach, opening many sectors of the economy to foreign and private participation, including numerous state-run industries.¹⁴²⁹ But the oil industry escaped this fate—as it would have required a constitutional amendment—though the government did restructure *Pemex* in 1992. This restructuring created four independently operating divisions: *Pemex* Exploration and Production, *Pemex* Gas and Basic Petrochemical, *Pemex* Refining, and *Pemex* Petrochemical.¹⁴³⁰

In any event, Mexico continues to be highly dependent on *Pemex* for its revenues. The federal government relies on *Pemex* for approximately one-third of its budget, with *Pemex* turning over an estimated 60 percent of their annual revenues.¹⁴³¹ *Pemex* is considered the world's fifth largest oil producing company and the single most important entity in the Mexican economy; but experts believe that Mexican crude oil reserves are declining rapidly due to limited funding for exploration activities.¹⁴³² In any event, *Pemex* is considered a symbol of Mexican sovereignty. Thus, there are no plans to pursue

¹⁴²⁵ *Id.* at 145.

¹⁴²⁶ *Id.*

¹⁴²⁷ *Id.*

¹⁴²⁸ WU, *supra* note 458, at 27.

¹⁴²⁹ *Id.*

¹⁴³⁰ “Ley Orgánica de Petróleos Mexicanos y Organismos Subsidiarios,” D.O., 16 de Julio de 1992, art. 3 (Mex.) (Amended in 1993 and 2002, *see* “D.O., 22 de diciembre de 1993,” “D.O., 15 de enero de 2002.”).

¹⁴³¹ *See* SENER, EL SECTOR DE ENERGÍA EN MÉXICO, *supra* note 1343, at 13-26.

¹⁴³² EIA, Mexico, *supra* note 449.

a constitutional amendment that would allow the privatization of the company or the participation of private companies in upstream oil activities.

Current Legal Framework for Oil and Gas

Article 27 of the Constitution, which reserves all hydrocarbon resources exclusively for the Mexican government and expressly prohibits concessions or joint ventures for their exploitation, is currently implemented by the 1958 Petroleum Law, as amended. The Petroleum Law has been amended on three occasions—in 1977, 1995, and 1996—since its passage in 1958.¹⁴³³ Pursuant to the Petroleum Law, *Pemex* is in charge of managing the nation’s exclusive right to develop the oil industry. *Pemex*’s duties include the exploration, exploitation, refining, transportation, storage, and distribution of petroleum (the upstream and downstream oil industry), as well as the production and distribution of petroleum by-products and “basic” petrochemicals. Additionally, the company manages the exploration and exploitation of natural gas (the upstream gas industry).¹⁴³⁴

Pemex has been divested of the monopoly over the downstream natural gas sector, however. Starting in 1995, the transportation, storage, and distribution of natural gas (the downstream gas industry) have been open to private participation and competition.¹⁴³⁵ A Constitutional Amendment in 1995 opened the way for private participation in the transportation, storage, and distribution of natural gas.¹⁴³⁶ In addition, it required a redefinition of what constitutes the “oil industry” in the Petroleum Law.¹⁴³⁷

¹⁴³³ See “D.O., 30 de diciembre de 1977;” “D.O., 11 de mayo de 1995;” “D.O., 13 de noviembre de 1996,” (Mex.).

¹⁴³⁴ See Mexico’s Petroleum Law, *supra* note 1412, arts. 3 (I, II) & 4.

¹⁴³⁵ *Id.* arts. 4 & 13-14.

¹⁴³⁶ CONST. art. 28 (“D.O., 2 de marzo de 1995”) (Mex.).

¹⁴³⁷ See Mexico’s Petroleum Law, *supra* note 1412, arts. 3 & 4.

Although private participation in the upstream oil and gas industry is prohibited, *Pemex* is authorized to enter into service and performance contract arrangements with private parties.¹⁴³⁸ Service and performance contract arrangements between *Pemex* and private parties are termed Multiple Service Contracts, and are designed to comply with Article 27 of the Constitution and the Petroleum Law.¹⁴³⁹ *Pemex* is authorized to subcontract with individuals or companies for services and infrastructure required to develop its activities, provided payment is in cash.¹⁴⁴⁰ The law prohibits *Pemex* from making payment with a share of production results or as a percentage of products obtained in the exploitation.¹⁴⁴¹

Under a Multiple Service Contract, the private company assumes the entire responsibility for performing the contract, and *Pemex* pays the company for the work performed and services rendered.¹⁴⁴² The oil or natural gas produced in a specific field remains the property of *Pemex*. Further, pursuant to the Foreign Investment Law (*Ley de Inversión Extranjera*), drilling services for oil wells are subject to the 49-percent limitation on foreign ownership, unless authorization is obtained to exceed such limit.¹⁴⁴³ Private companies are allowed to sell retail refined petroleum products.¹⁴⁴⁴

The refining of crude oil and the production of basic petrochemicals is reserved to the State pursuant to Article 27 of the Constitution, and is the sole responsibility of *Pemex*. The redefinition of “oil industry” in the Petroleum Law, however, opened the

¹⁴³⁸ *Id.* art. 6.

¹⁴³⁹ *Id.*

¹⁴⁴⁰ *Id.*

¹⁴⁴¹ *Id.*

¹⁴⁴² See *Pemex's* model contract available at <http://www.csm.pemex.com/english/contracts/pdfs/model.pdf>. Examples of works contractors can perform include seismic processing and interpretation and geological modeling. See EIA, Mexico, *supra* note 449.

¹⁴⁴³ “Ley de Inversión Extranjera,” D.O., 27 de diciembre de 1993 (Mex.).

¹⁴⁴⁴ EIA, Mexico, *supra* note 449.

way for private participation in the production of “secondary” petrochemicals. Mexico, unlike most countries, makes a distinction between basic and secondary petrochemicals. *Pemex* has the monopoly over production of basic petrochemicals. Generally, basic petrochemicals are those chemicals derived from the first physical or chemical transformation of crude oil and natural gas.¹⁴⁴⁵ To broaden the scope of private investment in the production of petrochemicals, the Petroleum Law was amended in 1996 to allow the government to reclassify the number of basic petrochemicals.¹⁴⁴⁶ This amendment to the law opened new areas of the petrochemical subsector to private investment.

The Petroleum law also describes the general procedure for an oil or gas exploitation authorization. To begin, the law declares that the oil industry is in the public interest and to takes priority over any other use of the land, its surface, or the sub-soil.¹⁴⁴⁷ It further authorizes that “temporary or definite occupation or expropriation of property shall proceed in all cases where it has been requested by the State or its petroleum industry.”¹⁴⁴⁸

In order to use private lands for petroleum industry operations, *Pemex* must request that the Energy Secretariat (*Secretaría de Energía, Sener*) issue an expropriation or temporary occupation declaration. *Sener* will grant the request only if *Pemex* is able to prove that it previously indemnified the affected persons for damages and economic losses.¹⁴⁴⁹ Nonetheless, to carry out the investigation and superficial exploration of lands

¹⁴⁴⁵ See Mexico’s Petroleum Law, *supra* note 1412, art. 3.

¹⁴⁴⁶ Mexico’s Petroleum Law, *supra* note 1412, art. 3. See *SENER, SECTOR DE ENERGÍA*, *supra* note 1343, at 11 & 43-44.

¹⁴⁴⁷ Mexico’s Petroleum Law, *supra* note 1412, art. 10.

¹⁴⁴⁸ *Id.*

¹⁴⁴⁹ *Id.*

with potential oil reserves, *Pemex* requires *only* an authorization from the *Sener*; thus this activity is excluded from the environmental review process discussed *infra* in section 9.7.¹⁴⁵⁰

The exploitation of petroleum resources requires a specific authorization from the *Sener*.¹⁴⁵¹ In addition, in order to construct or operate facilities for the exploration and exploitation of petroleum, *Pemex* must solicit permission from *Sener*.¹⁴⁵² The Regulation to the Law Regulating Article 27 of the Constitution in Petroleum Affairs (*Reglamento de la Ley que Reglamenta el Artículo 27 de la Constitución en Materia Petrolera*) further describes the general procedure for an exploitation authorization.¹⁴⁵³

The *Sener* may deny *Pemex*'s application for a petroleum authorization, totally or partially, if it determines that the requested area should be or is incorporated in a national reserve zone or if the rights and obligations of third parties would be severely damaged.¹⁴⁵⁴ The *Sener* maintains the Petroleum Registry (*Registro del Petróleo*), which serves as an official record on the status of all petroleum authorization and oil reserve zones.¹⁴⁵⁵ Oil reserve zones are areas having oil exploitation potential that are set aside by presidential decree "in order to assure the future supply of the country."¹⁴⁵⁶

9.3 ELECTRICITY LAW

The fundamental constitutional principles on electricity law are twofold: the Mexican power sector is a strategic sector, and the provision of "electrical public

¹⁴⁵⁰ Mexico's Petroleum Law, *supra* note 1412, art. 7.

¹⁴⁵¹ *Id.* art. 3. See CEC, Environmental Law, Mexico, *supra* note 312, § 21.3.

¹⁴⁵² See CEC Environmental Law, Mexico, *supra* note 312, § 21.

¹⁴⁵³ "Reglamento de la Ley que reglamenta el artículo 27 de la Constitución en Materia Petrolera," D.O., (Mex) [Mexico's Petroleum Regulations].

¹⁴⁵⁴ Mexico's Petroleum Law, *supra* note 1412, art. 7.

¹⁴⁵⁵ See CEC, Environmental Law, Mexico, *supra* note 312, § 21.3.

¹⁴⁵⁶ Mexico's Petroleum Law, *supra* note 1412, art. 8.

services” is reserved for government-owned entities.¹⁴⁵⁷ The Federal Electricity Commission (*Comisión Federal de Electricidad*, CFE) and Center Power and Light (*Luz y Fuerza Centro*, LFC) are the state-owned electricity companies that run the electricity service.¹⁴⁵⁸ CFE is in charge of power generation, transmission, and distribution nationwide; and LFC is responsible for the same activities in Mexico City and surrounding areas.¹⁴⁵⁹ Nevertheless, the Mexican electricity system is completely interconnected and behaves as a sole market, with the exception of the Baja California peninsula, which remains isolated due to technical and economic reasons.

The power sector utilities, CFE and LFC, have enjoyed the monopolistic approach in the power sector since 1938, when the industry was nationalized. Reforms to the Electricity Law, introduced in 1992, however, allow private generation companies, termed independent power producers (IPPs), to sell the power they generate to CFE, as well as companies to self-generate their electric consumption.¹⁴⁶⁰ The 1992 amendment to the Electricity Law altered the definition of the term “public service,” thus allowing private companies to participate in the sector without conflicting with the Constitution.¹⁴⁶¹

Independent power producers are allowed to build, own and operate power generation facilities, and IPP’s power can be used at related industrial companies or sold under long-term contracts to the national public utilities (CFE and LFC).¹⁴⁶² Further,

¹⁴⁵⁷ CONST. arts. 27 & 28 (Mex.); “Ley del Servicio Público de Energía Eléctrica,” D.O., 22 de diciembre de 1975, art.1 (Mex.) [Mexico’s Electricity Law].

¹⁴⁵⁸ See SENER, *EL SECTOR DE ENERGÍA EN MÉXICO*, *supra* note 1343, at 13-26; SENER, *PROSPECTIVA 2001-2010*, *supra* note 1343; OLADE, *POWER SECTOR*, *supra* note 209, at 204.

¹⁴⁵⁹ See IDB, *Power Sector, Mexico*, *supra* note 477, at I.

¹⁴⁶⁰ Mexico’s Electricity Law, *supra* note 1457, arts. 3, 36-38 (as amended in 1992 and 1993 *see* “D.O., 23 de diciembre de 1992,” and “D.O., 22 de diciembre de 1993.”).

¹⁴⁶¹ See IDB, *Power Sector, Mexico*, *supra* note 477, at II.

¹⁴⁶² Mexico’s Electricity Law, *supra* note 1457, art. 36.

IPPs also can gain permits to build larger plants, for electricity sales to “off-takers,” which are large groups of consumers or industrial firms.¹⁴⁶³ IPP’s are also allowed to export electricity or to import electricity, but it must be sold to CFE. Large users or groups of users may also generate or import power and wheel it through the public transmission grid to meet their own requirements.

Since the 1992 reform to the Electricity Law, the private sector has performed most of the power expansion. The CFE generates about 74 percent of the country’s electricity; LFC about 2 percent (with most of its customers in Mexico City and surrounding areas); and *Pemex* generates 4 percent. The private sector generates the remaining percentage, with independent power producers accounting for 14 percent, and self-generation and cogeneration for 6 percent.¹⁴⁶⁴

Since 1999, the government has proposed to reform Mexico’s electricity industry by unbundling activities and allowing more involvement by the private sector. The Mexican National Assembly, however, has stalled the proposed bills. Furthermore, in 2001, the federal government tried to relax the rules for the power sector, but the judiciary stepped in to halt further reform. The case involved an executive order issued in May 2001 that would have allowed private generators to sell their excess electricity to CFE and LFC. In April 2002 the Mexican Supreme Court struck down the executive order. Citing Articles 27 and 28 of the Constitution, the Court held that Mexico’s power sector is reserved exclusively to the State.¹⁴⁶⁵ Thus, the restructuring of the electric power sector requires a constitutional amendment, while further private sector participation in the

¹⁴⁶³ EIA, Mexico, *supra* note 449 (noting that the off-taker market is most active in Baja California).

¹⁴⁶⁴ *Id.*

¹⁴⁶⁵ See Mexican Supreme Court, Constitutional Controversy 22/2001, *supra* note 1343, at 67.

sector requires enabling legislation, which to date has not gained congressional approval.

9.4 RENEWABLE ENERGY AND ENERGY EFFICIENCY LAW

Mexico's energy conservation programs are run by the National Commission for Energy Conservation (*Comisión Nacional de Conservación de la Energía*, CONAE), within the administrative structure of *Sener* (as discussed in the next section). The CONAE is responsible for promoting, evaluating, and coordinating governmental actions in the area of energy conservation, and for the design and implementation of national energy efficiency programs.¹⁴⁶⁶ In addition, the CONAE prepares the Official Mexican Standards (*Normas Oficiales Mexicanas*, NOMs) on energy efficiency; the *Sener* adopts all energy-related NOMs. Around twenty NOMs on energy efficient standards, covering appliances, lighting devices, and machinery, are in effect in Mexico.

Since 1995, CONAE is also responsible for promoting the use, application and development of renewable energy in Mexico. Until 2005, there was no specific legislation for renewable energy in Mexico, except for a resolution that approves a model contract for interconnecting renewable energy resources to the grid issued in 2001. In December 2005, Mexico's Congress approved the Law for the Use of Renewable Energy Sources (*Ley para el Aprovechamiento de las Fuentes Renovables de Energía*), which establishes a Program for the Use of Renewable Energy Sources.¹⁴⁶⁷ This law applies to wind, solar, hydro, ocean, geothermal and biomass energy resources.¹⁴⁶⁸ The stated goal

¹⁴⁶⁶ "Decreto por el que se crea la Comisión Nacional para el Ahorro de Energía, como órgano desconcentrado de la Secretaría de Energía," D.O., 15 de septiembre de 1989 (Mex) [Mexico's CONAE Decree]; "Reglamento Interior de la Comisión Nacional para el Ahorro de Energía," D.O., 15 de agosto de 2001 (Mex.) [Mexico's CONAE Regulations]. See CEC, Environmental Law, Mexico, *supra* note 312, § 21.1.

¹⁴⁶⁷ "Ley para el Aprovechamiento de las Fuentes Renovables de Energía," diciembre de 2005 (Mex.) [Mexico's Renewable Energy Law].

¹⁴⁶⁸ *Id.* art. 2.

is to achieve at least 8 percent participation for renewable energy in the total electrical generation, not including the large hydroelectric facilities, by 2012.¹⁴⁶⁹ This law is clearly a move in the right direction and a fundamental step in order to create a comprehensive legal regulatory framework for renewables in Mexico; but awaits implementation.

9.5 ENERGY AUTHORITIES AND REGULATORY AGENCIES

The Energy Secretariat (*Secretaría de Energía, Sener*) is responsible for Mexico's energy policy, and is the chief administrative authority over energy.¹⁴⁷⁰ The *Sener* also is charged with approving the exploration and production (the upstream activities) of hydrocarbon energy resources.¹⁴⁷¹ Thus, *Sener* has oversight powers over *Pemex*, since upstream oil and gas industries are assigned to *Pemex*. In addition, *Sener* is authorized to issue regulations for the energy sector and to adopt Official Mexican Standards (*Normas Oficiales Mexicanas*, NOMs), thereby providing technical standards for production, commercialization, sales, quality, and management of hydrocarbon activities and products.¹⁴⁷² Regarding environmental protection, *Sener* is specifically directed to adhere to environmental legislation in its oversight of the national energy industries and private participants in energy activities.

Within the administrative structure of *Sener* is a General Office of Security and Environmental Protection (*Oficina General de Seguridad y Protección Ambiental*) and two commissions: the Energy Regulatory Commission (*Comisión Reguladora de Energía*, CRE) and the National Commission for Energy Conservation (*Comisión*

¹⁴⁶⁹ Mexico, *Third National Communication Pursuant to the United Nations Framework Convention on Climate Change* xxxiv (2006) [Mexico's Third UNFCCC Report].

¹⁴⁷⁰ "Ley Orgánica de la Administración Pública Federal," D.O., 28 de diciembre de 1994 (Mex.) [Mexico's Organic Law of the Federal Public Administration], art. 33.

¹⁴⁷¹ "Reglamento Interior de la Secretaría de Energía," D.O., 30 de julio de 1997 (Mex.).

¹⁴⁷² Mexico's Petroleum Law, *supra* note 1412, art. 11.

Nacional de Conservación de la Energía, CONAE). The CRE, created in 1993 as a technical branch of the *Sener*, is responsible for regulating the power sector and the transportation, storage, and distribution (the downstream activities) of natural gas.¹⁴⁷³ The CRE's mission is to foster productive investment and efficient markets to benefit end users.¹⁴⁷⁴ The CONAE is responsible for promoting, evaluating, and coordinating governmental actions in the area of energy conservation, and for the design and implementation of national energy efficiency programs.¹⁴⁷⁵

9.6 INSTITUTIONAL AND LEGAL ENVIRONMENTAL FRAMEWORK

In 1988, the Mexican Congress passed the Environmental Framework Law, also called Ecology Law (*Ley General del Equilibrio Ecológico y la Protección al Ambiente*), providing an institutional and legal environmental system for the country.¹⁴⁷⁶ The Mexican Congress also created the Secretariat of Environment, Natural Resources and Fisheries (*Secretaría del Medio Ambiente, Recursos Naturales y Pesca*, SEMARNAP) in 1994 to centralize federal environmental policy and oversight over natural resource management and environmental protection.¹⁴⁷⁷

The SEMARNAP regulates a broad spectrum of environmental issues related to the energy sector, including the environmental impact review process; the use of national waters; conditions for wastewater discharges into national waters; and the management of

¹⁴⁷³ “Decreto por el que se crea la Comisión Reguladora de Energía como un órgano administrativo desconcentrado de la Secretaría de Energía, Minas e Industria Paraestatal,” D.O., 4 de octubre de 1993, arts. 4-5 (Mex.).

¹⁴⁷⁴ “Ley de la Comisión Reguladora de Energía,” D. O., 31 de octubre de 1995 (Mex.) (as amended, *see* “D.O., 23 de enero de 1998.”).

¹⁴⁷⁵ *See* Mexico's CONAE Decree, *supra* note 1466; Mexico's CONAE Regulations, *supra* note 1466. *See also* CEC, Environmental Law, Mexico, *supra* note 312 § 21.1.

¹⁴⁷⁶ Mexico's Environmental Law, *supra* note 1393.

¹⁴⁷⁷ *See* Mexico's Organic Law of the Federal Public Administration, *supra* note 1470.

natural protected areas and marine ecological zoning programs.¹⁴⁷⁸ In addition, the SEMARNAP issues Official Mexican Standards (NOMs) related to environmental protection of renewable and non-renewable resources.¹⁴⁷⁹ The distinction as to the NOMs issued by the *Sener* and the SEMARNAP is thematic: While the *Sener* is authorized to issue NOMs related to the energy sector in general, mainly the oil and power industries (i.e., production, commercialization, sales, quality and management), and with respect to energy efficiency; the SEMARNAP is authorized to issue the NOMs for environmental protection, including those for the exploration, exploitation and use of renewable and non-renewable natural resources.¹⁴⁸⁰

There are three main agencies under the SEMARNAP to implement its mandate: the National Institute of Ecology (*Instituto Nacional de Ecología*, INE), the National Water Commission (*Comisión Nacional del Agua*, CNA), and the Office of the Attorney General for Protection of Environment (*Procuraduría Federal de Protección al Ambiente*, PROFEPA). The National Institute of Ecology is responsible for the development of environmental policies and regulations, and the issuance of federal environmental permits and licenses, including review and authorization of a project's environmental review.¹⁴⁸¹ The National Water Commission has responsibility for issuing concessions and permits for water withdrawal from and discharge to federal waterbodies.¹⁴⁸² Finally, PROFEPA is the primary federal agency responsible for the

¹⁴⁷⁸ *Id.*; Mexico's Environmental Law, *supra* note 1393, arts. 5 & 6; CEC, Environmental Law, Mexico, *supra* note 312, § 2.

¹⁴⁷⁹ Mexico's Environmental Law, *supra* note 1393, arts. 36-37, 108-109.

¹⁴⁸⁰ *Id.* See CEC Environmental Law, Mexico, *supra* note 312 §§ 2 & 21.3. Associated with the Ecology Law and related regulations, more than 250 environmental standards (NOMs) have been established to regulate areas in air emission, wastewater discharge, hazardous waste, health and safety, etc.

¹⁴⁸¹ See CEC, Environmental Law, Mexico, *supra* note 312, § 2.

¹⁴⁸² *Id.*

enforcement of environmental laws, regulations, and NOMs for the management and disposal of hazardous and industrial waste, air emission, and water pollution.¹⁴⁸³

Non-federal environmental matters are under the jurisdiction of the respective states, the Federal District, and municipalities. As indicated above, under section 9.1, the environmental requirements of the states, the Federal District, and municipalities must meet or exceed federal standards and requirements.¹⁴⁸⁴ These governmental bodies are responsible for land use licensing, construction permitting, and regulation of solid waste disposal.¹⁴⁸⁵

Pemex and its subcontractors, as well as private companies involved in downstream natural gas activities, must adhere fully to the environmental laws. At a federal level, the industry is subject to the federal Environmental Law, federal environmental regulations, and environmental standards (NOMs). In addition, *Pemex* has the general obligation to maintain all its installations in a good sanitary condition, and the company may not abandon materials, equipment, tools, or devices that could be used for other works or that could cause environmental contamination.¹⁴⁸⁶ *Pemex* must also immediately notify the SEMARNAP in the case of an accident that could affect the ecology or contaminate the environment.¹⁴⁸⁷

9.7 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The legal framework for the federal environmental review process is found in the Environmental Framework Law and the implementing regulations (*Reglamento de*

¹⁴⁸³ *Id.*

¹⁴⁸⁴ *Id.*

¹⁴⁸⁵ Mexico's Environmental Law, *supra* note 1393, arts. 7, 8 & 9.

¹⁴⁸⁶ "Ley Orgánica de Petróleos Mexicanos y Organismos Subsidiarios," D.O., art. 11 (XI).

¹⁴⁸⁷ *Id.* See CEC, Environmental Law, Mexico, *supra* note 312, § 21.3.

Impacto Ambiental de la Ley de Ecología).¹⁴⁸⁸ The National Institute of Ecology is responsible for carrying out the federal environmental evaluation.¹⁴⁸⁹ The law defines environmental review as the process of establishing conditions for actions or activities that may cause ecological imbalance or exceed the limits and conditions set forth under the applicable environmental laws or NOMs.¹⁴⁹⁰ Upon assessing the evaluation, the environmental authorities may do one of five things: approve the project, authorize the project under certain conditions, establish additional preventive and mitigation measures, modify the project, or deny the requested authorization.¹⁴⁹¹ If the project is approved, the National Institute of Ecology typically establishes specific conditions that the developer must meet during construction, operation, and decommissioning or abandonment.¹⁴⁹²

Significantly, the process is aimed at protecting the environment, as well as preserving and restoring the ecosystems.¹⁴⁹³ Thus, in carrying out the process, the environmental authorities must take into account the whole affected ecosystem, not only those resources that are being exploited. When serious damage to ecosystems might occur, the authorities may request that compliance with the conditions imposed under the process be supported by an insurance policy or other guarantees.¹⁴⁹⁴ The Ecology Law and the regulations mandate public participation in the process.¹⁴⁹⁵ The evaluation also must take into account special provisions that apply to Federal Natural Protected

¹⁴⁸⁸ Mexico's Environmental Law, *supra* note 1393, Part I, Chapter IV, Section V. *See also* "Reglamento de Impacto Ambiental de la Ley de Ecología," [Mexico's EIA Regulations].

¹⁴⁸⁹ The *Dirección General de Ordenamiento de Zonas Ecológicas e Impacto Ambiental* of the INE is responsible for carrying out the federal EIA process..

¹⁴⁹⁰ Mexico's Environmental Law, *supra* note 1393, art. 28.

¹⁴⁹¹ *Id.* art. 35.

¹⁴⁹² *See* CEC, Environmental Law, Mexico, *supra* note 312, § 21.3.

¹⁴⁹³ *Id.*; Mexico's Environmental Law, *supra* note 1393, art. 35.

¹⁴⁹⁴ Mexico's Environmental Law, *supra* note 1393, art. 35.

¹⁴⁹⁵ *Id.* arts. 157-159.

Areas.¹⁴⁹⁶

The Environmental Framework Law mentions activities in the energy sector that are required to submit an environmental impact study. Specific actions and activities related to the oil and gas sector that require such a study pursuant to the law are: hydraulic works, oil and gas pipelines, and multi-purpose pipelines.¹⁴⁹⁷ Further, all activities considered “oil industry” and “petrochemical industry,” terms which are defined in the Petroleum Law (discussed *supra* at section 9.2), must prepare and submit environmental evaluations. Nonetheless, an addition or expansion of any previously authorized action or activity does not trigger an assessment process, provided that it fully complies with the law, the standards, and regulations.¹⁴⁹⁸

Other activities of the energy industry may require environmental review. These include the disposal of hazardous waste; actions in wetlands, marshes, rivers, lakes, and estuaries, as well as along the littoral and coastal federal areas; actions in natural protected areas under federal jurisdiction. Further, a fallback provision in the Ecology Law, requires environmental assessment of any actions under federal jurisdiction that may cause severe and irreparable ecological imbalances, or exceed the limits and conditions set forth under the provisions of environmental laws.¹⁴⁹⁹

9.8 ENFORCEMENT

Mexico relies, to a large degree, on environmental auditing and voluntary compliance.¹⁵⁰⁰ With respect to federal enforcement, the Federal Attorney General for

¹⁴⁹⁶ *Id.* arts. 44 & 64.

¹⁴⁹⁷ Mexico’s Environmental Law, *supra* note 1393, art. 28 (I & II). *See* Mexico’s EIA Regulation, *supra* note 1488, art. 5 (C), (D) & (E).

¹⁴⁹⁸ *See* Mexico’s EIA Regulations, *supra* note 1488, art. 6.

¹⁴⁹⁹ *Id.* art. 28 (IV), (X), (XI) & (XIII).

¹⁵⁰⁰ *Id.* art. 38.

Environmental Protection (PROFEPA) is the entity in charge of overseeing compliance with federal environmental laws and the terms set forth in environmental licenses. PROFEPA may, where warranted, impose sanctions, including fines, shutdowns, the suspension or revocation of authorizations, and even administrative arrest.¹⁵⁰¹ There are three ways in which PROFEPA initiates enforcement actions: through citizen complaints, through notification from National Institute of Ecology (INE) of possible infringements to the environmental laws, and through its own audits and inspections.¹⁵⁰²

Mechanisms for citizens' enforcement of environmental laws and regulations include: Popular Complaint; Motion for Review; Request for a Technical Report; Criminal Complaint; and *Amparo*. First, any citizen may file a Popular Complaint (*Denuncia Popular*) with PROFEPA for any incident, action or omission that harms, or may harm, the environment or natural resources and that falls within the government's federal jurisdiction.¹⁵⁰³ Second, any affected citizen may file a Motion for Review (*Recurso de Revisión*), which is a request for revision of a decision issued by environmental authorities pursuant to the Environmental Framework Law and its implementing regulations.¹⁵⁰⁴ Third, a petitioner may seek an order for a technical report by the SEMARNAP if the petitioner has been injured or harmed by an alleged violation to the Environmental Framework Law.¹⁵⁰⁵ Fourth, any person may file a criminal complaint with PROFEPA for actions or omissions that constitute federal environmental

¹⁵⁰¹ Mexico's EIA Regulation, *supra* note 1488, art. 47. See CEC Environmental Law, Mexico, *supra* note 312.

¹⁵⁰² See CEC, Environmental Law, Mexico, *supra* note 312.

¹⁵⁰³ Mexico's Environmental Law, *supra* note 1393, art. 190 & 191.

¹⁵⁰⁴ *Id.* arts. 176 & 179.

¹⁵⁰⁵ *Id.* art. 204 (Citizens seeking compensation for the injuries suffered may use the Technical Report in a subsequent civil suit).

crimes.¹⁵⁰⁶ Finally, *Amparo* (discussed *supra* in Chapter 2) is a legal action brought by an aggrieved party that seeks reparation for, or the suspension or annulment of, an act by a governmental authority that violates the plaintiff's individual guaranteed rights.¹⁵⁰⁷

Mexico offers a complex system of *Amparo* proceedings for the protection of individual rights and as a defense against unconstitutional laws and actions.¹⁵⁰⁸ In general,

[a]n *amparo* suit may be brought in regard to: (1) any law or action by authorities that violates an individual right guaranteed under the Mexican Constitution or federal laws; (2) laws or federal official actions that violate or restrict the sovereignty of the states or that of state laws; or (3) official actions that invade the sphere of federal authority.¹⁵⁰⁹

Amparo for the protection of individual rights guaranteed in Mexico can be used in three ways: First, an individual may use a direct *Amparo* to challenge decisions made by state or federal courts, or by administrative tribunals. The direct *Amparo* is brought before a Collegiate Circuit Court or the appropriate Chamber of the Supreme Court, and may be based on both procedural and substantive errors. Second, a person may bring an indirect *Amparo* to challenge an official action, which allegedly violates a constitutional right. The indirect *Amparo* is brought before the District Court where the defendant is located or where the action took place. The proceeding seeks an injunction to the official or agency involved. Third, a party may bring an *Amparo* against a law, challenging the constitutionality of a federal or state law, regulation, or decree. In this last scenario, the decision of the court will be *inter partes*. "Thus, other courts hearing similar appeals in

¹⁵⁰⁶ *Id.* art. 182; "Código Penal Federal," arts. 415 – 420 (Mex.).

¹⁵⁰⁷ CONST. arts.103 and 107 (Mex).

¹⁵⁰⁸ See CEC, Environmental Law, Mexico, *supra* note 312, § 6.3.

¹⁵⁰⁹ *Id.*

the future are not compelled to follow such a ruling until obligatory jurisprudence has been created following five consecutive decisions of the same nature.”¹⁵¹⁰

As a general rule, only parties that are directly affected by a governmental action or a law, regulation, or decree, may file an *Amparo* proceeding in Mexico. However, in cases where the purpose is to seek protection of a collective interest, a collective *Amparo*, is permitted as well (as in Argentina). There are several limitations to *Amparo*, mainly that judicial and administrative remedies must be exhausted before an *Amparo* suit may be brought. Another limitation is that decisions of the Supreme Court are not subject to *Amparo*.

Lack of enforcement of environmental laws in Mexico, particularly in the oil and gas sector is rampant. Oil spills have affected coastal waters, as well as rivers and groundwater systems, killing or adversely affecting large quantities of fish, seabirds, sea turtles and other marine life. In particular, oil spills on Mexico’s Gulf coast have raised questions about the ability of state-owned *Pemex* to manage and control environmental risks, and of the governmental bodies to pursue enforcement actions in order to prevent environmental damage. Mexican environmental agencies seem reluctant to come down hard on *Pemex*. But PROFEPA appears to be taking a harder line. It has launched several investigations of oil spill, which could lead to criminal negligence charges against *Pemex* and any individual employees or subcontractors.

There are examples of active enforcement by PROFEPA, in particular when dealing with large oil spills. One case where enforcement measures were taken relates to an explosion that ruptured one of *Pemex*’s pipelines in December 2004. *Pemex* reported

¹⁵¹⁰ *Id.*

5,000 barrels of crude spilled into a waterway. The oil was carried five miles downstream into the Gulf of Mexico, killing thousands of fish, posing a threat to pelicans and sea turtles, and forcing Mexico to declare a fishing ban. Responding to the spill, PROFEPA ordered the temporary shutdown of three major pipelines and fined *Pemex* the equivalent of US\$200,000.¹⁵¹¹ Environmental groups, however, found the response insufficient, and filed a formal complaint with PROFEPA, demanding a severe economic penalty for the oil spill, studies to determine how much damage has been done and more aggressive action to prevent further accidents.

¹⁵¹¹ *Pemex says bulk of oil-pipeline network “at risk”*, ECOAMÉRICAS, February 2005, Vol. 7, No. 4, at 1 & 9.

CHAPTER 10 – PERU

10.1 CONSTITUTIONAL ISSUES

The Constitution of Peru is relatively straightforward in relation to energy resources. The 1993 Peruvian Constitution proclaims that “[n]atural resources, whether renewable or non-renewable, are patrimony of the Nation. The State is sovereign in their exploitation.”¹⁵¹² However, the Constitution authorizes the Congress to establish conditions for the use of such resources and for granting of concessions to private parties for their exploitation.¹⁵¹³ Under this constitutional authorization, the Congress has passed legislation that has enabled the government to establish a semi-privatized oil industry and a mostly-privatized power industry in the country.

10.2 OIL AND GAS LAW

In 1993, after several decades of operating the oil and gas sector as a state-run monopoly, the government opened the sector to private investment and subjected it to the rules of a competitive market. The reform was aimed at making private companies the main players in the sector. In fact, private entrepreneurs had started oil development in Peru. Thus, a brief background on the development of the Peruvian oil industry helps to understand the sector’s organization and legal regime.

Peruvian oil production began in the early 1900s when British entrepreneurs developed oil fields located in the north coast of the country.¹⁵¹⁴ These oil fields were later acquired by an affiliate of the U.S.-based Standard Oil, which in turn created the

¹⁵¹² CONST. art. 66 (Peru).

¹⁵¹³ *Id.*

¹⁵¹⁴ Brown, *supra* note 1089, at 16.

International Petroleum Company to control the oil fields.¹⁵¹⁵ At this early stage, private concessions were allowed based on the Mining Code, which was influenced by the American common-law concept of property whereby ownership extends both to the surface and the subsurface.¹⁵¹⁶ As noted previously in Chapter 9 (section 9.2), such mining laws had been enacted in Mexico, as exceptions to the civil law doctrine with respect to ownership of the subsurface.¹⁵¹⁷ Subsequently, a controversy regarding ownership over oil and gas resources arose in Peru when “twentieth-century nationalists looked not to the *laissez-faire* liberalism ... but to the Spanish legal heritage of state control.”¹⁵¹⁸ By 1922, the Peruvian government and the International Petroleum Company had to negotiate a settlement on the issue of proprietary rights over subsoil resources.¹⁵¹⁹ In the compromise, the government conceded that subsoil oil resources of the company were to be considered private property.¹⁵²⁰

For more than half a century, the International Petroleum Company exploited its proprietary oil reserves in near monopoly status. In 1968, however, Peru nationalized its oil industry, using the “illegality” of the 1922 compromise as one of its justifications.¹⁵²¹ In 1969 the government created *PetroPeru* to manage the State oil industry after nationalization.¹⁵²² In the following decades, *PetroPeru* exercised the national oil monopoly for both upstream and downstream operations. In 1981, *PetroPeru* was restructured to “facilitate its activities and objectives more expeditiously and with more

¹⁵¹⁵ *Id.*

¹⁵¹⁶ *Id.* at 19.

¹⁵¹⁷ *Id.*

¹⁵¹⁸ *Id.*

¹⁵¹⁹ *Id.*

¹⁵²⁰ *Id.* at 20.

¹⁵²¹ *Id.* at 15, 18 & 22.

¹⁵²² See “Decreto Ley No. 17.753 de 1969,” (Peru).

independence [from the government].”¹⁵²³ The legislature also gave the company a mandate to “preserve the environment, prevent, control and avoid its contamination,” and specifically subjected the company to all environmental laws and regulations.¹⁵²⁴

PetroPeru’s oil monopoly ended in 1993, when the Constitution opened the way for establishing an oil and gas sector that is open to private participation and subject to the rules of a competitive market. This regime change required a creative and elaborate legal framework. To begin, as indicated above, the 1993 Constitution authorizes the legislature to set forth conditions for the utilization of hydrocarbon resources and the conditions for granting concessions over these resources.¹⁵²⁵ Further, it states that a concession grants to its holder a proprietary right.¹⁵²⁶ Also in 1993, Congress passed the Hydrocarbons Law (*Ley Orgánica de Hidrocarburos*) implementing this constitutional provision and creating a new public company for the sector termed *Perupetro*.¹⁵²⁷

The Hydrocarbons Law provides that hydrocarbons in the subsoil (“*in situ*”) are the property of the State.¹⁵²⁸ However, the law adds the following language:

The State grants *Perupetro S.A.* the right of ownership over hydrocarbons extracted so that it will be able to enter into exploration and exploitation contracts, or just exploitation contracts, over these resources under the terms stipulated in this Law.

In keeping with the foregoing paragraph, *Perupetro S.A.’s* property rights over the extracted hydrocarbons will be transferred to the licensees when

¹⁵²³ “Decreto Legislativo No. 43 de 1981,” *El Peruano*, 5 de marzo de 1981 (Peru).

¹⁵²⁴ *Id.* art. 3.

¹⁵²⁵ CONST. art. 66 (Peru).

¹⁵²⁶ *Id.*

¹⁵²⁷ “Ley No. 26.221 de 1993,” *El Peruano*, 20 agosto de 1993, arts. 2, 8 & 13 (Peru) [Peru’s Hydrocarbon Law] (Note: As of 2004, this law had been modified 5 times, by the following laws: Law No. 26.734 of December 30 1996, Law No. 26.817 of June 23, 1997, and Law No. 27.343 of September 01, 2000, Law No. 27.377 of December 7, 2000, and Law No. 27.391 of December 29, 2000.).

¹⁵²⁸ *Id.* art. 8.

the Licensing Contracts are entered into.¹⁵²⁹

Accordingly, *Perupetro* was set up as a “private law state company” to administer the nation’s hydrocarbon resources, to contract for their exploration and production, and to foster private investment in these activities.¹⁵³⁰ Subsequently, *Perupetro* initiated offerings of blocks of land for exploration and production.

The Hydrocarbons Law promotes the development of hydrocarbon resources based on free access to the sector, competition, and seeks to guarantee the stability of oil contracts executed by *Perupetro*.¹⁵³¹ Likewise, it guarantees oil and gas developers the same rates of taxation and foreign exchange regimes as those in force at the date of signing the concession or agreement.¹⁵³² The law provides that upstream hydrocarbon activities may be carried out under the form of license contracts, service agreements, or other contract modalities authorized by the Ministry of Energy and Mines, all of which are governed by private law.¹⁵³³ In any event, the model contract between the Peruvian oil companies *Perupetro* and the potential oil or gas developer includes a clause to ensure compliance with environmental protection.¹⁵³⁴

As a result of the opening of the sector, the major oil producing companies in Peru include national and foreign enterprises. Notwithstanding, the Peruvian government continues to directly participate in upstream and downstream activities of the country's hydrocarbon sector by means of *PetroPeru*, which was authorized to participate in bids

¹⁵²⁹ *Id.* See OLADE, POWER SECTOR, *supra* note 209, at 206.

¹⁵³⁰ “Ley No. 26225 de 1993,” *El Peruano*, 23 agosto de 1993, arts. 1 & 3. (Peru) [*Perupetro’s Law*].

¹⁵³¹ Peru’s Hydrocarbon Law, *supra* note 1525; CONST. art. 62 (Peru).

¹⁵³² Peru’s Hydrocarbon Law, *supra* note 1525, art. 8.

¹⁵³³ *Id.* art. 9.

¹⁵³⁴ See *Perupetro’s License Contract for the Exploration and Exploitation of Hydrocarbons Block: Clause Thirteen—Environmental Protection and Community Relations*, *available at* <http://www.perupetro.com.pe/>.

conducted by *Perupetro*.¹⁵³⁵ *PetroPeru* is not ranked among the first five oil producers, however. As for the gas sector, the main players are the concessionaries of the Camisea gas field.¹⁵³⁶ *PetroPeru* is not a major natural gas producer, and is not part of the Camisea project. In fact, the private sector, not the Peruvian oil company, is developing Peru's vast Camisea natural gas reserves.

10.3 ELECTRICITY LAW

In 1992, the Peruvian government opted to restructure and privatize the country's electricity sector in similar fashion to Argentina and Chile, rather than following Bolivia's approach of "capitalizing" the sector.¹⁵³⁷ Peru used three basic mechanisms to institutionalize a market-approach in the electricity sector.¹⁵³⁸ First, Peru privatized the electricity industry by transferring most state-owned electricity companies to private hands under bidding processes.¹⁵³⁹ Second, Peru fully unbundled its electricity market by splitting the industry into three distinct areas—generation, transmission, and distribution—and by preventing a company in one area from owning a company in another. Other countries, such as Chile, make exceptions to this rule.¹⁵⁴⁰ Finally, Peru established a competitive electricity market by treating the sale of electricity as a commercial business.¹⁵⁴¹ The Peruvian government also privatized transmission and distribution activities in each of the interconnected grid systems.¹⁵⁴²

¹⁵³⁵ "Ley No. 26.224 de 1993," *El Peruano*, 23 de agosto de 1993 (Peru); "Decreto Supremo No. 024-2002-EM," *El Peruano*, 26 de agosto de 2002 (Peru).

¹⁵³⁶ EIA, Peru, *supra* note 449.

¹⁵³⁷ See Armstrong, *supra* note 477, at 479 ("Peru, however, decided to privatize its electric utilities, because it needed an infusion of hard currency in order to stabilize its national bank reserves, thereby allowing it to emerge from international bankruptcy.").

¹⁵³⁸ *Id.*; See also IDB, *Power Sector, Peru*, *supra* note 477; EIA, Peru, *supra* note 449.

¹⁵³⁹ See EIA, Peru, *supra* note 449.

¹⁵⁴⁰ See Armstrong, *supra* note 477, at 278-279.

¹⁵⁴¹ *Id.*

¹⁵⁴² EIA, Peru, *supra* note 449.

The 1992 Electricity Law (*Ley de Concesiones Eléctricas*) forms the backbone of the reform.¹⁵⁴³ In addition to forcing the unbundling of electrical activities in the electricity sector, this law fosters the role of the private sector and sets forth rules for awarding concessions for commercial operations in a competitive manner.¹⁵⁴⁴ It also defines pricing and market entry rules at all levels.¹⁵⁴⁵ In addition, the Electricity Law imposes a duty on the State to prevent environmental degradation from power sector activities and to ensure the rational use of natural resources in the generation, transmission, and distribution of electrical power.¹⁵⁴⁶

The Peruvian Electricity Law provides for the regulation of prices at three levels: sales of energy between generators; payments for use of transmission systems; and the sale of electricity to distribution concessions for the purpose of supplying “public electricity service” to customers.¹⁵⁴⁷ The law specifically states that the prices for other sales and activities will not be regulated.¹⁵⁴⁸ Accordingly, there are four types of transactions in the Peruvian electricity market.¹⁵⁴⁹ The first is a “free market” between major customers, who are defined as those whose consumption exceeds one megawatt. Second, a “spot” market, which applies to transactions at a given moment of supply and demand. Third, an “inter-generators market” exists for transactions between electricity generating companies.¹⁵⁵⁰ Finally, there is a regulated (rate-based) electrical public service system, which applies to all customers whose consumption is less than one

¹⁵⁴³ “Ley 25.844 de 1992,” *El Peruano*, 19 de noviembre de 1992 (Peru) [Peru’s Electricity Law].

¹⁵⁴⁴ *Id.* arts. 22-38.

¹⁵⁴⁵ *Id.* arts. 8 & 42-81.

¹⁵⁴⁶ Peru’s Electricity Law, *supra* note 1543, art. 9.

¹⁵⁴⁷ *Id.* art. 43.

¹⁵⁴⁸ *Id.*

¹⁵⁴⁹ See Armstrong, *supra* note 477, at 481-482.

¹⁵⁵⁰ *Id.* at 482 (“These transactions are calculated at marginal cost corresponding to real time system.”).

megawatt.¹⁵⁵¹

The 1992 Electricity Law created the Electricity Tariffs Commission (*Comisión de Tarifas Eléctricas*) to regulate electricity prices and the System Operation Committee (*Comité de Operación Económica del Sistema*, COES) to be in charge of the dispatch of the system.¹⁵⁵² Peru included dispatch activities in its privatized electricity sector activities.¹⁵⁵³ To that end, the main generators and transmitters in each interconnected system are required to establish an electricity pool (COES).¹⁵⁵⁴

Initially, the COES not only performed dispatch functions but made the calculations to be used by another entity, the Electrical Tariffs Commission, in rate-setting.¹⁵⁵⁵ The Electrical Tariffs Commission was in charge of regulating electricity prices where applicable, but the COES performed the calculations.¹⁵⁵⁶ This complex scheme was abandoned in 2001, when the tariff-setting function was assigned to the Ministry of Energy and Mines' Supervising Body for Investments in Energy (*Organismo Supervisor de la Inversión en Energía*, OSINERG).¹⁵⁵⁷

In 2001, the Congress passed legislation establishing the Social Compensation Fund (FOSE), for the purpose of favoring about 58 percent of electricity users, by reducing the tariff charged to low-income users.¹⁵⁵⁸ This Fund is financed by a nominal

¹⁵⁵¹ *Id.* at 482 (“The rates for these transactions are fixed by a calculus incorporating short-term marginal cost plus distribution value-added costs.”).

¹⁵⁵² Peru’s Electricity Law, *supra* note 1543, arts. 10-21 & 39-41. *See* OLADE, POWER SECTOR, *supra* note 209, at 205.

¹⁵⁵³ *See* Armstrong, *supra* note 477, at 479.

¹⁵⁵⁴ Peru’s Electricity Law, *supra* note 1543, arts. 39-41.

¹⁵⁵⁵ *Id.* art. 41.

¹⁵⁵⁶ Peru’s Electricity Law, *supra* note 1543, arts. 10-21; Armstrong, *supra* note 477, at 481.

¹⁵⁵⁷ “Ley No. 26.734 de 1996,” *El Peruano*, 31 de diciembre de 1996, art. 1 (Peru) [Peru’s OSINERG Law]; “Ley No. 27.699 de 2002,” *El Peruano*, 16 de abril de 2002 (Peru) [Peru’s OSINERG Supp. Law].

¹⁵⁵⁸ “Ley 27.510 de 1997,” *El Peruano*, 28 de agosto de 2001 (Peru).

surcharge on users who consume over 100 kilowatts per hour (less than 3 percent).¹⁵⁵⁹

The Fund, which was set up temporary, was extended in 2004.¹⁵⁶⁰

In 1997, the Congress passed the Law Against Monopoly and Oligopoly in the Electricity Sector (*Ley Antimonopolio y Antioligopolio del Sector Eléctrico*) to limit integration between companies in the generation, transmission, and distribution subsectors.¹⁵⁶¹ The maximum permissible level of control of any conglomerate in the power sector is 15 percent of the total power sector activities.¹⁵⁶² Companies are also limited to controlling 5 percent of the market in any one subsector.¹⁵⁶³

In sum, the key players in the Peruvian electricity sector are:¹⁵⁶⁴ The System Operation Committee (COES), which is made up of the generation and transmission companies of the interconnected system, with the purpose of minimal cost dispatch and settlement of transactions on the market. Electric companies, either power concessionaires or authorized entities, which may be generation, transmission and distribution companies. Free customers, those with demand over 1 megawatt, which negotiate directly with their suppliers under a competition regime. Finally, there is a regulatory agency, OSINERG, which is discussed below under section 10.5.

10.4 RENEWABLE ENERGY AND ENERGY EFFICIENCY LAW

In 1997, the Congress passed another important law for the sector, this time to promote geothermal energy (*Ley Orgánica de Recursos Geotérmicos*).¹⁵⁶⁵ It did so by

¹⁵⁵⁹ See OLADE, Report 2004, Peru, *supra* note 2.

¹⁵⁶⁰ *Id.*

¹⁵⁶¹ “Ley 26.876 de 1997”, El Peruano, 18 de noviembre de 1997, arts. 1-2 (Peru) [Peru’s Law Against Monopoly and Oligopoly in the Electricity Sector]. See IDB, *Power Sector, Peru*, *supra* note 477, at II.

¹⁵⁶² Peru’s Law Against Monopoly and Oligopoly in the Electricity Sector, *supra* note 1561, art. 3.

¹⁵⁶³ *Id.*

¹⁵⁶⁴ See OLADE, POWER SECTOR, *supra* note 209, at 205.

¹⁵⁶⁵ “Ley 26.848 de 1997,” El Peruano, 23 de julio de 1997 (Peru) [Peru’s Geothermal Energy Law].

creating a legal framework for geothermal energy activities, and by providing fiscal incentives to promote these activities (which were not extended to conventional energy resources).¹⁵⁶⁶ The legal framework and economic incentives set forth in the 1997 Geothermal Energy Law has four main features.¹⁵⁶⁷ First, the law defines geothermal resources and allows the creation of a separate legal regime for geothermal development.¹⁵⁶⁸ “In this way, geothermal resources are separated from other resources and allowed to avoid the complexities of integrating geothermal development laws into an already established legal regime, such as the one that exists for hydropower.”¹⁵⁶⁹

Second, pursuant to the Geothermal Energy Law, the Ministry of Energy and Mines bears sole responsibility for the issuance of all licenses, concessions, and permits for everything from initial exploration to production of electricity for the grid.¹⁵⁷⁰ The law sets forth a three-tiered licensing system for geothermal energy: resource license, resource concession, and electricity concession.¹⁵⁷¹

Third, the law states that the resource license or authorization is valid for only three years, but may be extended for another two years. Thus, the holder of a development license has, at most, five years to develop a commercial resource, or the resource reverts to the government.¹⁵⁷² This scheme encourages the quick development of geothermal resources. Within the five-year timeframe the developer may request a concession, which may be granted for up to thirty years.¹⁵⁷³

¹⁵⁶⁶ *Id.* See Armstrong, *supra* note 477, at 492.

¹⁵⁶⁷ See Armstrong, *supra* note 477, at 493.

¹⁵⁶⁸ Peru’s Geothermal Energy Law, *supra* note 1565, at “Título Preliminar”.

¹⁵⁶⁹ See Armstrong, *supra* note 477, at 493.

¹⁵⁷⁰ *Id.* See Peru’s Geothermal Energy Law, *supra* note 1565, art. 3

¹⁵⁷¹ Armstrong, *supra* note 477, at 493.

¹⁵⁷² Peru’s Geothermal Energy Law, *supra* note 1565, at “Título Preliminar,” “Norma IV” & art. 15

¹⁵⁷³ *Id.* art. 18.

Finally, the Geothermal Energy Law provides incentives necessary to allow the geothermal industry to compete with established competitors on a level playing field. As such, geothermal energy receives five economic advantages: an income tax advantage; customs and duties incentives; accounting incentives; convertibility incentives, and revenue incentives.¹⁵⁷⁴ The law does, however, impose a royalty and a charge to fund the regulatory oversight functions, each not to exceed 1 percent of the average price of the electricity generated by the developer.¹⁵⁷⁵

In addition, the law imposes on geothermal energy developers a general duty to protect the environment and liability for environmental damage. It also requires an environmental impact assessment for exploratory or production activities, which is reviewed by the Ministry of Energy and Mines.¹⁵⁷⁶ Therefore, the Ministry of Energy and Mines considers the granting of all the requisite approvals necessary under the law, including environmental review approval and supervision, thereby creating a “one-stop-shop” system for approval of geothermal energy projects.¹⁵⁷⁷ In sum, the Peruvian Congress crafted the Geothermal Energy Law to assure developers from the outset of exploration that if they invest in resource development and fulfill the obligations they undertake, they will be guaranteed to receive the requisite permits, licenses and concessions, as well as economic incentives that will allow them to produce and sell electricity to the grid.¹⁵⁷⁸

¹⁵⁷⁴ *Id.* arts. 32-46; Armstrong, *supra* note 477, at 493.

¹⁵⁷⁵ Peru’s Geothermal Energy Law, *supra* note 1565, art. 23 & 43-46.

¹⁵⁷⁶ *Id.* arts. 47-49.

¹⁵⁷⁷ *Id.*

¹⁵⁷⁸ Armstrong, *supra* note 477, at 493.

10.5 ENERGY AUTHORITIES AND REGULATORY AGENCIES

The highest governmental agency for energy in Peru is the Ministry of Energy and Mines (*Ministerio de Energía y Minas*).¹⁵⁷⁹ This Ministry also serves as the top authority for environmental matters in energy sector.¹⁵⁸⁰ Within the Ministry, the National Energy Council (*Consejo Nacional de Energía*) formulates and implements planning functions.

The Ministry, through its Office of Hydrocarbons (*Dirección General de Hidrocarburos*), is responsible for the fulfillment of the Hydrocarbon Law and for implementing regulations pertaining to the exploration, exploitation, storage, transportation, and commercialization of the hydrocarbon sector.¹⁵⁸¹ The Ministry's National Office of Electricity (*Dirección General de Electricidad*) issues concessions and other authorizations for sector participants in all operating activities, sets technical operational standards, oversees contracts, and undertakes other regulatory and oversight functions. The Ministry's Office of Environmental Affairs (*Dirección General de Asuntos Ambientales*) is the environmental protection agency for the energy sector. However, the National Environmental Council (*Consejo Nacional del Ambiente*, CONAM), sets general environmental policies and standards, as discussed below.

The Supervising Body for Investment in Energy (*Organismo Supervisor de la Inversión en Energía*, OSINERG), established in 1996, is a regulatory entity attached to the Ministry of Energy and Mines.¹⁵⁸² The OSINERG oversees the legal and technical

¹⁵⁷⁹ "Decreto Supremo No. 025-2003-EM," *El Peruano*, 28 de junio de 2003 (Peru) [Peru's MEM Regulations]; Peru's Hydrocarbon Law, *supra* note 1525, art. 3.

¹⁵⁸⁰ "Ley No. 26.821 de 1997," *El Peruano*, 26 de junio de 1997, Tercera Disposición Final, (Peru) [Peru's Natural Resources Law]; Peru's Hydrocarbon Law, *supra* note 1525, art. 33 and 87.

¹⁵⁸¹ Peru's MEM Regulations, *supra* note 1579, arts. 36 & 37.

¹⁵⁸² Peru's OSINERG Law, *supra* note 1557; Peru's OSINERG Supp. Law, *supra* note 1557.

aspects of energy activities in the country.¹⁵⁸³ Further, OSINERG is responsible for monitoring compliance with regulations governing the protection of the environment in energy developments.¹⁵⁸⁴ In sum, OSINERG role is to “supervise energy sub-sector activities to ensure that they comply with the legal provisions and technical standards of the power and hydrocarbons subsectors, and fulfill the provisions relating to environmental protection and conservation ... its duties are normative, regulatory, supervisory, auditing, and penalizing.”¹⁵⁸⁵

In addition, All entities conducting upstream or downstream oil and gas activities must supply OSINERG with pertinent technical and economic information related to their activities.¹⁵⁸⁶ The OSINERG is authorized to impose administrative sanctions in cases of non-compliance with energy legislation or environmental laws and regulations.¹⁵⁸⁷ The resources for OSINERG’s operation come from contributions made by the companies of the sector.¹⁵⁸⁸

As noted earlier, prior to 2001, the Peruvian government also conducted regulatory functions for the electricity sector under a separate agency of the Ministry of Energy and Mines, the Electricity Tariffs Commission, which was responsible for setting, modifying, and revising tariffs.¹⁵⁸⁹ The Electricity Tariffs Commission joined OSINERG since 2001. Currently, OSINERG fixes tariffs for public utilities, transportation and distribution.

¹⁵⁸³ Peru’s OSINERG Law, *supra* note 1582, art. 2; Peru’s Hydrocarbon Law, *supra* note 1525, art. 5.

¹⁵⁸⁴ Peru’s OSINERG Law, *supra* note 1582, arts. 2 & 5; Peru’s Hydrocarbon Law, *supra* note 1525, arts. 5, 33, 87.

¹⁵⁸⁵ See OLADE, POWER SECTOR, *supra* note 209, at 205.

¹⁵⁸⁶ Peru’s OSINERG Law, *supra* note 1582, arts. 2 & 5.

¹⁵⁸⁷ Peru’s Hydrocarbon Law, *supra* note 1525, art. 5, 33 & 87. See Peru’s OSINERG Supp. Law, *supra* note 1582.

¹⁵⁸⁸ See OLADE, POWER SECTOR, *supra* note 209, at 205.

¹⁵⁸⁹ Peru’s Electricity Law, *supra* note 1543, arts. 10-21.

10.6 INSTITUTIONAL AND LEGAL ENVIRONMENTAL FRAMEWORK

Peru's environmental institutional framework involves many governmental bodies and agencies. The National Environmental Council (CONAM), created in 1994, is the body that determines environmental policy.¹⁵⁹⁰ The CONAM is responsible, among other functions, for establishing general criteria for environmental quality, coordinating the issuance of permissible emissions and discharge limits by the various environmental authorities, and determining general criteria for the environmental impact review process.¹⁵⁹¹ In 2001, the Peruvian Congress designated CONAM as the overall coordinator of the environmental review process.¹⁵⁹²

Notwithstanding CONAM's authority in environmental matters, the Office of Environmental Affairs of the Ministry of Energy and Mines is responsible for establishing preventive and mitigating measures to control environmental impacts in the energy sector, as noted in the previous section.¹⁵⁹³ Its powers include the regulation of social impacts derived from energy activities.¹⁵⁹⁴ In addition, this office evaluates and approves environmental assessments for energy activities, evaluates incidents of non-compliance, and proposes adequate and pertinent sanctions.¹⁵⁹⁵

The Ministry of Agriculture (*Ministerio de Agricultura*) is the governmental authority that regulates "the rational use and conservation of natural resources," which include water, soil, flora, and fauna. The Ministry operates through the Natural Institute

¹⁵⁹⁰ "Ley No. 26.410 de 1994," El Peruano, 22 de diciembre de 1994, arts. 2 & 3 (Peru) [Peru's CONAMA Law].

¹⁵⁹¹ *Id.* art. 3.

¹⁵⁹² Peru's EIA Law, *supra* note 1611, arts. 1 & 16. (Peru).

¹⁵⁹³ Peru's MEM Regulations, *supra* note 1579, arts. 38 & 39.

¹⁵⁹⁴ *Id.* art. 39.

¹⁵⁹⁵ *Id.*

of Natural Resources (*Instituto Nacional de Recursos Naturales*, INRENA).¹⁵⁹⁶ The INRENA is required to give a technical opinion before the Ministry of Energy and Mines approves the environmental impact assessment for activities that modify the condition of renewable energy resources or other natural resources that may be involved in energy activities.¹⁵⁹⁷ The INRENA is also the authority in charge of protected areas and natural resources management within these areas. The INRENA must, in the case of energy activities to be developed within protected areas, issue a favorable technical opinion before the Office of Environmental Affairs of the Ministry of Energy and Mines can approve the respective environmental impact assessment.¹⁵⁹⁸

The Ministry of Health (*Ministerio de Salud*) through its Office of Environmental Health (*Dirección General de Salud Ambiental*) is the authority that enforces measures to prevent environmental contamination that create a risk or hazard to human health.¹⁵⁹⁹ The Office of Environmental Health issues regulations for the discharge of waste or contaminating substances into water, air, or soil. It also issues regulations related to hazardous substances and products in order to prevent adverse impacts to human health.¹⁶⁰⁰

The Office of Ports and Coastguards (*Dirección General de Capitanías y Guardacostas*) is the national authority that supervises activities in navigable waters.¹⁶⁰¹ The Coastguard's office coordinates the National Contingency Plan that seeks to prevent

¹⁵⁹⁶ See "Decreto Ley No. 25.902 de 1992," *El Peruano*, 28 de noviembre de 1992 (Peru) [Peru's Organic Law of the Ministry of Agriculture]; "Decreto Supremo No. 17-2001-AG," *El Peruano*, 19 de abril de 2001, arts. 2 & 3 (Peru).

¹⁵⁹⁷ "Decreto Supremo No. 056-97-PCM," *El Peruano*, 17 de noviembre de 1997 (Peru).

¹⁵⁹⁸ Peru's Organic Law of the Ministry of Agriculture, *supra* note 1596, arts. 5, 17 & 19.

¹⁵⁹⁹ "Ley No. 27.657 de 2002," *El Peruano*, 29 de enero del 2002, arts. 2 & 3 (Peru); "Decreto Supremo No. 002-92-SA," *El Peruano*, 20 de agosto de 1992 (Peru).

¹⁶⁰⁰ "Ley No. 27.657 de 2002," *El Peruano*, 29 de enero del 2002, art. 25 (Peru).

¹⁶⁰¹ "Ley No. 26.620 de 1996," *El Peruano*, 7 de junio de 1996 (Peru).

and control the contamination of aquatic resources from dumping or discharges from ships. In particular, the Coastguard's office oversees the loading and unloading of hydrocarbon products.¹⁶⁰²

Finally, the Technical Secretariat of the Commission on Indigenous Peoples (*Secretaría Técnica de la Comisión Nacional de los Pueblos Andinos, Amazónicos y Afroperuanos*) within the Office of the Presidency (*Ministerio de la Presidencia*) must be involved when energy activities affect indigenous people.¹⁶⁰³ This Technical Secretariat is responsible for coordinating and overseeing policies and projects in native communities to ensure respect and conformity to their ethnic and cultural identity and their organization methods. The Ministry of Energy and Mines must consult the Secretariat on the environmental and social impacts of oil and gas activities on indigenous people at the time of reviewing project approval.

Peru drafted the country's post-1990 environmental laws and regulations with an understanding that the energy sector is one of the most polluting activities in the country. The basic environmental statute is the 1990 Environment and Natural Resources Code (*Código del Medio Ambiente y de los Recursos Naturales*).¹⁶⁰⁴ This law establishes general norms for the protection of the environment, as well as the management and conservation of natural resources. Article 73 of the Code states that "[t]he exploitation of energy, its infrastructure, transportation, transformation, distribution, storage and final

¹⁶⁰² *Id.*; "Decreto Supremo No. 028 DE/MGP," *El Peruano*, 25 Mayo 2001, "Parte F" (Peru); "Resolución Directorial No. 562-2003," *El Peruano*, 5 de septiembre de 2003 (Peru).

¹⁶⁰³ "Decreto Supremo No. 111-2001-PCM," *El Peruano*, 5 de octubre de 2001 (Peru); "Decreto Supremo No. 073-2003-PCM," (Peru); "Decreto Supremo No. 012-2003-PCM." (Peru).

¹⁶⁰⁴ "Decreto Legislativo No. 613 de 1990," *El Peruano*, 8 de septiembre de 1990 (Peru) [Peru's Environment and Natural Resources Code].

use must be carried out without contaminating the soil, water or air.”¹⁶⁰⁵

The Natural Resources Code establishes the requirement of an environmental impact assessment for contaminating activities, indicating that such studies must fully describe the activity, including any foreseeable direct and indirect environmental and social impacts in both the short and long-term.¹⁶⁰⁶ The evaluation system established in the statute, however, required further elaboration; and, in 2001, the Peruvian Congress passed legislation creating the National Environmental Impact Assessment System (*Sistema Nacional de Impacto Ambiental*).¹⁶⁰⁷

In 2004, the Peruvian Congress crafted a major overhaul of environmental legislation and passed an Environmental Framework Law, but was vetoed by the President.¹⁶⁰⁸ The veto message stated that the bill “will not be conducive to the economic growth of productive activities that are very important for the country, based on sustainable development and the maximum responsible use of our natural resources.”¹⁶⁰⁹ The veto message noted that several provisions would unduly limit economic development. The provisions cited include measures on citizen participation in environmental oversight, criteria for triggering government anti-pollution action, ceilings on environmental fines, powers of the country’s top environmental authority (CONAM) and procedure for setting emissions standards. The President also faulted the bill for assigning CONAM certain oversight responsibilities currently held by sectoral ministries (such as environmental oversight by the Ministry of Energy and Mines of the energy

¹⁶⁰⁵ *Id.* art. 73.

¹⁶⁰⁶ *Id.* art. 9.

¹⁶⁰⁷ “Ley No. 27.446 de 2001,” *El Peruano*, de 2001, arts. 1 & 16. (Peru) [Peru’s EIA Law].

¹⁶⁰⁸ *See Around the Region: Veto sends environmental law back to drawing board*, ECOAMÉRICAS, Vol. 7, No. 10, at 11.

¹⁶⁰⁹ *Id.*

sector). The President would rather have environmental oversight by entities that specialize in the technical issues relevant to their sectors, and preserve the *status quo*, thereby avoiding antagonizing industries such as hydrocarbons and mining.

10.7 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Under Peru's Environmental Impact Assessment Law, sectoral environmental authorities, such as the Office of Environmental Affairs of the Ministry of Energy and Mining, are responsible for the approval of the assessment of environmental and social impacts derived from activities in their respective sectors.¹⁶¹⁰ The National Environmental Council (CONAM), the body that determines environmental policy, was designated the coordinator of the Environmental Impact Assessment System.¹⁶¹¹

The Environmental Impact Assessment System provides for the issuance of an Environmental Certificate upon approval of the environmental impact statement under a unified procedure applicable to all sectors.¹⁶¹² Pursuant to Peru's Environmental Impact Assessment Law, an environmental evaluation is required for private and public projects or activities that may cause damage to the environment, and must be approved by the competent environmental authority.¹⁶¹³ Peru's system provides general guidelines for the review and approval, establishes categories of projects based on their environmental risk, and sets forth general requirements for public dissemination of the studies and for public participation in the decision-making process.¹⁶¹⁴

¹⁶¹⁰ Peru's EIA Law, *supra* note 1611, art 18.

¹⁶¹¹ Peru's CONAMA Law, *supra* note 1590, arts. 2 & 3.

¹⁶¹² Peru's EIA Law, *supra* note 1611, arts. 3, 6, 7 & 10.

¹⁶¹³ *Id.* arts. 2 & 3.

¹⁶¹⁴ *Id.* arts. 4-14.

10.8 ENVIRONMENTAL REGULATION FOR OIL AND GAS

During the 1990s Peru developed detailed environmental regulations for the hydrocarbons sector, with the particular goal of establishing an adequate legal framework for the Camisea Project.¹⁶¹⁵ The Hydrocarbons Law establishes that all hydrocarbon activities must protect the environment in accordance with the requirements set forth in environmental laws and regulations.¹⁶¹⁶ This provision specifically targets “[d]omestic or foreign individuals or corporations carrying out hydrocarbon activities”.¹⁶¹⁷ Further, this law provides that oil and gas activities shall be performed according to generally accepted international hydrocarbon standards, without prejudice to full compliance with environmental laws.¹⁶¹⁸

The contract between *Perupetro* and the oil or gas developer is another important legal tool to ensure environmental protection in Peru. *Perupetro*’s model “License Contract for the Exploration and Exploitation of Hydrocarbons Block” includes a clause to ensure compliance with environmental protection and community outreach requirements.¹⁶¹⁹ In addition, participants in the hydrocarbons sector can voluntarily commit to standards and requirements required by international lending institutions. The upstream and downstream concessionaries of the Camisea gas field, for instance, have stated that they would comply with such standards, in particular those set forth by the Inter-American Development Bank.¹⁶²⁰

¹⁶¹⁵ For information on *Camisea* see *infra* 10.11.

¹⁶¹⁶ Peru’s Hydrocarbon Law, *supra* note 1525, art. 87.

¹⁶¹⁷ *Id.*

¹⁶¹⁸ *Id.* art. 34.

¹⁶¹⁹ See *Perupetro*’s “License Contract for the Exploration and Exploitation of Hydrocarbons Block,” Clause Thirteen—Environmental Protection and Community Relations, at <http://www.perupetro.com.pe/>.

¹⁶²⁰ See Inter-American Development Bank, PERU, Camisea Project, Environmental and Social Impact Report (June 2003), available at <http://www.iadb.org/exr/doc98/pro/pe02221.pdf>.

The Hydrocarbons Law empowers the Ministry of Energy and Mining with the necessary authority to issue regulations for the protection of the environment in hydrocarbon activities.¹⁶²¹ In addition, it establishes that concessionaries in the oil and gas industry shall protect and secure the workers' health.¹⁶²² The Ministry has issued regulations for various specific activities for the sector, including "Regulations for the Transportation of Hydrocarbons through Pipelines," and "Safety Regulations for the Transportation of Hydrocarbons."¹⁶²³ Pursuant to the latter, concessionaires must prepare a contingency plan and a safety manual for the transportation of hydrocarbons, and submit these plans to the Peruvian energy agency OSINERG for its approval. In case of non-compliance, the OSINERG will determine the pertinent sanctions, and the Ministry has the power to terminate the respective contract.¹⁶²⁴

10.9 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOR OIL AND GAS

The environmental impact assessment process for the oil and gas sector is ruled by the "Regulation for the Protection of the Environment in Hydrocarbon Activities" (*Reglamento para la Protección Ambiental en las Actividades de Hidrocarburos*, hereinafter Hydrocarbons Environmental Assessment Regulations).¹⁶²⁵ The regulations require that developers submit environmental impact studies prepared by a qualified independent consultant registered with the Ministry's Office of Environmental Affairs

¹⁶²¹ Peru's Hydrocarbon Law, *supra* note 1525, at 34.

¹⁶²² *Id.* art. 35. *See also* "Ley No. 26.842," El Peruano, 20 de agosto de 1997 (Peru).

¹⁶²³ "Decreto Supremo No. 041-99-EM," El Peruano, 15 de septiembre de 1999 (Peru); "Decreto Supremo No. 026-94-EM," El Peruano, 10 de mayo de 1994 (Peru).

¹⁶²⁴ Peru's Hydrocarbon Law, *supra* note 1525, art. 35.

¹⁶²⁵ "Decreto Supremo No. 046-93-EM," El Peruano, de 12 noviembre de 1993 (Peru); "Decreto Supremo No. 09-95-EM," El Peruano, 13 de mayo de 1995 (Peru); "Decreto Supremo No. 053-99-EM," El Peruano, 28 de septiembre de 1999 (Peru); "Decreto Supremo No. 003-2000-EM," El Peruano, 28 de enero de 2000 (Peru) [Peru's Hydrocarbons EIA Regulations].

prior to conducting hydrocarbon activities.¹⁶²⁶ The environmental evaluation must attach a social impact assessment, including a socio-economic baseline. The social impact assessment must evaluate potential social, economic, and health impacts on indigenous or rural communities within the project area. It must also provide details of measures the developer will take to prevent, minimize or eliminate these impacts. As indicated earlier, the INRENA is required to give a technical opinion before approval of any activities that would modify the natural condition of renewable natural resources such as water, soil, flora and fauna.¹⁶²⁷

In 2002, the Ministry of Energy and Mining issued the “Regulation for Consultations and Citizen’s Participation in the Approval Process of Environmental Studies in the Energy and Mining Sector” (*Reglamento de Consulta y Participación Ciudadana en el Procedimiento de Aprobación de los Estudios Ambientales en el Sector Energía y Minas*).¹⁶²⁸ Developers must follow this regulation in the preparation and approval process for their environmental plans.¹⁶²⁹ It requires workshops with stakeholders prior to the submittal of any studies, advance notice time of public hearings, and an opportunity for the public to present their comments after public hearings; finally, it establishes requirements on how to carry out public hearings.¹⁶³⁰ In addition, the Ministry’s Office of Environmental Affairs has approved a Community Relations Guide, which establishes the content, requirements and framework for consultation with the project stakeholders.¹⁶³¹

¹⁶²⁶ Peru’s Hydrocarbons EIA regulations, *supra* note 1625, art. 10.

¹⁶²⁷ *Id.* art. 3; *See also* Peru’s EIA Law, *supra* note 1611, art. 10.

¹⁶²⁸ “Resolución Ministerial No. 596-2002-EM/DM,” *El Peruano*, enero de 2003 (Peru).

¹⁶²⁹ *Id.* art. 1.

¹⁶³⁰ *Id.* art. 3.

¹⁶³¹ “Resolución Directoral No. 010-2001-EM/DGAA,” *El Peruano*, 25 de enero de 2001 (Peru).

10.10 OTHER ENVIRONMENTAL LAWS

Other environmental laws have specific provisions that apply to energy projects and activities. For instance, the Forestry and Wildlife Law (*Ley Forestal y de Fauna Silvestre*) requires that the holders of grants for petroleum activities operating within forest areas receive authorization from the INRENA to clear such areas.¹⁶³² Several other environmental laws apply generally to the energy sector. These include the Water Resources Act and the Water Code; the Natural Protected Areas Law (*Ley de Áreas Naturales Protegidas*); and the General Law for the Protection of the Nation's Cultural Heritage (*Ley General de Amparo al Patrimonio Cultural de la Nación*).¹⁶³³ The latter protects and recognizes as cultural heritage archeological and historical sites. It requires developers to certify the absence of archeological remains in the project area.

The rights of indigenous people are particularly important in Peru since the Constitution acknowledges ancestral rights over areas currently occupied by these communities.¹⁶³⁴ The Law for Native Communities (*Ley de Comunidades Nativas*) establishes the structure of indigenous territories in the Amazon rainforest and highland regions as well as the land tenure system for the development of these regions and its habitants.¹⁶³⁵ Moreover, the Peruvian Congress has ratified the International Labor Organization's *Convention on Indigenous People*.¹⁶³⁶ As indicated in Chapter 2, this convention establishes that indigenous peoples shall participate in the formulation,

¹⁶³² "Ley No. 27.308 de 2000," *El Peruano*, 16 de julio de 2000, art. 17 (Peru).

¹⁶³³ "Decreto Supremo N° 0048-91-AG," (Peru); "Ley No. 26.834 de 1997," *El Peruano*, 19 de julio de 1997 (Peru); "Ley No. 24.047 de 1985," *El Peruano*, 1 de mayo de 1985 (Peru); "Ley No. 24.193 de 1985," *El Peruano*, 6 de junio de 1985; "Ley No. 25.666 de 1992," *El Peruano*, 27 de junio de 1992).

¹⁶³⁴ CONST. arts. 88 & 89 (Peru).

¹⁶³⁵ "Decreto Legislativo No. 22.175," (Peru).

¹⁶³⁶ "Resolución No. 26.253 de 17 de enero de 1994," (Peru). See *Indigenous People Convention*, *supra* note 155.

implementation, and evaluation of plans and programs for national and regional development that may affect them directly.¹⁶³⁷

10.11 ENFORCEMENT

Peruvian environmental law suffers from deficiencies and difficulties when the time comes to enforce its provisions. To start, the various levels of government have produced a large number and scattered pieces of environmental legislation, and the effectiveness of this legislation has been graded in the lower end of the scale.¹⁶³⁸ More substantively, Ada Alegre Chang has pointed out that Peru's environmental laws lack coherency and clarity. This author notes that the areas of competency of the various authorities are not clearly defined, and "some laws are supported on contradictory principles or criteria."¹⁶³⁹ She observes that these deficiencies weaken the action of authorities and allow defendants to question enforcement authority.

The institutional framework of environmental management is also criticized as having a strong and pronounced centralized environmental management approach.¹⁶⁴⁰ Even the environmental units of the central government are criticized as weak, due mainly to limited resources. Furthermore, the environmental management model in Peru has also been criticized for lacking coordination of the various economic sectors.¹⁶⁴¹ The coordinating authority, the CONAM, which must articulate the environmental policies and management strategies of the different sectors, has not consolidated effective mechanisms to avoid conflicts of competing interests when setting environmental policy.

¹⁶³⁷ See *supra* Chapter 1 § 1.6.

¹⁶³⁸ See Ada Alegre Chang, *Enforceable Rules and Requirements: The Peruvian Experience Role of the Executive Branch and the Judiciary*, in FARN, COMPLIANCE AND ENFORCEMENT I, *supra* note 36, at 75-76.

¹⁶³⁹ *Id.* at 78.

¹⁶⁴⁰ *Id.*

¹⁶⁴¹ *Id.*

This failure has resulted in conflicts among the various authorities.

On a positive note, with regards to CONAM's performance, in 1997 the Council created the so-called "Structural Frame of Environmental Management," a coordination system of environmental management at different levels that established public participation and inter-agency consultation mechanisms in the drafting and approval of environmental law and regulations.¹⁶⁴² Another positive aspect, in general, has been an increased involvement of citizens in decision-making and in vigilance of environmental law. However, the citizen enforcement culture remains weak, and "some authorities are not very transparent about their own decision making procedures."¹⁶⁴³ Finally, it is worth pointing out that "in Peru there are still no express laws for environmental vigilance by citizens."¹⁶⁴⁴

As noted in the previous sections, enforcement of environmental laws and regulations in the energy sector is carried out by sectoral entities. In most cases, however, it is the complaint of indigenous people or environmental group that prompts enforcement actions. For instance, in May and June of 2005, the OSINERG fined PlusPetrol (a Peruvian subsidiary of Argentina-based oil company PlusPetrol), nearly US\$4 million for environmental damage done in two northern Amazon oil concession areas near Peru's border with Ecuador.¹⁶⁴⁵ The enforcement action followed protests from Achuar indigenous people about pollution in a region along the Corrientes River, which has been affected by three decades of oil extraction in the region. The OSINERG found levels of pollutants exceeding maximum allowable limits in areas along the

¹⁶⁴² *Id.* at 77.

¹⁶⁴³ *Id.* at 79.

¹⁶⁴⁴ *Id.*

¹⁶⁴⁵ *Pluspetrol fined over waterpollution in Peru's Amazon*, ECOAMÉRICAS, July 2005, Vol. 7, No. 9, at 11.

Corrientes River, an area that includes about 30 Achuar communities.¹⁶⁴⁶ Pluspetrol Norte contends, however, that the problem is cumulative: it is caused not only by its current production, but is also damaged left by earlier operations under by state-run *PetroPerú* and U.S.-based Occidental Petroleum.¹⁶⁴⁷

The Camisea Project is an example of developers committing to abide by environmental standards set by financial institutions—in this case the Inter-American Development Bank—and the leverage these institutions have in requiring environmental and social mitigation. But, compliance and enforcement of such standards, in the context of applicable environmental laws and regulations in Peru, remain unresolved. For instance, such standard may not set sufficiently clear criteria to facilitate enforcement.

In any event, the Camisea is one of the most significant energy projects in Latin America.¹⁶⁴⁸ In simple terms, the project consists of natural gas from Peru's huge Camisea field on the east side of the Andes Mountains being pumped over the mountains to Lima and other coastal cities in Peru.¹⁶⁴⁹ However, it is not as simple as it may sound, “[t]he project has been in germination for decades, and illustrates the difficult issues involved in working in one of the world’s most sensitive natural environments.”¹⁶⁵⁰ Indeed, the Smithsonian Institution, hired by the concessionary for the exploration phase of the project (Shell Oil), found “that Camisea was in one of the richest areas of biological diversity in the world.”¹⁶⁵¹ Further, the project area covers the legally recognized

¹⁶⁴⁶ *Id.*

¹⁶⁴⁷ *Id.* (noting that the company has appealed the fines).

¹⁶⁴⁸ See BOSSELMAN ET AL., *supra* note 43, at 648; IDB, Environmental/Social Report Camisea, *supra* note 201.

¹⁶⁴⁹ See BOSSELMAN ET AL., *supra* note 47, at 649.

¹⁶⁵⁰ *Id.*

¹⁶⁵¹ *Id.* (citing to Smithsonian Institution Research Report # 94 (1998)).

and titled territory of several nomadic, isolated, and uncontacted indigenous peoples.¹⁶⁵²

Following is a brief discussion of the project's key social and environmental issues.

Significantly, the IDB recognizes that “[p]ortions of the Camisea Project are located in areas of extremely rich and diverse environmental and social characteristics that require special attention and could be significantly and negatively affected if the project is not properly developed.”¹⁶⁵³ The project area is described as follows:

The Camisea Project extends over a large and sensitive area of considerable variety in terms of geography, climate, flora and fauna, as well as of socio-cultural and economic backgrounds. The direct and indirect area of influence of the project includes three main ecosystems: ... the Peruvian Amazon (rainforest); ... the Andean Mountainous range (highlands); ... the coastal segment (coast). There are four noteworthy environmental and social aspects within the influence of the Camisea Project: (1) the rainforest ... recognized as an important global biodiversity “hotspots” because of its biological richness, high number of endemic species and the presence of threatened species; (2) ... approximately 22 native indigenous communities settlements in the direct and indirect area of influence of the project and the non-contacted or voluntarily isolated groups ...; (3) the highlands area ... in terms of the communities that live in extreme poverty ...; and (4) the Paracas National Reserve located on the coast south of Pisco, which is Peru's only marine reserve, with part of Paracas Bay listed as a RAMSAR site ...¹⁶⁵⁴

Therefore, the IDB's involvement in the Camisea project seeks to demonstrate its “commitment to sustainable development for Peru, including strong environmental and social safeguards.”¹⁶⁵⁵

The Camisea project consists of three separate projects or components: upstream

¹⁶⁵² *Id.*

¹⁶⁵³ IDB, Environmental/Social Report Camisea, *supra* note 201, Executive Summary, at iv.

¹⁶⁵⁴ *Id.* at 8.

¹⁶⁵⁵ *Id.* Executive Summary, at iv.

component, which includes the exploration and exploitation of gas deposits in Camisea, processing, a fractionation plant and a marine terminal for natural gas liquid; downstream component, which consists of the transport of natural gas and natural gas liquids; and distribution component, which consists of distribution of natural gas to Lima and Callao.¹⁶⁵⁶ In September 2003, the IDB's Board of Directors approved providing up to US\$75 million in direct loans to help finance a portion of the Camisea Project's approximately US\$1.6 billion development cost; specifically, a loan to support the transportation component of the project (Downstream Component), which was executed in August 2004.¹⁶⁵⁷ The IDB is not participating in the financing of other two components of the project (upstream and distribution). The commercial operation of the downstream component started in August 2004.¹⁶⁵⁸

The IDB believes the Camisea project can be conducted in an environmentally and socially responsible way, setting conditions on such issues as environmental mitigation and community participation.¹⁶⁵⁹ Specifically, the bank required the creation of a protected corridor to discourage migration into the Amazon rainforest, provided funds for monitoring and recommended project managers reconsider the location of a plant to process gas liquids for export. In the end, the plant was sited in a buffer zone of the Paracas Natural Reserve, Peru's only marine reserve.

The IDB's 2004 environmental and social report summarizes the bank's

¹⁶⁵⁶ *Id.* Executive Summary, at iv. (under the responsibility of Pluspetrol, Transportadora de Gas del Peru and Tractebel, respectively).

¹⁶⁵⁷ *Id.*

¹⁶⁵⁸ *See Toledo launches gas system, touts benefits*, ECOAMÉRICAS, August 2004, Vol. 6, No. 10, at 3; *See also Camisea questions loom over IDB session*, ECOAMÉRICAS, April 2004, Vol. 6, No. 6, at 5.

¹⁶⁵⁹ IDB, Environmental/Social Report Camisea, *supra* note 201, Executive Summary, at iv. *See* Section 8 of the IDB Environmental and Social Impact Report (ESIR) and the Annex to ESIR, *available at* <http://www.iadb.org> (Peru, Camisea).

approach:

The participation of the IDB has clearly made a significant difference in the environmental and social viability of the Camisea Project. For example, the IDB leveraged its presence in the Downstream Component by extending its environmental and social standards to the Upstream Component and ensuring that the GOP [Government of Peru] increased its supervision and monitoring activities and took additional actions to mitigate environmental and social impacts. The IDB has also leveraged its participation beyond just mitigating negative environmental and social impacts to developing and implementing programs that will improve the environmental and social conditions in the area of the Camisea Project and Peru. The IDB participation has also helped establish enhanced knowledge and capabilities, in terms of similar projects, by all parties involved, including civil society, the private sector companies, the Government of Peru, and the financial community. With the ongoing IDB participation continued leverage can be maintained to ensure adequate environmental and social protection measures are adequately and appropriately implemented.

... By taking an integrated and innovative approach to problem-solving, the IDB believes it has been able to leverage its relatively small financial contribution to achieve a greater good for Peru.¹⁶⁶⁰

Despite the IDB's efforts, the Camisea project illustrates that consultation with indigenous people is not an easy undertaking. Communities in the Peruvian Amazon urge more consultation, especially concerning respect for their cultures and quantification of environmental damage.¹⁶⁶¹ Other groups call for an independent environmental audit and question the reliability of consortium-paid monitoring. Concerns also remains over the impact of Camisea in the Nahua-Kugapakori Reserve, an area set aside for Nahua and

¹⁶⁶⁰ *Id.* at v.

¹⁶⁶¹ See *Around the Region: Rough start for Peru's Camisea gas network*, ECOAMÉRICAS, February 2005, Vol. 7, No. 4, at 11.

Nanti indigenous people, some of whom are nomadic and have little or no contact with the outside world. The reserve has been created to protect these groups, and development there is prohibited—except for the Camisea project. But, no specific protection measures were attached to the loan to address the impact on these groups.

Furthermore, lack of environmental enforcement on the first phase of the project has affected public hearings on the second phase. The processing and transport network started operations in 2004.¹⁶⁶² In 2005, after a pipeline failure that sent natural gas liquids into a river, local communities boycotted the hearings on the planned expansion of Camisea.¹⁶⁶³ No fine was imposed by OSINERG, the government agency in charge of monitoring the Camisea development. Indigenous communities demanded that, before attending hearings, they wanted a full report on the cause of the rupture, an inspection of the entire pipeline, payment of damages to the affected communities, sanctions for the pipeline operator and an independent environmental audit of Camisea.¹⁶⁶⁴

Enforcement of laws protecting wetlands from oil and gas projects is another concern.¹⁶⁶⁵ The *Abanico de Pastaza* (also termed *Pastaza fan*) is the largest of Peru's 10 *Ramsar* sites.¹⁶⁶⁶ The *Abanico* wetland system is found in the Amazon, and includes Lake Rimachi, the largest lake in the Peruvian Amazon. Rimachi Lake forms part of an intricate wetland system along the Pastaza River and several contiguous watersheds in northern Peru, near the Ecuadorian border. The wetland system also help sustain indigenous Candoshi, Achuar and lowland Quechua people.

¹⁶⁶² See also *Toledo launches gas system, touts benefits*, ECOAMÉRICAS, August 2004, Vol. 6, No. 10, at 3.

¹⁶⁶³ See *Around the Region: Rough start for Peru's Camisea gas network*, ECOAMÉRICAS, February 2005, Vol. 7, No. 4, at 11.

¹⁶⁶⁴ *Id.*

¹⁶⁶⁵ *Occidental project in Peru raises wetland worries*, ECOAMÉRICAS, 2004, Vol. 6, No. 11, at 1 & 9.

¹⁶⁶⁶ *Id.*

In 2004, U.S.-based Occidental Petroleum signed a contract with the Peruvian government to explore for oil in a track of land which overlaps the wetlands. The company has been consulting with indigenous to use their lands for exploration. The *Abanico* wetland system, however, in a state of regulatory limbo: it is has not been designated a protected area and the country has no legislation related to *Ramsar* sites as such. Moreover, the oil concession predates the designation of the *Abanico* wetlands as a *Ramsar* site. Thus, environmental agencies have not acted to require special protection measures. While protected status or designation under *Ramsar* in Peru does not preclude hydrocarbon projects, it should impose a higher environmental scrutiny.

CHAPTER 11 – VENEZUELA

11.1 CONSTITUTIONAL ISSUES

The 1999 Constitution of Venezuela declares that all hydrocarbon deposits, in whatever form or nature, that exist within the territory are public domain.¹⁶⁶⁷ Similarly, all waters within the country are public domain; the legislature is given the power to regulate the use and protection of water resources.¹⁶⁶⁸ As a general rule, the exploitation of renewable and non-renewable natural resources or the provision of public services can be carried out by non-state actors under concession and adequate royalties.¹⁶⁶⁹ But the Constitution of Venezuela specifically reserves for the State, “the petroleum industry and other industries, exploitations, services or goods of public interest and strategic nature.”¹⁶⁷⁰ Further, the Constitution explicitly bans the privatization of Venezuela’s national petroleum company (*Petroleos de Venezuela*, PdVSA).¹⁶⁷¹

Sustainability and environmental equilibrium are principles stated in the preamble to the Constitution and are later developed in many provisions.¹⁶⁷² In particular, an entire chapter deals with environmental rights and sustainable development, placing emphasis in environmental planning and zoning and requiring the use of environmental impact review for polluting activities.¹⁶⁷³ Any authorization or concession granted by the State for the use of natural resources is presumed to include a clause requiring compliance with

¹⁶⁶⁷ CONST. art. 12 (Venez.).

¹⁶⁶⁸ *Id.* art. 304.

¹⁶⁶⁹ *Id.* art. 113.

¹⁶⁷⁰ *Id.* art. 302.

¹⁶⁷¹ *Id.* art. 303.

¹⁶⁷² *Id.* “Preambulo”.

¹⁶⁷³ *Id.* arts. 127-129.

all environmental norms.¹⁶⁷⁴

As stated in earlier chapters, Venezuela has a federal system. Notably, the municipalities are charged with regulation land use and planning; environmental protection and public services, including electricity, residential natural gas service, and sewage.¹⁶⁷⁵ Finally, sustainable development and environmental protection are mentioned in the socioeconomic guiding principles of the State.¹⁶⁷⁶

11.2 OIL AND GAS LAW

Venezuela started developing its oil industry around 1917 when oil was discovered in the Gulf of Maracaibo.¹⁶⁷⁷ From the 1920s to the 1950s Venezuela was the world's leading exporter of petroleum.¹⁶⁷⁸ As such, Venezuela was a founding member of OPEC in the 1960s and has been a major player in the organization ever since.¹⁶⁷⁹ Private companies dominated the country's vast oil industry entirely until the mid-1970s. Moreover, two foreign oil corporations—U.S.-based Standard Oil and Royal Dutch-Shell—controlled the oil industry almost exclusively.¹⁶⁸⁰

In 1971, the Congress of Venezuela passed legislation requiring the oil companies to post bonds in order to guarantee that oil fields and facilities were turned over to the government in good condition at the expiration of the concessions, a first move toward the nationalization of the oil industry.¹⁶⁸¹ Later that year Venezuela nationalized natural

¹⁶⁷⁴ *Id.* art. 129.

¹⁶⁷⁵ *Id.* art. 178.

¹⁶⁷⁶ *Id.* art. 299

¹⁶⁷⁷ See Edwin Lieuwen, *The Politics of Energy in Venezuela, in Latin American Oil Companies and the Politics of Energy* 192 (John D. Wirth, ed., University of Nebraska Press, 1985).

¹⁶⁷⁸ *Id.* (noting that “from 1926 to 1947 her production exceeded that of the entire Middle East combined”).

¹⁶⁷⁹ *Id.* at 207.

¹⁶⁸⁰ *Id.* (noting that “[t]hese were vertically integrated businesses”).

¹⁶⁸¹ *Id.*

gas.¹⁶⁸² In 1973, the Congress reserved for the State the exploitation of the domestic market of oil products.¹⁶⁸³ The formation of the national oil company, *Petróleos de Venezuela* (PdVSA), followed in 1975.¹⁶⁸⁴ A year later, the petroleum industry was completely nationalized under the Hydrocarbons Nationalization Law (*Ley Orgánica que Reserva al Estado la Industria y el Comercio de los Hidrocarburos*).¹⁶⁸⁵ The government took back all oil concessions in a negotiated process.¹⁶⁸⁶

The Hydrocarbons Nationalization Law completely reserved to the State all activities relating to the exploration, exploitation, manufacture, refining, storage, transportation, and domestic and foreign sales of hydrocarbons and oil products, except for case-by-case, congressionally approved partnerships with the private sector.¹⁶⁸⁷ Pursuant to this law, PdVSA was charged with the development and administration of Venezuela's huge oil and gas resources. Nationalization was ratified by the 1999 Constitution, which specifically reserves state-ownership and control of all hydrocarbon deposits.¹⁶⁸⁸ Further, the Constitution that explicitly bans the privatization of PdVSA.¹⁶⁸⁹

In 1999, the Natural Gas Law (*Ley Orgánica de Hidrocarburos Gaseosos*) opened the country's natural gas sector to private capital, including foreign investment, nonetheless, in certain exploration and production, transmission, and distribution

¹⁶⁸² *Id.* at 211.

¹⁶⁸³ "Ley que Reserva al Estado la Explotación del Mercado Interno de los Productos Derivados de Hidrocarburos," G.O., 22 de junio de 1973 (Venez.).

¹⁶⁸⁴ "Decreto No. 1123 de agosto 30 de 1975," (Venez.).

¹⁶⁸⁵ "Ley Orgánica que Reserva al Estado la Industria y el Comercio de los Hidrocarburos," G.O., 29 de agosto de 1975 [Venezuela's Hydrocarbons Nationalization Law]. *See generally* RÓMULO BETANCOURT, VENEZUELA'S OIL (Donald Peck trans., George Allen & Unwin, 1978); GUSTAVO CORONEL, THE NATIONALIZATION OF THE VENEZUELAN OIL INDUSTRY (Lexington Books, 1983); LAURA RANDALL, THE POLITICAL ECONOMY OF VENEZUELAN OIL (Praeger 1987). *See* Lieuwen, *supra* note 1677, at 212.

¹⁶⁸⁶ *See* Lieuwen, *supra* note 1677, at 213.

¹⁶⁸⁷ Venezuela's Hydrocarbons Nationalization Law, *supra* note 1685, arts. 1 & 5.

¹⁶⁸⁸ CONST. art. 12 (Venez.).

¹⁶⁸⁹ *Id.* arts. 302-303.

activities.¹⁶⁹⁰ Specifically, the Natural Gas Law regulates exploration and exploitation activities of non-associated hydrocarbon deposits; it also regulates the collection, storage and use of gas, whether it is gas produced in association with oil or a non-associated gas.¹⁶⁹¹ In addition, the law regulates the processing, industrialization, transportation, distribution, and foreign trade of gas.¹⁶⁹² No company is allowed to explore, produce, or transport natural gas within the same geographic region.¹⁶⁹³

Currently, the 2001 Hydrocarbon Law (*Ley de Hidrocarburos*) regulates all aspects of oil exploration, exploitation and production, as well as manufacturing, refining, transportation, and storage activities.¹⁶⁹⁴ This law also establishes the tax and royalties regime for hydrocarbons.¹⁶⁹⁵ PdVSA is authorized to enter into joint ventures for oil exploration and production with foreign investors, provided that PdVSA hold a 51 percent stake in any new exploration and production agreement.¹⁶⁹⁶ Nonetheless, the government decided to take a majority stake in all existing ventures (whether formed post-Hydrocarbons Law or earlier) in the upstream sector by early 2007.

In addition to controlling oil and natural gas production in Venezuela, PdVSA's has foreign holdings, mainly refining and marketing interests and assets, spread out in the Caribbean, the United States and Europe, including a wholly owned U.S. company, (CITGO) with refining and marketing operations in the United States.¹⁶⁹⁷ PdVSA ranks

¹⁶⁹⁰ "Decreto No. 310 de 1999 con Rango y Fuerza de Ley," G.O., 23 de septiembre de 1999, art. 2 (Venez.) [Venezuela's Natural Gas Law]; "Decreto No. 840 de 2000," G.O., 5 de junio de 2000 (Venez.) [Venezuela's Natural Gas Regulations].

¹⁶⁹¹ Venezuela's Natural Gas Law, *supra* note 1690, art. 2; BAKER & MCKENZIE, *supra* note 421, at 192.

¹⁶⁹² Venezuela's Natural Gas Law, *supra* note 1690, art. 2.

¹⁶⁹³ *Id.* art. 9.

¹⁶⁹⁴ "Decreto con fuerza de ley No. 1510 de 2001," G.O., 13 de noviembre de 2001 (Venez.) [Venezuela's Hydrocarbons Law], arts. 1-2.

¹⁶⁹⁵ *Id.* arts. 44-55.

¹⁶⁹⁶ Venezuela's Hydrocarbons Law, *supra* note 1694, art. 22.

¹⁶⁹⁷ *Id.*

as one of the world's largest oil companies, and contributes approximately two-thirds of the Venezuelan government's revenues.¹⁶⁹⁸ PdVSA is also a significant participant in the country's petrochemical industry, and the government has assigned it exclusive rights to explore and exploit coal deposits in the Guasare region on behalf of the nation.

11.3 ELECTRICITY LAW

Electric sector reform in Venezuela started in 1996 and continued through the end of the decade.¹⁶⁹⁹ The 1999 Electricity Law provides the framework for the restructuring of the power sector in Venezuela.¹⁷⁰⁰ This law “establishes the creation of a Wholesale Power Market, based on the principle of free competition in energy production and marketing activities.”¹⁷⁰¹ The Electricity Law applies to the following activities: generation, transmission, distribution, operation, and management of the interconnected system, as well as to the marketing of energy and power as separated activities. All of these activities are, in theory, open to private investment.¹⁷⁰² However, in 2006, the government decided to buy-out foreign investments in the electrical power sector, as discussed further below.

The Electricity Law requires the unbundling of electrical activities and guarantees open access to transmission and distribution.¹⁷⁰³ The law also establishes legal, accounting, and management separation between generation, transmission, distribution, and marketing of electricity companies.¹⁷⁰⁴ Thus, no single company may undertake

¹⁶⁹⁸ See Lieuwen, *supra* note 1677, at 189.

¹⁶⁹⁹ See IDB, *Power Sector, Venezuela*, *supra* note 477.

¹⁷⁰⁰ “Decreto No. 319 de 1999 con Rango y Fuerza de Ley,” G.O., 17 de septiembre de 1999 (Venez.) [Venezuela’s Electricity Law].

¹⁷⁰¹ See OLADE, *POWER SECTOR*, *supra* note 209, at 209.

¹⁷⁰² Venezuela’s Electricity Law 1700, arts. 1 & 24-39.

¹⁷⁰³ *Id.* art. 3.

¹⁷⁰⁴ *Id.* art. 6; IDB, *Power Sector, Venezuela*, *supra* note 477, at II.

more than one of the generation, transmission, or distribution activities in the sector.¹⁷⁰⁵

The national transmission network, formed in 1968, became a separate state-run enterprise to connect power generators with local distributors.¹⁷⁰⁶

Vertically integrated electric companies were required to divide generation, transportation, distribution, and marketing assets into independent companies by 2003.¹⁷⁰⁷ Nonetheless, the restructuring occurred mainly in the generation and marketing functions. Distribution and transmission remain regulated businesses. Hydroelectric plants are to remain under state control due to their strategic importance.¹⁷⁰⁸

In December 2001, the Organic Electric Utilities Law (*Ley Orgánica del Servicio Eléctrico*) was passed.¹⁷⁰⁹ This law modified the terms initially established for commencement of operations by the regulatory agency, the Electric Power National Commission (*Comisión Nacional de Energía Eléctrica*, CNEE) (see *infra* section 11.4). It also affected the initiation of operations by the Electric System National Administration System (*Centro Nacional de Gestión del Sistema Eléctrico*, CNG), in charge of Wholesale Power Market administration and operation.

The Electricity Law also reserves for the State, through the Energy and Mines Ministry, the right to fix tariffs for generation, transmission, distribution, and marketing.¹⁷¹⁰ In 1999, a joint resolution of the Ministry of Energy and Mines and the Ministry of Industry and Commerce established the basic rates applicable during a Four-

¹⁷⁰⁵ Venezuela's Electricity Law 1700, art. 6.

¹⁷⁰⁶ See IDB, *Power Sector, Venezuela*, *supra* note 477, at I.

¹⁷⁰⁷ Venezuela's Electricity Law 1700, arts. 120-121.

¹⁷⁰⁸ *Id.* art. 3; IDB, *Power Sector, Venezuela*, *supra* note 477, at I.

¹⁷⁰⁹ "Ley Orgánica del Servicio Eléctrico," 22 de octubre de 2001 (Venez.) [Venezuela's Organic Electric Utilities Law]; "Ley de Reforma Parcial del Decreto con Rango y Fuerza de Ley de Servicio Eléctrico," 12 de diciembre de 2001 (Venez.).

¹⁷¹⁰ Venezuela's Electricity Law 1700, arts. 77-86. See IDB, *Power Sector, Venezuela*, *supra* note 477, at II.

Years Tariff Regime (1999 to 2002).¹⁷¹¹ The Energy and Mines Ministry was to adjust tariffs semi-annually to reflect fluctuations in inflation and the currency exchange rate; and monthly to reflect fluctuations in fuel cost. But, in 2003, a governmental decree established price controls of basic goods and services including electricity.¹⁷¹²

Despite the reform, the power sector continues to be dominated by state-owned entities that have a high degree of vertical integration. State-owned enterprises supply over 80 percent of the electricity demand.¹⁷¹³ The State-owned *Electrificación de Caroni* (EDELCA) generates over 70 percent of all the electricity produced in the interconnected system and owns about 60 percent of the total installed capacity.¹⁷¹⁴ Venezuela's second largest generating company by capacity is state-run *Compañía Anónima de Administración y Fomento Eléctrico* (CADAFE), a previously vertically integrated monopoly that was divided into four regional distribution companies, several generation companies, and a transmission company. Privately owned distribution companies own about 10 percent of the generation capacity and buy most of their requirements from the state-owned generators.¹⁷¹⁵ After the reform, the country's largest private-sector electricity utility became *Electricidad de Caracas*, but the federal government through PdVSA's budget, moved to take control of this utility from its foreign and local investors in 2006.¹⁷¹⁶

Four companies supply 95 percent of the interconnected system: EDELCA, CADAFE, *Electricidad de Caracas*, and *Empresa de Energía de Venezuela* (Enelven). In

¹⁷¹¹ See EIA, Venezuela, *supra* note 449.

¹⁷¹² *Id*

¹⁷¹³ *Id.*

¹⁷¹⁴ *Id*; IDB, *Power Sector, Venezuela*, *supra* note 477, at I.

¹⁷¹⁵ IDB, *Power Sector, Venezuela*, *supra* note 477, at I.

¹⁷¹⁶ See EIA, Venezuela, *supra* note 449.

short, although restructured, the power sector lacks market competition and there is no clear separation of roles. The government performs policy-setting, regulatory and commercial functions for the sector. It will dominate the sector again for years to come.

11.4 ENERGY AUTHORITIES AND REGULATORY AGENCIES

The Ministry of Energy and Mines (*Ministerio de Energía y Minas*) sets the energy policy for the country. In particular, it is in charge of oil and natural gas policy and it oversees the entire oil industry.¹⁷¹⁷ The Ministry is empowered to inspect, enforce, and sanction any violations to oil and gas legislation.¹⁷¹⁸ The Natural Gas Law created the National Entity for Natural Gas (*Ente Nacional del Gas*) in 1999 to act as the regulatory agency for downstream natural gas activities.¹⁷¹⁹ The *Ente Nacional del Gas* is organized under the administrative structure of the Ministry of Energy and Mines. Tariff setting for final consumers of natural gas is under the Ministry of Energy and Mines and the Ministry Production and Commerce, while ENAGAS develops the bases for tariff definition.¹⁷²⁰

The Electricity Law established the Electric Power National Commission for Electricity (*Comisión Nacional de Energía Eléctrica*, CNEE) to regulate and oversee the power sector.¹⁷²¹ As noted earlier, the 2001 Organic Electric Utilities Law modified the terms initially established for commencement of operations the CNEE and of the Electric System National Administration System (*Centro Nacional de Gestión del Sistema*

¹⁷¹⁷ Venezuela's Hydrocarbons Law, *supra* note 1694, art 8; Venezuela's Natural Gas Law, *supra* note 1690, art. 6.

¹⁷¹⁸ Venezuela's Hydrocarbons Law, *supra* note 1694, arts. 8, 66 & 67; Venezuela's Natural Gas Law, *supra* note 1690, arts. 6, 51 & 52.

¹⁷¹⁹ Venezuela's Natural Gas Law, *supra* note 1690, art. 36; "Resolución No. 194 de 2002," G.O., 14 de agosto de 2002 (Venez.). See OLADE, POWER SECTOR, *supra* note 209, at 209.

¹⁷²⁰ See OLADE, POWER SECTOR, *supra* note 209, at 209.

¹⁷²¹ Venezuela's Electricity Law 1700, arts. 15-23; IDB, *Power Sector, Venezuela*, *supra* note 477, at II.

Eléctrico, CNG), in charge of Wholesale Power Market administration and operation.

11.5 INSTITUTIONAL AND LEGAL ENVIRONMENTAL FRAMEWORK

Venezuela began its efforts towards establishing a comprehensive environmental legal framework in the 1970s and 1980s. The 1976 Environmental Framework Law (*Ley Orgánica del Ambiente*) sets forth “the governing principles for the conservation, management and improvement of the environment for the purpose of upgrading the quality of life.”¹⁷²² It further declares, “the conservation, management and improvement of the environment are of public interest.”¹⁷²³ This law governs all “activities that may degrade the environment.” It also provides a definition of such activities.¹⁷²⁴ The essence of the law is to allow activities that could cause reparable damage to the environment, provided that the activities bring apparent economic or social benefits to the country.¹⁷²⁵ Its stated goal is that the corresponding environmental authorizations establish pertinent conditions, limitations, and restrictions as well as guaranties, procedures, and rules for correcting the damages that are caused.¹⁷²⁶

The Ministry of the Environment and Renewable Natural Resources (*Ministerio de Medio Ambiente y de los Recursos Naturales*, MARN), created in 1976, is the highest-ranking entity in charge of overseeing activities capable of contaminating the environment, and monitoring compliance with environmental laws and regulations.¹⁷²⁷ The MARN has regional offices throughout the country. Environmental permits are

¹⁷²² “Ley Orgánica del Ambiente,” G.O., 16 de junio de 1976 (Venez.) [Venezuela’s Environmental Law], art. 1. See Nolon, *supra* note 424, at 718.

¹⁷²³ Venezuela’s Environmental Law, *supra* note 1722, art. 2.

¹⁷²⁴ *Id.* arts. 19 & 20.

¹⁷²⁵ *Id.* art. 21; BAKER & MCKENZIE, *supra* note 421, at 172.

¹⁷²⁶ See BAKER & MCKENZIE, *supra* note 421, at 172.

¹⁷²⁷ See “Decreto No. 1475 de 2001,” G.O., 17 de Octubre de 2001, art. 12 (Venez.) [Venezuela’s MARN Decree]; Venezuela’s Environmental Law *supra* note 1722, arts. 8-18.

granted directly by the regional offices of the MARN. As noted by Professor John R. Nolon, “Venezuela, like Brazil and Argentina [as well as Mexico], has a federal, but less decentralized governmental structure.”¹⁷²⁸

In 1983, Venezuela passed another key environmental statute: the Land Use Planning Framework Law (*Ley Orgánica para la Ordenación del Territorio*).¹⁷²⁹ “It defines land planning as the regulation of the siting of human settlements and the development of the territory with a view toward securing harmony between the welfare of the people, the use of natural resources and the protection of the environment.”¹⁷³⁰ The concerns of this law, as noted by Professor Nolon, are broad indeed and include the optimum use of the territory; harmonious regional development; integrated agricultural development and country planning; efficient process of urbanization; the layout of transportation networks; environmental conservation; and the rational use of natural resources.¹⁷³¹

Significantly, both laws provide that companies undertaking activities in the oil and gas sector must rationally use hydrocarbons resources, use “best scientific practices” and protect the environment.¹⁷³² To that end, both the Hydrocarbons Law and the Natural Gas Law, require companies operating in the sector to fully disclose to the government the impact of their activities and provide any information required of them.¹⁷³³ Notably,

¹⁷²⁸ Nolon, *supra* note 424, at 716.

¹⁷²⁹ “Ley Orgánica para la Ordenación del Territorio,” G.O., 11 de agosto de 1983, arts. 49, 53 & 76. (Venez.) [Venezuela’s Organic Land Use Planning Law]. *See also* “Ley Orgánica para la Planeación Urbana,” G.O., 16 de Octubre de 1987 (Venez.); CONST. art. 128 (Venez.) (requiring the state to adopt a national zoning policy).

¹⁷³⁰ Nolon, *supra* note 424, at 716 (citing to Venezuela’s Land Use Planning Law, tit. I, § 2).

¹⁷³¹ *Id.* (citing to Venezuela’s Organic Land Use Planning Law, § 3).

¹⁷³² Venezuela’s Hydrocarbons Law, *supra* note 1694, art. 19; Venezuela’s Natural Gas Law, *supra* note 1690, art. 15.

¹⁷³³ Venezuela’s Hydrocarbons Law, *supra* note 1694, arts. 5 & 20; Venezuela’s Natural Gas Law, *supra* note 1690, arts. 3 & 14.

pursuant to the Electricity Law, the power sector is required to rationally use the natural resources, encourage non-conventional electric generation and its use, comply with land-use planning, protect the environment, and respect the rights of consumers.¹⁷³⁴

11.6 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Neither the Environmental Framework Law nor the Land Use Planning Framework Law required the preparation and submission of an environmental impact assessment. Eventually, a presidential decree in 1996, implementing both laws, adopted regulations establishing an environmental review process in the country.¹⁷³⁵ Moreover, the 1999 Constitution categorically stated that any activity that may damage ecosystems requires environmental and social impact studies.¹⁷³⁶

Pursuant to the environmental impact assessment regulations, all projects by public or private developers that “may degrade the environment” must have authorization from the regional office of the MARN.¹⁷³⁷ To obtain this authorization, the applicant must begin by submitting a report (*Documento de Intención*) describing the project or program and the potential environmental and social impacts. Within thirty days the MARN, establishes the methodology for assessing the environmental impact, mitigation, and future recovery to be carried out in impacted areas.¹⁷³⁸ The methodology must be established “taking into account the characteristics and potential effects, as well as the particular conditions of the area that will be affected.”¹⁷³⁹ The MARN will then decide whether the project requires the preparation of an environmental impact study, or a

¹⁷³⁴ Venezuela’s Electricity Law, *supra* note 1700, art. 2.

¹⁷³⁵ “Decreto No. 1.257 de 1996,” G.O., 25 de abril de 1996 (Venez.) [Venezuela’s EIA Regulations].

¹⁷³⁶ CONST. art 129 (Venez.).

¹⁷³⁷ Venezuela’s EIA Regulations, *supra* note 1735, arts. 1 & 4.

¹⁷³⁸ *Id.*

¹⁷³⁹ *Id.* art. 5.

specifically tailored environmental assessment.

The environmental approval is termed Land Use Occupation Authorization (*Autorización para la Ocupación del Territorio*), and encompasses two authorizations: a land occupation authorization and the environmental authorization (environmental license).¹⁷⁴⁰ This is a significant feature of the Venezuelan environmental review system: The environmental assessment must be reviewed in accordance with the Framework Land Use Planning Law. As stated by Professor Nolon, “[u]nder this system, the permitting of development activities is based on their compliance with land use plans.”¹⁷⁴¹ Thus, “[w]hen issuing a land occupation authorization, MARN must determine the compatibility of the proposed activity with the restrictions established therein and with the physical-natural, social, and economic potential of the area.”¹⁷⁴² Further, once the MARN has approved the environmental assessment and granted a land use authorization, the proponent of the project is required to obtain authorization to affect the respective resource (*autorización para la afectación de recursos*), prior to initiation the activity. To this end, the proponent must present the required application and documentation the MARN.¹⁷⁴³

The environmental impact review regulations contain specific provisions targeting oil and gas polluting activities. To start, the rules define the key activities in the oil industry: “Seismic Hydrocarbon Exploration”; “Exploration of Hydrocarbons”; “Production of Hydrocarbons”; and “Ancillary Programs and Projects to Hydrocarbon

¹⁷⁴⁰ *Id.* arts. 4 & 10.

¹⁷⁴¹ Nolon, *supra* note 424, at 716 (citing to Venezuela’s Organic Land Use Planning Law, tit. IV, ch. IV).

¹⁷⁴² BAKER & MCKENZIE, *supra* note 421, at 181.

¹⁷⁴³ Venezuela’s EIA Regulation, *supra* note 1735, arts. 13, 14 & 17.

Exploration and Production.”¹⁷⁴⁴ All these activities require preparation of an environmental study.¹⁷⁴⁵ In addition, oil refineries and petrochemical complexes are listed among those projects requiring environmental review.¹⁷⁴⁶

Furthermore, these regulations include an entire chapter dealing with all phases of hydrocarbon and mining activities.¹⁷⁴⁷ The regulations explicitly require that prior to granting oil and gas concession or contract, the Ministry of Energy and Mining, PdVSA, and territorial entities must authorize the environmental assessment and grant a land use authorization. PdVSA and other governmental entities are instructed to follow these procedures even in cases where no concession or contacts are involved.¹⁷⁴⁸ Prior to initiating exploratory or exploitation activities, the proponent of the project must obtain authorization to use the respective resource from MARN.¹⁷⁴⁹ To complement the regulations in these areas, the MARN has issued a set of guidelines on the “Documentary Requirements for the Environmental Assessment of Mining and Hydrocarbon Exploration and Exploitation Programs and Projects.”¹⁷⁵⁰

11.8 ENFORCEMENT

The government of Venezuela created the Ministry of the Environment and Renewable Natural Resources (MARN) in 1976 as the entity in charge of protecting the environment and monitoring compliance with environmental laws and regulations;

¹⁷⁴⁴ *Id.* art. 4. ¶ (8), (9), (10 & (11).

¹⁷⁴⁵ *Id.* art. 6. ¶ (2).

¹⁷⁴⁶ *Id.* art. 6. ¶ (6).

¹⁷⁴⁷ *Id.* Chapter II, arts. 15-23.

¹⁷⁴⁸ *Id.* art. 15.

¹⁷⁴⁹ *Id.* arts 15-23.

¹⁷⁵⁰ See “Gaceta Oficial No. 5.079 de 19 de julio de 1996” (Venez.); BAKER & MCKENZIE, *supra* note 421, at 182.

however, it gave MARN no teeth to enforce the law.¹⁷⁵¹ In addition, the 1976 Environmental Framework Law created the Office of the Attorney General for Environmental Protection (*Procuraduría del Ambiente*) that represents the interests of the Nation in environmental enforcement actions.¹⁷⁵²

Citizens were allowed to request investigations and enforcement actions from this specialized Attorney General's office.¹⁷⁵³ However, according to legal practitioners in the field, the MARN remained under-funded for years and was unable fully carry out its duties; thus, it lacked any real powers to enforce environmental laws.¹⁷⁵⁴ Moreover, while the Environmental Framework Law created the *Procuraduría del Ambiente*, and included a chapter on sanctions for violations to the law, it did not authorize the *Procuraduría del Ambiente* or the MARN to impose fines.¹⁷⁵⁵

The MARN and the *Procuraduría del Ambiente's* lack of powers to enforce environmental laws and regulations remained unchanged for years until the Environmental Criminal Law became effective in 1992.¹⁷⁵⁶ With the enactment of this Law the MARN is empowered to stop illegal contaminating activities and to impose penalties or ask the courts to order arrests, imprisonment, or communitary work for violating environmental laws.¹⁷⁵⁷ Monies received from penalties are deposited in a fund for the protection of the environment.¹⁷⁵⁸ Criminal conduct includes unlawful discharges

¹⁷⁵¹ See "Decreto No. 1475 de 2001," G.O., 17 de octubre de 2001, art. 12 (Venez.); BAKER & MCKENZIE, *supra* note 421, at 175.

¹⁷⁵² Venezuela's Environmental Law, *supra* note 1722, arts. 30 & 31.

¹⁷⁵³ *Id.* art. 32.

¹⁷⁵⁴ See BAKER & MCKENZIE, *supra* note 421, at 169.

¹⁷⁵⁵ *Id.* See Venezuela's Environmental Law *supra* note 1722, arts. 24-29.

¹⁷⁵⁶ "Ley Penal del Ambiente," G.O., 3 de enero de 1992 (Venez.).

¹⁷⁵⁷ *Id.* arts. 5, 6 & 23.

¹⁷⁵⁸ *Id.* art. 18.

of toxic substances and of hydrocarbons into waterbodies.¹⁷⁵⁹ Specifically, the discharge of hydrocarbons into the marine environment is an environmental crime that can be punished with penalties or imprisonment.

The lack of enforcement continues, however, and is most notable in the oil and gas sector. The oil industry has contributed significantly to the degradation of Venezuela's natural environment, and oil pollution along the country's Caribbean coast is particularly bad. The most pressing environmental issues from the oil industry in Venezuela include air pollution and oil pollution of Lake Maracaibo in the Caribbean.

Air pollution levels are high, owing mainly to Venezuela's hydrocarbon industry and to vehicle exhaust from the country's growing number of motor vehicles. Automobile use has been growing exponentially due to subsidized gasoline prices. The government has been working to reduce levels of lead in gasoline and to develop a natural gas infrastructure for public transportation. Several regions of the country have taken the initiative to control emissions from vehicles through stringent enforcement mechanisms, such as substantial fines for violators. In addition, ambient air quality monitoring stations exist in at least fourteen industrial and urban areas. In the capital city of Caracas, where air pollution is particularly bad due to automobiles and power plants, the MARN has implemented a plan to reduce pollution levels by 50 percent in 2005 and by 80 percent in 2007; the overall goal is that the city will reach acceptable levels by 2010. Water pollution from oil development and oil spills is a major problem affecting Venezuela. While the state oil company PdVSA, has taken actions to mitigate the environmental impact of oil drilling and extraction activities, there is minimal

¹⁷⁵⁹ *Id.* arts. 35, 38 & 40.

enforcement of environmental laws as they apply to PdVSA.

CONCLUSION

Latin American countries have yet to incorporate many elements of the emerging law of sustainable energy, but the fundamental legal underpinning has already been established. During the past three decades, the countries of the region have made substantial reforms to their legal regimes seeking to address the environmental implications of energy generation and use. Notably, the countries of Latin America have ratified, and implemented to some extent, key multilateral environmental agreements, and have adopted soft law set forth in environmental international law instruments.

Another major step taken by these countries has been the recognition of environmental rights as well as the inclusion of sustainable development principles in their constitutions. Further, to execute the mandates set forth in international instruments and the constitutional texts, domestic energy legislation has been overhauled, or new laws passed, to include principles of sustainable energy law. In addition, with the emergence of modern environmental law, specifically-focused environmental legislation now addresses the impacts of energy generation and use.

The legal and institutional regimes in the Latin America countries, nonetheless, are not totally fit to address the environmental effects of energy activities or to ensure energy sustainability. Constitutional and legislative enactments that lay the foundation for energy and environmental regulation are not necessarily the same; the evolution of these norms has typically occurred on different tracks, and coordination between the two areas is minimal or non-existent. Consequently, there is some degree of uncertainty and lack of

consistency in environmental requirements for energy activities.¹⁷⁶⁰

Generally, the energy and environmental policies have not received the joint treatment that would have been desirable, as their levels of development have been dissimilar.¹⁷⁶¹ In some cases, mechanisms for integrating energy and environmental policy, planning and permitting are still lacking.¹⁷⁶² Furthermore, “[p]rogress in mechanisms for environmental policy administration and implementation go hand in hand with a renewed emphasis on economic growth, which translates as a marked tendency to flexibilize the legal requirements of environmental protection for development activities.”¹⁷⁶³ Additionally, environmental compliance and enforcement remains weak, and stands out as the main challenge in order to have sustainable energy practices in Latin America.¹⁷⁶⁴

There is a clear indication of the need for a consistent and clear set of laws and regulations governing the environmental implications of energy development, as pointed out in a report prepared by the Latin American Energy Organization and the University of Calgary in 1998 (hereinafter 1998 OLADE/University of Calgary Study) that analyzed energy and environmental laws in the region.¹⁷⁶⁵ This study also noted, “[i]t is evident that some activity in this direction has already been taken. However, energy and environmental sustainability demand that there be a systematic effort to accomplish this goal, both at the local and regional level.”¹⁷⁶⁶

¹⁷⁶⁰ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 208.

¹⁷⁶¹ See OLADE, POWER SECTOR, *supra* note 209, at 33.

¹⁷⁶² See OLADE/University of Calgary Study, *supra* note 3, at iii.

¹⁷⁶³ See OLADE, POWER SECTOR, *supra* note 209, 34.

¹⁷⁶⁴ See OLADE/University of Calgary Study, *supra* note 3, at ii.

¹⁷⁶⁵ *Id.* at 108. As discussed herein, many of the findings and conclusions of the OLADE/University of Calgary Study (see Findings 1-44 at 73-108) remain valid today.

¹⁷⁶⁶ *Id.*

The conclusion herein follows the same pattern and organization as the main body of the dissertation. That is, it presents the discussion of the issues considered under three legal settings: the international and regional law context; the constitutional and civil law context; and the domestic law context, which includes energy and environmental legislation in the various countries of the Latin American region that are considered in this study. Additionally, the conclusion discusses crucial questions that determine whether sustainable energy laws and the appropriate institutional systems exist in the region. The underlying theme is how the energy and environmental laws in place are actually executed and the real effect they have on the energy sector and environmental quality.

In connection with the international and regional law context, reviewed in Chapter 1, two fundamental questions are considered. First, whether international environmental law applicable in the region that seek to provide effective mechanisms for environmental protection—as they apply to the energy sector—and encourage sustainable development are sufficient, and whether they are adequately implemented at the domestic level. Second, whether additional regional legal instruments are warranted to address the environmental consequences of energy production, trade/investment and end-use in the region.

Regarding the constitutional and civil law context offered in Chapter 2, where the fundamental pillars for energy and environmental legislation are discussed, the main questions relate to whether the recognition of environmental rights and other collective rights (such as the rights of indigenous people), as well as the adoption of sustainable development principles, have practical applications leading to the improvement of environmental quality and the rational use of energy and natural resources. In addition,

whether the constitutional habeas actions developed in Latin America can be effectively used to enforce environmental constitutional rights.

In the context of the domestic legislation that has been adopted by the Latin American countries studied in Chapters 3 to 11, four important questions must be answered. First, are the laws in force for oil and gas, electricity and modern renewable energy responsive to energy and environmental sustainability? Second, is there coherence between energy norms and environmental laws? Third, where energy restructuring processes have been undertaken, does the legal regime appropriately address the environmental effects of the energy sector's restructuring? Fourth, what are the main reasons for weak enforcement of environmental law in the energy sector?

Finally, while energy policy is not the main focus of this study, policy issues are mentioned throughout the legal dissertation, and an overview of the energy sector in Latin America is included in the Appendix. Therefore, a brief discussion on sustainable energy policy for Latin America is appropriate to close the study. The main concern with regards to energy policy is whether Latin America is using its energy potentials for sustainable development. Specifically, how should the energy resources of the region be used to bring prosperity, environmental quality and sustainability in the region?

International and Regional Law Context

Chapter 1 shows that the Latin American countries have ratified and, to some extent, implemented many multilateral environmental agreements, particularly those dealing with climate change, habitat, biodiversity, and the marine environment as well as international law instruments on the rights of indigenous people. These countries have also adopted multiple environmental soft law principles set forth in the form of

declarations, resolutions, guidelines and the like, some of which have been incorporated into their domestic legislation. Moreover, the influence of international law, mainly through the implementation of environmental and energy-related treaty provisions at the national level, is clear in the adoption of environmental standards. Nonetheless, the international environmental law – including both the so-called “hard” and “soft” law –, applicable in the region seem insufficient to ensure an energy sustainable future. This body of law also fails to encourage the harmonization of energy and environmental laws and policies among the countries of the region.

With regards to climate change, regional implementation of the *Climate Change Convention* and its Kyoto Protocol seems particularly helpful in promoting cleaner energy options in Latin America.¹⁷⁶⁷ Further, on the positive side, the *Climate Change Convention* mandates periodic inventories of greenhouse gases, including those originating from energy-related activities, and requires the adoption of national strategies to reduce such emissions. Furthermore, the countries of the region have undertaken important initiatives to capture the opportunities arising from the use of flexible mechanism incorporated in the climate change regime, mainly the use of the Clean Development Mechanism (CDM) under the Kyoto Protocol. But the fact that the *Climate Change Convention* nor the Kyoto Protocol impose any mandatory reductions in greenhouse gases (GHGs) from the Latin American countries, results insufficient to address climate change concerns in the region.

Undisputedly, Latin America is one of the regions presenting the most projects within the framework of the CDM. Latin America and the Caribbean has nearly 40

¹⁷⁶⁷ See *Climate Change Convention*, *supra* note 30; see *supra* Chapter 1 § 1.2.

percent of all CDM projects in the world, with a portfolio that includes mainly hydro projects, wind developments and, importantly, biogas energy projects in connection with the adequately management of landfills.¹⁷⁶⁸ In fact, even before the Kyoto Protocol entered into force, the deployment of the CDM mechanism had commenced in the region. Most of the institutions governing the region's environmental sector are the national authorities that are responsible for the CDM process, with the exception of Brazil and Mexico. In the case of Brazil and Mexico, this authority is handled by inter-ministerial commissions created for that purpose.

In connection with the protection of habitat and biodiversity, the region has adopted international instruments such as the *Biological Diversity Convention* and the *Ramsar Convention*.¹⁷⁶⁹ These conventions have been instrumental in safeguarding important ecosystems unprotected by domestic legislation or to heighten domestically protected status. An illustration is the Argentine case *Oikos v. Repsol-YPF*, where the courts ordered the suspension of an oil project as a way of protecting a wetland ecosystem that had been declared a provincial natural reserve in 1980 and designated a *Ramsar* wetland in 1995.¹⁷⁷⁰

The *Ramsar Convention* and the *Biological Diversity Convention*, nonetheless, have not been fully implemented throughout the region, which results in many biologically-rich areas and wetland ecosystems lacking adequate legal protection. A Peruvian case helps to illustrate this problem. A U.S.-based multinational oil company signed a contract with the Peruvian government to explore for oil in areas that include

¹⁷⁶⁸ See OLADE, Report 2004, Regional Overview, *supra* note 2, at 9.

¹⁷⁶⁹ See *Ramsar Convention*, *supra* note 134; *Biological Diversity Convention*, *supra* notes 135.

¹⁷⁷⁰ See *supra* Chapter 3 § 3.10.

sections the largest of Peru's *Ramsar* sites (*Abanico de Pastaza*).¹⁷⁷¹ This wetland system is in a state of regulatory limbo: it has not been designated a protected area, and Peru has no specific legislation implementing *Ramsar*. Therefore, there is an urgent need to fully implement these conventions at the country level, and to coordinate environmental statutes aimed at the protection of habitat and biodiversity with legislation governing energy extractive or use activities.

As for the protection of the marine environment, worldwide and regional demand for Latin American oil and natural gas is increasing waterborne transportation and off-shore developments. Oil spills impacting natural resources throughout the region—from the Galapagos in Ecuador to the mangroves in Brazil—have prompted implementation of international instrument for the protection of the hydrosphere through national legislation that incorporates mechanisms set forth in these instruments.¹⁷⁷² Thus, legal instruments for their control are found at the national level, but are usually grounded in international law.

The rights of indigenous people vis-à-vis the rights of energy developers, whether state-owned companies, multinational companies or domestic concessionaries, remains a highly contested legal issue. In particular, the legal implications of the International Labour Organization's *Indigenous People Convention* in the energy sector are still being debated.¹⁷⁷³ The convention's main provision relating to energy provides that where the State retains the ownership of mineral or sub-surface resources or rights to other resources—as is typical in the Latin American countries—governments need to establish

¹⁷⁷¹ See *Oikos v. Repsol-YPF*, *supra* note 621. See *supra* Chapter 10 § 10.11.

¹⁷⁷² Such as the *Civil Liability Convention*, the *London Anti-Dumping Convention*, MARPOL 73/78; and the *Law of the Sea Convention*. See *supra* Chapter 1 § 1.5.

¹⁷⁷³ See *Indigenous People Convention*, *supra* note 155, arts. 7 & 13. See *supra* Chapter 1 § 1.6.

procedures through which they consult indigenous people.¹⁷⁷⁴

Accordingly, under the International Labour Organization's *Indigenous People Convention*, indigenous people have the right to ascertain whether and to what degree their interests would be prejudiced before permitting the exploration or exploitation of such resources in their ancestral lands. Further, the convention requires that the indigenous people participate in the benefits of such activities and receive fair compensation for any damages that they may sustain as a result of such activities. Actual compliance with these provisions in connection with energy projects, particularly oil and gas developments or large hydroelectric dams, involves complex political, legal and economic issues. Despite these complexities, this convention has been vital in allowing the participation of Latin American indigenous people in the formulation, implementation and evaluation of energy developments that may affect them directly.

In the Inter-American legal context, the most forceful instrument dealing with human rights, environmental rights and the rights of indigenous people is the *American Human Rights Convention*.¹⁷⁷⁵ An additional protocol to this convention, known as the *Protocol of San Salvador*, recognizes that every person has the right to live in a healthy environment and to enjoy essential public services.¹⁷⁷⁶ If fully ratified, this protocol would make the Inter-American legal system still more forceful.¹⁷⁷⁷

The Inter-American Commission on Human Rights and the Inter-American Court of Human Rights have already adjudicated, and are likely to continue adjudicating, regional disputes arising from energy developments in connection with environmental

¹⁷⁷⁴ See *Indigenous People Convention*, *supra* note 155, art. 15 (2) & arts. 6, 7 & 9.

¹⁷⁷⁵ See *American Convention on Human Rights*, *supra* note 61. See *supra* Chapter 1 § 1.7.

¹⁷⁷⁶ *Protocol of San Salvador*, *supra* note 161, art. 11 (3) (4).

¹⁷⁷⁷ As of 2006, the *Protocol of San Salvador* awaits ratification by a few member countries.

and human rights.¹⁷⁷⁸ The real-life effect of the recommendations and decisions issued by the Commission and the Court are yet to be proven. At least in some cases, however, the recommendation of the Commission have been useful to resolve disputes arising environmental claims raised by indigenous people. For instance, the U'wa indigenous group in Colombia gained support from the Inter-American Commission of Human Rights in connection with plans by a U.S.-based multinational oil company to drill for oil in their territories.¹⁷⁷⁹ The Commission recommended that Colombia enlarge the protected area for the U'wa people, which the government accepted.¹⁷⁸⁰

Soft law on environmentally-sound energy, including various declarations at United Nations conferences, United Nations General Assembly Resolutions and declarations of international bodies and institutions, such as guidelines and standards from the World Bank and the Inter-American Development Bank, also play an important role in shaping energy and environmental legislation. Soft law principles on energy for sustainable development are condensed in the consensus decision reached by the United Nations Commission on Sustainable Development, which were later incorporated in the World Summit on Sustainable Development's *Johannesburg Plan of Implementation*.¹⁷⁸¹ Under these principles, energy for sustainable development implies not just providing access to energy services but finding ways and means by which energy services are delivered reliably, affordably and in an economically viable, socially acceptable and

¹⁷⁷⁸ See Inter-Am. C.H.R., Yanomami case, *supra* note 176; Inter-Am. C.H.R., Huarorani case, *supra* note 179; Inter-Am. Court of H.R., Mayagna (Sumo) Awas Tingni Community v. Nicaragua, *supra* note 187. See also Scott, *supra* note 165, at 224.

¹⁷⁷⁹ See Culler, *supra* note 1208, at 336. See *supra* Chapter 7 § 7.8.

¹⁷⁸⁰ See Culler, *supra* note 1208, at 336-337.

¹⁷⁸¹ See CSD-9, Energy for Sustainable Development, *supra* note 91; *Johannesburg Plan of Implementation*, *supra* note 17. See *supra* Chapter 1 § 1.2.

environmentally sound manner.¹⁷⁸² Building on these principles, the countries of the region should strive to provide access to energy services, which are essential for clean drinking water, sanitation, health services and healthy human conditions, the four pillars of the *Johannesburg Plan of Implementation*.¹⁷⁸³

As for soft law thought guidelines, policies, and standards, perhaps the more relevant in the Latin American context are those of the World Bank and the Inter-American Development Bank (IDB) dealing with environmental aspects of energy projects that receive financing by these lending institutions.¹⁷⁸⁴ In general terms, the policies and standards of the World Bank and of the IDB seek to encourage sound environmental practices in bank-financed projects. But they do little in the way of requiring actual environmental mitigation, monitoring and enforcement or encouraging sustainable energy principles.

The World Bank's strategy for environmental protection—which includes a specifically-tailored environmental strategy for Latin America—and the environmental strategy for the energy sector, dated 2001 and 2000, respectively, seek to integrate broad principles of energy and environmental sustainability into its projects.¹⁷⁸⁵ The World Bank's "Safeguard Policies"—within the overall set of Operational Policies—seek to ensure that potentially adverse environmental and social consequences are identified, minimized, and mitigated.¹⁷⁸⁶ The environmental standards of the Inter-American

¹⁷⁸² CSD-9, Energy for Sustainable Development, *supra* note 91, ¶ 12.

¹⁷⁸³ *Johannesburg Plan of Implementation*, ¶¶ 8, 9 & 10, *supra* note 17; *United Nations Millennium Declaration*, *supra* note 127. *See also* WORLD ENERGY ASSESSMENT, *supra* note 16, at 44.

¹⁷⁸⁴ *See supra* Chapter 1 § 1.8.

¹⁷⁸⁵ *See* WORLD BANK, ENVIRONMENTAL STRATEGY FOR THE ENERGY SECTOR, *supra* note 192; WORLD BANK, ENVIRONMENT STRATEGY, *supra* note 188, at 106-112 (Annex A); World Bank, Environmental Assessment Procedures, *supra* note 191.

¹⁷⁸⁶ *See* World Bank, Environmental Assessment Procedures, *supra* note 191.

Development Bank, adopted in 1979, however, are less stringent than those of the World Bank.¹⁷⁸⁷ Participation of civil society in project development is an area of concern, particularly in connection with projects financed by the Inter-American Development Bank.¹⁷⁸⁸

Despite their limitations and flaws, the effective use of these standards in Latin America is illustrated by World Bank-financed Yacyreta hydroelectric project in Argentina and the IDB-financed Camisea natural gas project in Peru. The Yacyreta hydroelectric project is a 3,200 megawatt facility that is co-owned by the governments of Argentina and Paraguay, and became fully operational in 1998. The World Bank, the main lending institution for the project, requires that the reservoir level be kept significantly below its capacity due to environmental and social concerns.¹⁷⁸⁹

The IDB's standards have played a significant role in tailoring the environmental and social aspects of Peru's Camisea natural gas development. Remarkably, the IDB has leveraged its relatively small contribution (8 percent of the total project cost) to achieve environmental standards for the entire project.¹⁷⁹⁰ Specifically, the IDB leveraged its presence in the downstream component of the project by extending its environmental and social standards to the upstream component of the project and ensuring that the Peruvian governments increase its supervision and monitoring activities.¹⁷⁹¹ The IDB took additional actions to mitigate some of the project's environmental and social impacts, and participated beyond just mitigating negative environmental and social impacts to

¹⁷⁸⁷ See *supra* Chapter 1 § 1.8.

¹⁷⁸⁸ See Inter-American Development Bank, *Report of the Blue Ribbon Panel on the Environment*, *supra* note 200.

¹⁷⁸⁹ See World Bank, News Release No: 2000/179/LAC, *supra* note 196.

¹⁷⁹⁰ IDB, Environmental/Social Report Camisea, *supra* note 201, Executive Summary at iv & 33.

¹⁷⁹¹ *Id.* at v.

developing and implementing programs seeking to improve the environmental and social conditions in the area of the Camisea project and other areas of Peru (mainly the cities that will be served with natural gas). The IDB role in the Camisea project has also helped establish enhanced knowledge and capabilities, in terms of similar projects, by all parties involved, including indigenous people, civil society, the private sector companies, government officials, and the financial community. In any event, the ongoing participation of these stakeholders is necessary to ensure that adequate environmental and social protection measures are adequately and appropriately implemented.

At a regional level the main concern is the lack a regional instrument promoting sustainable energy in Latin America. Indeed, there is no regional agreement containing mandatory environmental provisions on energy production, transportation and end-use. In particular, a legal framework to address environmental aspects of regional energy trade is warranted. There are several trade systems operating in the region, but environmental implications or energy activities are not addressed in the trade agreements themselves or adequately in other environmental agreements. However, some suggest that regional trade “fans the hope for legislative harmonization.”¹⁷⁹² A regional energy instrument for Latin America, along the lines of the Energy Charter Treaty, containing mandatory environmental provisions for energy operations and environmental rules for the trading systems seems necessary at this juncture.¹⁷⁹³ Such an agreement should be considered perhaps under the auspices of the Latin-American Energy Organization (OLADE) and the sponsorship of United Nations agencies.

¹⁷⁹² See OLADE, POWER SECTOR, *supra* note 209, 34.

¹⁷⁹³ See Energy Charter Treaty; Energy Charter Protocol on Energy Efficiency, *supra* note 257. See also COMPENDIUM OF SUSTAINABLE ENERGY LAWS, *supra* note 5, at 173.

Constitutional and Civil Law

Latin American constitutions provide the groundwork for energy and environmental sustainability. Constitutional provisions recognize the right to environmental quality and the notion of collective rights—meaning constitutional rights granted to a social group rather than an individual—which includes the rights of indigenous peoples and the rights of consumers, among others. These constitutional norms also include mandates to rationally use natural resources and to pursue sustainable development.

Constitutional provisions also grant, or serve as the basis for granting, other privileges, such as the rights to know government-held information and to public participation in decision-making. Moreover, some form of legal action to enforce constitutional rights has been created. As a consequence of this higher rank for environmental issues in the region, “environmental policy-making has taken a large leap forward.”¹⁷⁹⁴ Certainly, the constitutional frameworks constitute a powerful factor that is moving the region towards sustainable energy practices.

The constitutions in the Latin American nations considered in this study, as well as their civil codes, provide that natural resources are common goods (*res communes*)—a concept deeply rooted in Roman law and the civil law tradition. Consequently, natural resources fall within the public domain, and the State has all prerogatives and privileges in their exploitation. The result is a juxtaposition of constitutional rights and principles relating to energy and natural resources: on the one hand, environmental rights and the mandate for rational resource utilization; on the other, the State’s ownership and right to

¹⁷⁹⁴ See OLADE, POWER SECTOR, *supra* note 209, 33.

determine the exploitation of energy resources, which in some countries is an exclusive right to directly exploit these resources. As a result, constitutions are sometimes internally inconsistent.

A typical conflict of this nature arises when the constitution declares that both the exploitation of hydrocarbon resources and environmental protection are in the public interest.¹⁷⁹⁵ Conflicts of this nature also arise between the constitution and legal provisions as well as between different laws. In particular, energy-specific legislation is frequently in conflict with environmental laws. An example from Mexican legislation serves to illustrate this problem.¹⁷⁹⁶ The Mexican Petroleum Law reads: “The petroleum industry is of *public interest* and takes priority over any use of the land, its surface or the sub-soil ... temporary or definite occupation or expropriation of property shall proceed in all cases where it has been requested by the State or its petroleum industry.”¹⁷⁹⁷ Parallel to this law, the environmental framework statute defines *public interest* to include environmental planning, the establishment of protected areas and the establishment of buffer protection zones from high-risk activities.¹⁷⁹⁸ As a result, implementation of these norms—through rulemaking or enforcement—may result in legal conflicts that needs to be resolved by the courts on a case-by-case basis.

Many legal conflicts arise due to the fact that the region’s hydrocarbon and hydropower resources are found in environmentally sensitive areas, or even in legally protected areas, such as natural reserves or national parks. Besides, the exploration and exploitation of oil and natural gas resources, the construction of hydroelectric dams, and

¹⁷⁹⁵ See OLADE/University of Calgary Study *supra* note 3, at 75.

¹⁷⁹⁶ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 213.

¹⁷⁹⁷ *Id.* See Mexico’s Petroleum Law, *supra* note 1412.

¹⁷⁹⁸ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 213.

the construction of energy transportation infrastructure, occurs, to a large degree, in indigenous territories, raising additional legal and socio-economic concerns. Therefore, the countries in the Latin American region must strive to introduce coherence into environmental and natural resources laws in their interaction with energy statutes, especially when applying land use planning and environmental tools such as habitat and area protection laws as well as environmental impact assessment regulations.¹⁷⁹⁹

Protecting constitutional environmental rights requires granting access to government-held information as well as adequate consultation with the affected communities about the environmental and social impacts of energy activities. Latin American countries have incorporated public participation requirements in connection with environmental matters by either adopting constitutional provisions or passing statutes requiring public consultation with the affected communities. However, executing these laws has not been an easy undertaking, as illustrated by the various conflicts, many of which are ongoing, particularly with respect to oil and gas developments that affect indigenous communities. The countries in the region need to solve the many problems encountered in applying the statutes and regulations on public participation.

Perhaps the most significant legal development shaping environmental law in Latin America is the possibility of using constitutional habeas actions to claim environmental rights. These habeas systems facilitate enforcement of environmental laws in the energy sector. Several constitutional formats for enforcing constitutional rights have been developed in Latin America: individual habeas (termed *Amparo* or *Tutela*), collective or popular actions (termed *Acción Popular* or *Ação Popular*), class actions

¹⁷⁹⁹ See OLADE/University of Calgary Study *supra* note 3, at 74-77.

(*Acciones de Grupo*) and mandamus actions (*Acción de Cumplimiento or Mandato de Segurança*).

In jurisdictions that recognize a personal right to environmental quality, citizens are able to sue for environmental protection through the constitutional habeas action (*Amparo* or *Tutela*). Where there is a collective right to environmental quality, the drafters have extended the constitutional actions (*Amparo Colectivo*) or created a special kind of collective action, termed popular actions (*Acción Popular*), to allow claims on behalf of collective plaintiffs.¹⁸⁰⁰ Some countries also allow class actions or group actions (*Acciones de Clase o Grupo*), which involve damages claims by the plaintiffs.¹⁸⁰¹ Further, mandamus actions are typically granted by the legislature in most jurisdictions, but they have a constitutional nature in Brazil.

The effective use of constitutional enforcement actions in the area of energy has been demonstrated in the Argentine case *Oikos v. Repsol-YPF*. The case involves an environmental group's collective *Amparo* suit to challenge the approval of an oil project impacting a wetland ecosystem, which is both a provincial natural reserve and a *Ramsar* site.¹⁸⁰² The plaintiff—*Oikos Red Ambiental (Oikos)*—argued that the oil development would contravene the Argentine Constitution's right to a healthy environment and a provincial law prohibiting oil and mining activity in the province's protected areas.¹⁸⁰³ In March 2005, the Supreme Court in Mendoza ruled favorably on the collective *Amparo* complaint filed by *Oikos*.¹⁸⁰⁴ The *Oikos* case illustrates that citizens can successfully

¹⁸⁰⁰ See *supra* Chapter 2 § 2.6.

¹⁸⁰¹ *Id.*

¹⁸⁰² See *Oikos v. Repsol-YPF*, *supra* note 621.

¹⁸⁰³ *Id.* The plaintiffs also alleged deficiencies in the project's EIA and that the project failed to fulfill public participation requirements.

¹⁸⁰⁴ *Id.*

enforce environmental law through constitutional actions.

Oil and Gas Law

For decades, Latin American national oil companies exclusively controlled, managed, and exploited national hydrocarbon resources in the region. This era started back in 1922, when Argentina established the world's first state oil company.¹⁸⁰⁵ But, in the 1990s, Argentina reversed course and became the first country in the region to completely privatize the oil and gas industry. This move again sparked a trend toward privatization that was followed, with variations, by most countries in the region.

In Latin America, only Mexico and Venezuela struggle to remain faithful to the oil and gas state monopoly model. Chile has chosen a partial monopoly, exclusively for oil and gas exploration and production activities (upstream). The remaining countries in South America have shifted to economic models for organizing the hydrocarbons sector closer to competitive market structures. These countries own and operate a national oil company, but this company now competes with private oil companies. Argentina can be counted in this group, after the creation in 2004 of a mixed-capital company, controlled by the federal government, which participates in the oil business and is authorized to intervene in the markets, if necessary.¹⁸⁰⁶ Some countries, like Brazil, have semi-privatized the State-owned oil company.¹⁸⁰⁷

¹⁸⁰⁵ Wirth, *supra* note 429, at ix.

¹⁸⁰⁶ See Argentina's ENARSA Law, *supra* note 452, at 1.

¹⁸⁰⁷ In 2000, Brazil sold a minority percentage stake (about 30 percent) in its oil company (*Petrobrás*). See EIA, Brazil, *supra* note 449. Colombia intends to follow this path by selling about 30 percent in its oil company (*Ecopetrol*).

Table 1.1: Oil Sector in Latin America

Model/ Sector	State Monopoly	State Control	Competitive Market
Oil Upstream	Mexico Chile	Bolivia Venezuela	Argentina Brazil Bolivia Colombia Ecuador Peru
Oil Downstream	Mexico	Bolivia Venezuela	Argentina Bolivia Brazil Colombia Ecuador Peru

Table 1.2: Natural Gas Sector in Latin America

Model/ Sector	State Monopoly	State Control	Competitive Market
Natural Gas Upstream	Mexico	Bolivia Venezuela	Argentina Brazil Chile Colombia Ecuador Peru
Natural Gas Downstream		Bolivia Mexico Venezuela	Argentina Brazil Chile Colombia Ecuador Peru

At the same time that the oil and gas sector was undergoing economic reform, hydrocarbon laws were amended to include environmental protection requirements and safeguards. But environmental provisions in the hydrocarbon laws by themselves are insufficient to ensure environmentally-sound energy practices by participants in the oil and gas industry. Further, the weaknesses and lack of cohesiveness of the legal and institutional environmental regimes dealing with oil and gas are evident.

The study reveals that the organization and structure of the oil and gas industry determines, to a great extent, environmental protection in the hydrocarbons sector. For instance, enforcement of environmental law is particularly weak when the State is the main or sole operator in the sector, like in Mexico or Venezuela.¹⁸⁰⁸ On the other hand, in the countries of Latin America that have shifted from a state-owned oil industry to a privatized or semi-privatized sector, the sector is subject to higher environmental regulation and oversight. However, the institutional regimes in these countries do not seem totally capable of managing and overseeing the handful of oil and gas companies operating in a competitive market.

Electricity Law

Similar to oil and gas law reform, a central theme in the Latin American region in recent decades is electricity legislation being overhauled to shift from state monopolies to market-oriented commercialized and privatized energy systems. Chile started the trend back in 1982 and, similar to what occurred in the oil and gas industry, many Latin American countries restructured and largely privatized the power sector, mostly to attract private investment in the sector. The environmental implication of these reforms and their

¹⁸⁰⁸ See OLADE/University of Calgary Study *supra* note 3, at 12.

impact in the entrance of new, efficient and environmentally-sound energy sources, still remains to be determined.¹⁸⁰⁹

State-owned utilities built most of the generating capacity currently in operation in the region during the 1960s and 1970s.¹⁸¹⁰ During this period, the governments of the region borrowed significantly from international lending institutions—mainly the World Bank and the IDB—and even commercial banks to finance energy infrastructure, particularly major hydroelectric projects and electricity transmission lines.¹⁸¹¹ Subsequently, the power sector suffered from a lack of investment during the 1980s and 1990s due, in large part, to a debt crisis experienced in many parts of the region.¹⁸¹²

This crisis favored a restructured power sector where the private sector finances, builds and operates electrical projects. Another factor that favored a restructured power sector was the need to increase electric supply, to diversify the energy mix, and to improve transportation and distribution infrastructure. Moreover, at a time when demand for electricity was increasing, the Latin American countries, largely dependent on hydropower, were severely affected by droughts causing blackouts and energy rationing in several countries.

During the 1990s, in order to help finance expansion in the sector, many countries in the region began unbundling electric services into generation, transmission and distribution, opening the sector to private—including foreign—investment and promoting competition. The process can be summarized, as follows:

Power market reform in Latin America proceeded in three distinct rounds.

¹⁸⁰⁹ *Id.* at i & 73.

¹⁸¹⁰ See OLADE, Report 2001, *supra* note 2, at 24.

¹⁸¹¹ *Id.*

¹⁸¹² *Id.*

The first round started in Chile in the late 1970s with the development of new legislation that was introduced in 1982, and ended with the privatization of the major electricity firms between 1986 and 1989. Chile's neighbors carried out the second round of reforms in the first half of the 1990s, an example of the demonstration effect of reform. The third round took place during the second half of the 1990s, and it included most of the remaining Latin American countries. Reform designers attempted to extend the scope and depth of competition in each round. Moreover, reforms were accomplished faster. The changes made in Argentina from 1990 to 1992 took a whole decade to achieve in Chile.¹⁸¹³

The Chilean reform contained two basic features.¹⁸¹⁴ First, competition was introduced to the wholesale market, in which power generation companies and large customers and distribution companies established long-term supply contracts. Second, transmission services were provided by a separate entity to introduce open access to the transmission network. Following Chile's innovations, many Latin American countries adopted competition in the wholesale power market. Interestingly, many countries in the region adopted a mixture of two structures: the power pool design of the Chilean model, and the independent transmission and system operator of the United Kingdom's model.¹⁸¹⁵

In addition to the structural reform and investment by the private sector, the reform required that the countries divested most of their state-owned assets in the power sector. This combination led to increased sector investment and improved sector performance in countries such as Argentina, Bolivia, Brazil, Chile, Colombia, and Peru.¹⁸¹⁶ It is believed that "[t]his model also spread the impact of shocks throughout

¹⁸¹³ See BESANT-JONES, *supra* note 119, at 25.

¹⁸¹⁴ *Id.*

¹⁸¹⁵ *Id.* at 24.

¹⁸¹⁶ *Id.*

sector stakeholders, thereby improving its robustness (but even this model could not withstand the huge macroeconomic shocks of 2001 in Argentina).”¹⁸¹⁷

According to their current structure of power supply, Latin American countries fall into four basic categories.¹⁸¹⁸ First, a vertically integrated monopolist. Second, a vertically integrated monopolist with independent power producers (IPPs) that sell power to it. Third, many distribution entities and generation entities and a transmission entity formed from unbundling the monopolist, in which the transmission entity acts as a single buyer of power from the generators and IPPs and sells power to the distribution entities and large users of power. Fourth, an organized market of generation entities, distribution entities and large users in which power is traded competitively, supported by a transmission entity, a power system operator and a power market administrator.

A vertically integrated monopolist operates in Venezuela, while a vertically integrated monopolist and IPPs exists in Mexico. Many distribution and generation companies, including IPPs, transportation company as single buyer with third party access, is the model adopted by Ecuador. Finally, the rest of the Latin American countries considered in this study—Argentina, Bolivia, Brazil, Chile, Colombia, and Peru—have a power market of generation companies, distribution companies, large users, a transportation company and an independent system operator.¹⁸¹⁹

Recent OLADE-sponsored reports classify the Latin American countries’ power sectors not just based on the structure of power supply (the “operating options”) but on the “ownership options” as well, as illustrated in Table 1.3.¹⁸²⁰ The table ranks the

¹⁸¹⁷ *Id.*

¹⁸¹⁸ *Id.* at 21-22.

¹⁸¹⁹ *Id.* at 22.

¹⁸²⁰ See OLADE, POWER SECTOR, *supra* note 209, at 32; MENTOR POVEDA, *supra* note 477, at 48-67.

countries of the region according to the current diverse structures of the sector; the vertical axis contains the sector's ownership options, and the horizontal axis contains the sector's operational options; the classifications are explained below.

Table 1.3: Power Sector Schemes in Latin America¹⁸²¹

Operating Options & Ownership Options	Functions	Central Control	Single Buyer	Integrated Autonomous	Open Market
Private Ownership	Vertical Segmentation with Incompatibility of Function				Argentina(**) Bolivia (*)
	Vertical Integration Permitted				Chile (*) Peru (*)
Mixed Ownership			Ecuador Mexico	Venezuela	Colombia (*) Brazil
Exclusive State Ownership		(Venezuela)			

(*) With weak horizontal partition

(**) With a strong horizontal partition

Exclusive state ownership: The vertical axis begins with the original position of most of the countries prior to reforms, which was exclusive state ownership; all electrical system assets were owned by the state.

¹⁸²¹ See OLADE, POWER SECTOR, *supra* note 209, at 30-31.

Mixed ownership: Moving away from the origin, there is a second option where private investors are shareholders of companies with additional participation of the state among the shareholders. There are also a few wholly state-owned companies, but they participate only partially in the sector.

Private Property: Finally, the option furthest from the origin refers to countries where the electrical system is predominantly under private ownership. In this case there are two options. The first involves “vertical” segmentation with an obligatory separation between generation, transmission and distribution activities; the second case includes a possibility for “vertical” integration, i.e. generation, transmission and distribution activities may remain in one hand.

Central control: Traditionally, the entire chain of power generation and distribution was considered a natural monopoly. So it was logical that a single entity should own and operate the electrical service for an area, either owned by the state or by private companies. For years, the power sub-sector was considered monopolistic and a single company had a concession. The majority of the countries of the region provided electrical service through a single state-owned company.

Single buyer: This principle has been applied to the region for several years and has allowed private entities to participate through a limited opening. This has especially been the case for generation, and was part of a process in some cases and a complete step in others.

Integrated and autonomous: This type of coordination involves a different distribution of the roles between the State and the company(s) that operate(s) in the sub-sector. The latter perform their activities according to their own initiative, planning and execution. The State has to approve the pertinent decisions on investments, rates, etc. It carries out regulatory functions either on its own behalf or through an agency that represents society (public commission), because it is a public service. This system does not imply a vertical or horizontal breakdown. Integrated organization

has been the dominant method used in the power sub-sectors of industrialized countries such as United States and Germany. A multitude of companies from the private, public or mixed sector participate in these sub-sectors. However, effective competition among them does not exist, because they often have exclusivity under a concession contract for an area of supply, or companies divide a sector among themselves by area or type of customer.

Open market: Natural monopolies are only maintained for main electrical power transportation and distribution activities, where its disputability is considered necessary. In sufficiently large systems that permit and ensure competitive behavior, several participants can compete in the generating and marketing sectors.

As Table 1.3 shows, most Latin American countries have partially segmented the sectors of power industry in order to allow competition in the power generation sector, free access to transmission systems, and competition in the electricity distribution and marketing sector. But, “for different reasons some countries have failed to complete the processes, some are retaking public control of certain activities, and others are incorporating second-generation reforms based on market experience in order to ensure the proper functioning of power markets to attract the investments for the expansion of the sector required.”¹⁸²²

Among these reasons is a strong resistance to privatization in certain countries.¹⁸²³ There has been significant resistance to electricity privatization in Colombia, Ecuador, Mexico and Peru. In Colombia, there has been resistance, notably in deference of the well-established municipal utilities. Ecuador’s Congress passed a resolution in 2002, rejecting privatization initiatives, and the Constitutional Court ruled

¹⁸²² *Id.* at 30.

¹⁸²³ *Id.* at 33.

that such sales were unconstitutional. In Mexico, successive attempts to privatize the electricity system have been defeated by strong political opposition and court rulings and which have prevented privatization plans. In any case, it is expected that increased interconnections between the Latin American countries will bring about the consolidation of regional markets with optimized dispatching systems.¹⁸²⁴

Power market reform in Latin America should be assessed against two key outcomes.¹⁸²⁵ These outcomes are electricity services that support sustainable development and affordable access to electricity for the poor. In terms of increasing supply, improving supply-efficiency and reducing cost, successful outcomes have been achieved so far in Chile and Argentina.¹⁸²⁶ In Chile, power suppliers increased capacity substantially, and, at the same time, increased productivity.¹⁸²⁷ In the Chilean main power market, the regulated wholesale price of electrical energy fell about 40 percent, although the final price to customers fell by only about 20 percent.¹⁸²⁸ Similarly, in the case of Argentina, wholesale power prices and unserved demand dropped substantially following market reform; retail power prices did not decline as much. Similar price trends occurred in other Latin American countries—such as Bolivia, Colombia, Peru—that followed the same reform model as Argentina, with wholesale prices dropping by more than retail prices. Whatever the case may be, it has been reported that the “[e]lectricity tariffs in many countries allow the utilities to make profit.”¹⁸²⁹

A critical problem in the regulatory schemes where restructuring has taken place

¹⁸²⁴ *Id.* at 30.

¹⁸²⁵ *See generally* BESANT-JONES, *supra* note 119.

¹⁸²⁶ *Id.* at 33.

¹⁸²⁷ *Id.* at 32.

¹⁸²⁸ *Id.*

¹⁸²⁹ *See* OLADE, POWER SECTOR, *supra* note 209, at 11 & 126.

is that electricity and gas distribution companies' profits are pegged to the amount of power they move. The more electricity or natural gas they deliver, the greater their earnings. These companies typically sell power and natural gas at their wholesale costs, and must recover their cost-of-service and make a profit from what they charge to deliver power and natural gas. Delivery charges are primarily recovered through rates levied for services to a customer. In brief, most costs do not vary with sales. Consequently, companies' profits depend on how much power or gas they deliver to end users.

This scheme runs contrary to the goal of promoting energy efficiency and distributed generation. Thus, the countries in the Latin American region need to adopt a revenue decoupling mechanism for electricity and gas delivery rates. A revenue decoupling mechanism would separate profits from throughput by setting an appropriate revenue allowance that companies would be assured of collecting regardless of throughputs. Such a rate design is already being applied (or considered) in other parts of the world where electricity restructuring has taken place.

Another critical issue with restructuring in Latin America is the development of capabilities and institutions to regulate power markets.¹⁸³⁰ Some believe that "[t]his development covers both regulatory governance (who does what under which laws, rules, and procedures) and regulatory substance (how tariff levels and structures are established and approved, and mechanisms for coordination of tariffs and subsidies and the establishment of quality of service standards)."¹⁸³¹ As discussed in Chapter 2, Latin American countries have civil law systems whose regulatory systems operate within

¹⁸³⁰ See BESANT-JONES, *supra* note 119, at 80.

¹⁸³¹ *Id.*

Napoleonic law codes “with traditions of public service obligations,”¹⁸³² which may be antiquated for the new regime.

The countries where restructuring has taken place follow the approach that emphasizes using highly specific substantive rules in licenses or in legislation, known as “regulation by contract”.¹⁸³³ Certainly, “[t]he special investment conditions and contract fulfillment guarantees are the most used instrument in these countries, which may be due to the relative ease of managing these instruments.”¹⁸³⁴ Through restructuring of the power sector, these countries have now incorporated the structure of independent regulatory commissions developed under American law. However, “they lack the legislative background and substantial resources needed to replicate the regulatory processes of U.S. style cost-of-service regulation developed for investor-owned vertically integrated utilities.”¹⁸³⁵

The effects of restructuring the power sector on environmental quality and the effect on the entrance of new clean electricity generation and modern renewable energy technologies is the critical issue for energy sustainability. This study shows that the countries of the region have not taken measures to ensure environmentally-sound developments within the restructured power sector, except timid contractual requirements to concessionaries of electric distribution, like in Argentina, Brazil and Chile. Certainly, as noted above, the Latin American concession model depends on regulation by contract

¹⁸³² *Id.* at 81.

¹⁸³³ *Id.*

¹⁸³⁴ See OLADE, POWER SECTOR, *supra* note 209, at 35. See TONCI BAKOVIC, ET AL., REGULATION BY CONTRACT: A NEW WAY TO PRIVATIZE ELECTRICITY DISTRIBUTION? (World Bank, Energy and Mining Board, Discussion Paper No. 7, May 2003).

¹⁸³⁵ See BESANT-JONES, *supra* note 119, at 81.

of competitive licensees—more than by market forces—. ¹⁸³⁶ “In Argentina and Chile, for example, competitive bidding is used to award franchise rights for rural service territories to concessionaires providing service for the lowest subsidy. Concessionaires can choose from a range of off-grid technologies, although photovoltaic (PV) systems are expected to be the most cost-effective choice in many cases.” ¹⁸³⁷ Under these schemes, users pay a connection fee and monthly service tariff (set by the government), and the government pays the concessionaires a declining subsidy determined by their contract.

This study also reveals that the environmental legal regimes are not tailored to address adverse environmental impacts where industry restructuring has occurred. This finding had been already highlighted in the 1998 OLADE/University of Calgary Study, which stated that “the laws and model contracts governing this sector only contain brief references to the duties of operators, producers and owners of energy facilities and activities to abide by environmental laws and standards.” ¹⁸³⁸ Therefore, legal regimes in the region must appropriately address these flaws through additional regulation and strict enforcement.

Renewable Energy and Energy Efficiency

With respect to legislation promoting the development of renewable energy sources, the renewable portfolio standard (RPS) mechanism, where a specific target of renewable energy generation is set, could be the tool of choice to promote and regulate the entrance of the modern renewables. Brazil’s RPS is an interesting model that could be used throughout the region. ¹⁸³⁹ In the short-term, the Brazilian RPS seeks to secure 3,300

¹⁸³⁶ *Id.* at 98.

¹⁸³⁷ *Id.*

¹⁸³⁸ University of Calgary/OLADE Study, *supra* note 3, at 4 & 76.

¹⁸³⁹ Brazil’s PROINFA Law, *supra* note 768, art. 3. *See supra* Chapter 5 § 5.4.

megawatts of wind, small hydro and biomass generation by 2006. Brazil's federal utility (*Electrobrás*) guarantees power purchase agreements (for up to 15 years) to independent power producers of renewable energy, which are selected under competitive bidding.¹⁸⁴⁰ In the long-term, Brazil's RPS seeks to ensure that—at the end of 20 years—renewable energy systems supply 10 percent of the annual electric power consumption of the country.¹⁸⁴¹

Several Latin American countries have taken interest in developing legislation for biofuels. The purpose of legislation imposing a mandatory mix of biofuels and oil products is twofold. It creates demand-driven production of biofuels, and, at the same time, reduces harmful air pollutant from burning fossil fuels. Brazil has been the region's (as well as the world's) pioneer on biofuels, particularly with regards to ethanol production and use. In Brazil, a mandatory requirement for ethanol use in vehicles and trucks has been in effect for over three decades—currently established as 25 percent ethanol and 75 percent oil derivatives.¹⁸⁴² With respect to biodiesel, Brazil enacted legislation in early 2005 requiring that biofuel make up 2 percent of the diesel fuel mixture in the country by 2008 and 5 percent by 2013.¹⁸⁴³ Brazil's lead in this field is beginning to be followed by other countries in the region, mainly Argentina and Colombia.

Chile and Peru have the most comprehensive legislation on geothermal energy in the region.¹⁸⁴⁴ These laws create specific legal regimes for geothermal energy, avoiding

¹⁸⁴⁰ *Id.* art. 3. (I) (a).

¹⁸⁴¹ *Id.* art. 3. (II) (a).

¹⁸⁴² *See supra* Chapters 5 § 5.4.

¹⁸⁴³ *Id.*

¹⁸⁴⁴ Chile's Geothermal Energy Law, *supra* note 951; Peru's Geothermal Energy Law, *supra* note 1565. *See supra* Chapters 6 § 6.4 & 10 § 10.4, respectively.

the complexities of integrating geothermal energy law into already established legal regimes.¹⁸⁴⁵ Chile's Geothermal Energy Law, passed in 2000, provides a legal framework for geothermal energy, mainly for the exploration and exploitation of phases.¹⁸⁴⁶ The Peruvian legislation on geothermal energy, passed in 1997, in addition to creating a legal basis for geothermal energy activities, establishes many fiscal incentives to promote these activities, such as income tax advantages, customs and duties incentives.¹⁸⁴⁷ Notably, the Peruvian law requires an environmental impact assessment for exploratory or production activities, which is reviewed by the Ministry of Energy and Mines, and imposes on developers a general duty to protect the environment and liability for environmental damage.¹⁸⁴⁸ Despite the specific legal frameworks adopted and the economic incentives provided, geothermal energy is still undeveloped in these countries.¹⁸⁴⁹

Legislation on other modern renewables or relating to off-grid electrification is scant. Additional regulation is necessary, but it is difficult to prescribe specific legislative initiatives on this matter. A World Bank-sponsored report suggests four basic regulatory principles which may provide guidance for designing and implementing regulatory systems that promote renewables and off-grid electrification:¹⁸⁵⁰ Principle 1: Adopt light-handed and simplified regulation; Principle 2: The national or regional regulator should be allowed (or required) to temporarily or permanently "contract out" or delegate regulatory tasks to other governmental and nongovernmental organizations. Principle 3:

¹⁸⁴⁵ See Armstrong, *supra* note 477, at 493.

¹⁸⁴⁶ Chile's Geothermal Energy Law, *supra* note 951, arts. 1-6.

¹⁸⁴⁷ See Peru's Geothermal Energy Law, *supra* note 1565, arts. 3 & 32-46.

¹⁸⁴⁸ *Id.* arts. 47-49.

¹⁸⁴⁹ See *supra* Appendix and Tables (5.3, 6.1 and 6.4).

¹⁸⁵⁰ See BESANT-JONES, *supra* note 119, at 96.

The regulator should be allowed to vary the nature of its regulation depending on the entity that is being regulated. Principle 4: Quality of service standards must be realistic, affordable and enforceable. While these principles may be helpful guidance, promoting off-grid or grid-connected renewables and off-grid rural electrification through legal means has proven to be a difficult task for the regulators, and, perhaps, not a high-level priority as the policy documents might suggest. Brazil's electrification program stands out as a consistent effort to achieve this goal, and could serve as a model for other countries in the region.

Regulatory measures for promoting energy efficiency and savings at the end-use level (also termed demand-side management) used in Latin America include: adopting technical requirements aimed at preventing energy losses during production, transportation, distribution and use of energy; requiring manufacturers to improve the efficiency and environmental performance of vehicles, equipments, appliances and buildings; and, mandating labeling and consumer information on energy efficiency and environmental performance.¹⁸⁵¹ Significantly, “[a]lso noteworthy is the new impetus given by the concept of energy efficiency as one of the best roads to a cleaner, more sustainable energy future. This trend is currently seen reflected in programs, policy papers, and a few isolated rulings that promote efficiency and demand management.”¹⁸⁵² Therefore, energy efficiency seems offers many regulatory opportunities to improve energy and environmental sustainability in the region.

¹⁸⁵¹ University of Calgary/OLADE Study, *supra* note 3, at 38 & 80.

¹⁸⁵² See OLADE, POWER SECTOR, *supra* note 209, at 34.

Environmental Law Reforms

In 1999, Professors Katz de Barrera-Hernandez and Lucas submitted that in Latin American civil law countries “environmental law cannot yet be said to have found its proper place amidst the more established areas of the law with principles of their own,” and that “despite the introduction of new environmental law principles and instruments, [civil law jurisdictions] still rely heavily on basic civil, criminal, and administrative laws.”¹⁸⁵³ This study points to the contrary; it shows that, despite many flaws, environmental law is a well established area of the law with its own principles and rules in the Latin America region. The fact that civil law jurisdictions still draws from, and rely heavily on, Roman, basic civil, criminal, and administrative law, does not change the self-standing nature of environmental law in Latin America.

Indeed, the Latin American region has accomplished vital reforms in the application of environmental law to energy activities. Significant progress has been made in the following areas: environmental impact assessment and licensing; environmental standards and economic instruments; protection of habitat and biodiversity; public participation and consultation with indigenous people; and, enforcement. But many problems need to be addressed in order to have environmentally-sound energy practices in the region. In particular, the dissertation reveals institutional failures, deficiencies in environmental instruments, and weak enforcement.

Undoubtedly, a transition has occurred in the countries of Latin America to incorporate environmental management principles in their domestic legislation. Specifically, a transition has occurred “from general or scattered environmental

legislation to more specific and refined provisions that incorporate modern management and regulatory techniques and to an increasing extent, establish the framework for economic instruments.”¹⁸⁵⁴ Further, as noted in the previous subsections, the transition process has been accompanied by a comprehensive energy law reform in the direction of increased private participation and competition.¹⁸⁵⁵ The implementation of the energy sector reforms, where it occurred, was an opportunity to integrate environmental regulations and concentrate responsibilities in one or two institutions by country.¹⁸⁵⁶ The question that persists is whether the environmental legal and institutional frameworks have evolved appropriately to take into account the principles of sustainable energy law.

The emergence of environmental law in Latin America has undergone three fundamental phases. In the 1970s and 1980s—influenced by the United Nations Conference on the Human Environment held in Stockholm in 1972—countries in the region adopted natural resources codes or general environmental statutes to manage natural resource utilization, address environmental impacts of resource exploitation and improve environmental quality. During this first stage, a few countries in the region also incorporated mandates to protect the environment in their energy statutes.

A second phase occurred mainly in the 1990s when—as a consequence of the United Nations Conference on the Environment and Development held in Rio de Janeiro in 1992—the countries in the region adopted environmental framework laws, which can be defined that as laws “that integrate various environmental pollution laws and economic development policies and attempt to coordinate the roles of federal, state and

¹⁸⁵³ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 212.

¹⁸⁵⁴ University of Calgary/OLADE Study, *supra* note 3, at i.

¹⁸⁵⁵ *Id.* at 73. See also Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 210.

¹⁸⁵⁶ See OLADE, POWER SECTOR, *supra* note 209, at 33.

local government in their implementation.”¹⁸⁵⁷ These framework laws also seek to articulate the roles of the private sector and civil society and establish the processes through which those roles interact in environmental matters.¹⁸⁵⁸

Environmental framework laws exist in Argentina (2002), Bolivia (1992), Chile (1994), Colombia (1993), Ecuador (1999), Mexico (1988), Peru (2001), and Venezuela (1996). These environmental framework laws are grounded on the constitutional provisions that proclaim a right to environment quality and the reciprocal obligation to protect the environment.¹⁸⁵⁹ Importantly, these statutes include modern environmental management instruments, such as the requirement for environmental impact assessment and licensing, and, in some cases, the use of economic instruments. In addition, either through these laws or other enactments, many Latin American countries have created a top environmental authority with cabinet level, such as a ministry or secretariat, in charge of overseeing environmental matters.¹⁸⁶⁰ Other countries have revamped existing environmental authorities and reorganized the institutional framework to respond to the administrative duties and responsibilities set forth in the various environmental statutes and regulations. In addition, during this phase, the penal codes were amended to include environmental crimes.

A third phase, typically in the late 1990s, has been the implementation of the environmental framework laws, and the passing of specific pollution control laws and laws for the protection of specific natural resources or areas. Outstandingly, where environmental framework laws are in place, general environmental regulations have been

¹⁸⁵⁷ Nolon, *supra* note 424, at 710.

¹⁸⁵⁸ *Id.*

¹⁸⁵⁹ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 211.

¹⁸⁶⁰ Nolon, *supra* note 424, at 710.

largely completed. Also, as noted previously, hydrocarbons laws and electricity laws have been amended to incorporate environmental management principles. Further, several countries—such as Argentina, Bolivia, Ecuador and Peru—have developed specific environmental regulations for the hydrocarbons and electricity sectors that include, among other tools, specifically-designed environmental impact assessment processes.

As a result of this phased-transition, environmental legislation related to the energy sector remains scattered.¹⁸⁶¹ Furthermore, energy-related legislation and natural resources legislation continue to be important sources of environmental law.¹⁸⁶² These laws, which can be traced as far back as the early 1900s in most countries, have not been systematically revised, “leaving the door open to conflict and contradiction between old and new rules.”¹⁸⁶³

Consequently, environmental framework laws providing for environmental impact assessment and other management tools are layered over unrepealed general environmental laws and energy-specific legislation making implementation and enforcement more complex.¹⁸⁶⁴ The 1998 OLADE/University of Calgary Study found that “the successive intermingling layers of environmental and environment-related norms culminating with the present wave of environmental legislation, constitutes a considerable obstacle to the understanding and application of environmental laws in each country.”¹⁸⁶⁵ This finding remains a valid concern to this day. Thus, the countries in the

¹⁸⁶¹ See *id.* at 210; University of Calgary/OLADE Study, *supra* note 3, at i & 74.

¹⁸⁶² Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 210.

¹⁸⁶³ *Id.* at 213-214 (noting that “having to plod through several decades of legislative activity make it difficult to reconcile conflicting policy objectives as well as conflicting usage of terms and concepts.”).

¹⁸⁶⁴ University of Calgary/OLADE Study, *supra* note 3, at ii & 74-77.

¹⁸⁶⁵ *Id.* at 70.

region must strive to introduce coherence into environmental law in its interaction with energy statutes.

Another consequence of this phased-transition is that energy and environmental statutes in the countries of Latin America frequently contain general mandates to comply with regulatory requirements, such as references to “applicable” environmental provisions, and broadly phrased rules prohibiting environmentally degrading activities.¹⁸⁶⁶ The existence and effect of this type of norms was also noted in the 1998 OLADE/University of Calgary Study, “[t]his style of cross-referencing is seldom helpful in pointing at the law and requirements that may apply to a particular activity. Furthermore, this technique may create a vacuum if the instrument referred to has not yet been enacted or regulated, an occurrence that is not uncommon.”¹⁸⁶⁷ Even when such instruments exist, it creates conflicts “by referring to provisions belonging to a generation of laws historically, or for other reasons, opposed to, or devoid of, any environmental consideration.”¹⁸⁶⁸

Finally, while it is clear that there is a transition towards streamlining environmental management, there is lack of legislation integrating energy and environmental policies. An emerging approach combines legislation promoting energy efficiency, on both supply and demand, with environmental legislation.¹⁸⁶⁹ This approach, which is most prominent in Brazil, Chile, Colombia and Mexico, “embraces the concept of energy efficiency as one that may deliver a cleaner and sustainable energy

¹⁸⁶⁶ *Id.* at 75.

¹⁸⁶⁷ *Id.* (footnote omitted). See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 212.

¹⁸⁶⁸ University of Calgary/OLADE Study, *supra* note 3, at 212-213.

¹⁸⁶⁹ *Id.* at ii, 76 & 80.

future.”¹⁸⁷⁰ In addition, this approach is reflected in the legislation promoting the development of renewable energy sources and in the promotion of natural gas to replace coal and other petroleum fuels in the countries of the region.

A fourth phase is underway, as a consequence of the World Summit on Sustainable Development in Johannesburg in 2002, and of increasing regional and worldwide concern regarding global climate change. The main challenge in this phase is to integrate energy law and environmental law. Taking into account the constitutional and legal principles on energy, sustainable development, and environmental quality that exist today in Latin America, the law of sustainable energy is expected to emerge and will of inevitability become a recognizable legal discipline.

Environmental Institutional Frameworks

The institutional regimes for the energy sector in the region have evolved attempting to reflect changes in the sector’s organization, and to address the environmental requirements set forth in laws and regulations. Three different approaches are used in the region to regulate and control the environmental aspects of the energy sector (see Table 1.4). With respect to issuing environmental regulations for the energy sector, some countries assign this duty to the energy ministry or secretariat. Examples of countries using this sectoral approach are Argentina, Ecuador and Peru.

A second approach to rule-making with respect to environmental aspects of energy activities is to grant this empower to the ministry or secretariat of the environment. Brazil, Colombia and Venezuela use this second approach. Third, some countries have adopted a combination of the two systems, where there is some interaction

¹⁸⁷⁰ *Id.* at 76 & 77.

between both energy and environmental authorities to develop environmental regulations for the energy sector. This hybrid approach is used in Bolivia, Mexico and Chile.

Similarly, three different organizational structures exist in the region to manage and control the environmental aspects of energy developments, which mirror the rule-making approaches on environmental requirements for the energy industry. Under the first approach, that is the sectoral system used in Argentina, Ecuador and Peru, the energy ministry or secretariat serves as the top environmental authority for the sector. Under this structure, the energy authority is responsible for reviewing and approving environmental assessments, permitting and oversight of environmental performance in connection with energy activities.

Under the second approach, that is the organizational structure used in Brazil, Colombia and Venezuela, the environmental ministry or secretariat is the top environmental authority for the energy sector. Under this approach, the environmental authorities are responsible for environmental assessment, permitting and oversight of environmental performance by the energy industry. Lastly, in Bolivia, Mexico and Chile, a hybrid organizational structure has been adopted, where there is some interaction between both energy and environmental authorities to control environmental performance of the energy industry.

These systemic differences affect the implementation of environmental norms addressed to the energy sector. The first organizational structure results in more technical environmental regulations, while the second provides more independent review and evaluation of environmental impacts. The third structure may create problems of coordination and conflicts of interest. It remains to be seen which structure shows to be

more effective in adequately addressing the environmental and social concerns of energy activities, promoting compliance and facilitating enforcement actions. Ideally, the top environmental authority should both regulate and oversee environmental aspects of energy operations. In any event, adequate coordination and effective enforcement of environmental provisions addressed to the energy sector is the goal under any of these organizational structures.

Table 1.4: Environmental Institutional Frameworks

Environmental Control & Rulemaking	Country
Sectoral Approach (Energy Ministry/ Secretariat)	Argentina Ecuador Peru
Environmental Approach (Environmental Ministry/ Secretariat)	Brazil Colombia Venezuela
Mixed/Hybrid Approach	Bolivia Chile Mexico

Significantly, the Latin American countries have recognized the need to coordinate energy and policies and decisions, and to avoid creating isolated and ineffective environmental bodies within governmental agencies and sectors.¹⁸⁷¹ Indeed, “there is a growing tendency toward establishing top-ranking, centralized environmental authorities with the ability to coordinate and integrate environmental and resource management and protection across the different sectors.”¹⁸⁷² Usually, these entities take the form of a national environmental commission or council having cabinet-level. For instance, Brazil has a *Conselho Nacional do Meio Ambiente* (CONAMA); Chile has a *Comision Nacional del Medio Ambiente* (also termed CONAMA); Colombia has a *Consejo Nacional Ambiental*; and, Peru a *Consejo Nacional del Ambiente* (CONAM).

In practice, the institutional environmental systems in the region still have inadequate organizational models due to minimal or no coordination of activities among technical departments scattered within the governments’ administrative structure.¹⁸⁷³ Modern environmental and sustainable energy legislation, however, requires addressing environmental issues from an integrated planning, managerial and preventive approach. For instance, the implementation of modern tools, such as environmental impact assessment processes, stakeholder participation, and economic instruments (which are discussed further below), requires an institutional framework that is coordinated and integrated. Such a framework is still not apparent in the Latin American countries considered in this study.

¹⁸⁷¹ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, 215

¹⁸⁷² OLADE/University of Calgary Study, *supra* note 3, at 87-88. See also Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 217; See OLADE, POWER SECTOR, *supra* note 209, 34.

¹⁸⁷³ OLADE/University of Calgary Study, *supra* note 3, at 87.

Environmental Impact Assessment and Licensing

The requirement to undertake detailed environmental impact assessments and licensing for energy-related activities is commonplace throughout the region. This requirement may be a component of the application process for obtaining development permits or permits to use land or the natural resources involved.¹⁸⁷⁴ Typically, however, licenses must be obtained to exploit a resource, to build, to operate, to perform various project tasks and activities, to discharge contaminants and to dispose of the waste. Legislation coordinating these multiple requirements and procedures is scarce.

Few countries in the region “attempt to clarify the relationship between the requirement of comprehensive environmental licensing for a project, the sectoral authorization requirements, the provisions mandating licenses and authorization for individual activities, works or installations and use, emissions or discharges.”¹⁸⁷⁵ Indeed, “[p]articularly worth highlighting are the efforts that countries have been making, with varying levels of success, to simplify and rationalize licensing procedures and involve different sectors in decisions that could affect the environment.”¹⁸⁷⁶ Among the legislative efforts seeking to introduce integration and coordination into environmental decision-making for coordination and integration of environmental assessment and licensing, the Chilean and Colombia systems stand out.¹⁸⁷⁷ Other countries such as Brazil, Mexico and Peru, also have introduced legislation to simplify the licensing process. As an OLADE-sponsored report concluded in 2005,

With regard to Environmental Impact Studies (EIS), significant progress has been made in regulating public participation, access to information,

¹⁸⁷⁴ See OLADE/University of Calgary Study, *supra* note 3, at 96.

¹⁸⁷⁵ *Id.* at 91.

¹⁸⁷⁶ See OLADE, POWER SECTOR, *supra* note 209, at 34.

¹⁸⁷⁷ See Chapter 6 § 6.8 and Chapter 7 § 7.7.

inclusion of minorities, and access to administrative or judicial review. However, it is still necessary to integrate this set of elements into a coordinated procedure, whose terms will be tailored to each particular circumstance.¹⁸⁷⁸

The countries of the region have common features of environmental assessment legislation.¹⁸⁷⁹ Most countries frame their environmental assessment procedures within the broad constitutional goals of securing a healthy environment and sustainable development. With regards to scope, the environmental assessment applies to public as well as to private activities. The kinds of undertakings generally include the broad category of “works and activities,” but Bolivia and Venezuela also include programs and policies.¹⁸⁸⁰ While some legislation refers only to new projects, most statutes also include modifications of existing projects.

Most environmental assessment laws and regulations provide a list of projects and activities that must undergo mandatory comprehensive studies. This list typically includes energy projects, mainly generation and transmission facilities. In addition, screening rules are used to determine which of the remaining undertakings require further assessment. The screening procedures vary in relation to the level of detail required. Countries like Bolivia, Brazil, Chile, Colombia, Mexico, and Venezuela, define different categories of impacts and the corresponding levels of assessment necessary. Other, like Argentina, Ecuador, and Peru, do not fit into this group due to their sectoral-based approach to environmental policy and protection. As noted earlier, these countries have adopted specific legislation for the environmental assessment and licensing of energy projects.

¹⁸⁷⁸ *Id.* at 34.

¹⁸⁷⁹ See OLADE/University of Calgary Study, *supra* note 3, at 96-98.

¹⁸⁸⁰ *Id.*

While most countries ground their environmental assessment and licensing procedures in the sustainable development mandate, these procedures focus on ensuring development with little concern of sustainability.¹⁸⁸¹ The purpose behind these procedures is to streamline approval of energy-related projects. Undeniably, the environmental review process “is introduced to ensure that a project or activity that *will take place* is sustainable rather than to determine *whether or not an undertaking can proceed*.”¹⁸⁸² The general lack of the “no action” (or “no development”) alternative requirements seems to reinforce this finding.¹⁸⁸³

Consequently, the environmental assessment process in Latin America revolves around the concept of mitigation. In this regard, it is important to point out that “while the first generation of environmental assessment legislation in the region made no reference to establishing objective guidelines or criteria to orient the assessment of environmental impact studies, there are already examples—albeit embryonic in some cases—of enormous progress towards ensuring the effectiveness of the tool and the transparency of the process.”¹⁸⁸⁴ Certainly, while many problems remain in the application of the environmental assessment and licensing procedures in the energy sector, the environmental review process has proven an effective tool in Latin America. Many proposed projects have been modified or rejected altogether in order to avoid damage to the environment.

With regards to large hydropower dams, a good example is the proposed dam on the Xingú River in the Brazil’s eastern Amazon. The Brazilian federal utility (ANEEL),

¹⁸⁸¹ See OLADE/University of Calgary Study, *supra* note 3, at 99.

¹⁸⁸² *Id.* at 98; Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 222.

¹⁸⁸³ See OLADE/University of Calgary Study, *supra* note 3, at 99.

¹⁸⁸⁴ See OLADE, POWER SECTOR, *supra* note 209, at 33.

first proposed damming the Xingú in the early 1980s. Initially, the project called for a series of dams that would have inundated vast areas of the Amazon. But environmental and social concerns raised during the review process forced authorities to scale back and modify the project. As modified, it would be a run-of-river 11,183-megawatt hydropower complex, the second largest in Brazil after Itaipú (the 12,600-megawatt complex co-owned by Brazil and Paraguay). Furthermore, the project has been stalled since 2001, when a federal judge in the State of Pará ruled that Brazil's constitution prohibits construction of dams in indigenous areas without the informed, prior consent of the affected communities, as discussed further below.

Environmental Standards and Economic Instruments

Environmental legislation in Latin America mostly follows the command-and-control approach. In many instances, environmental statutes contain generic prohibitions that are not directly enforceable, and, in many instances, there are no further efforts to regulate these matters.¹⁸⁸⁵ As stated by Professors Katz de Barrera-Hernandez and Lucas, “regulatory standard setting is one area of environmental law that has not yet achieved a mature stage in the region. Because there are no specific regulatory standard-setting procedures or guidelines, standard setting in LAC [Latin American and Caribbean] countries may be left entirely at the discretion of administrators.”¹⁸⁸⁶

Whereas there is no consistent pattern regarding the nature of the environmental standards applicable throughout the region, environmental and energy laws have a tendency to contain technology-based standards.¹⁸⁸⁷ This type of norms may require

¹⁸⁸⁵ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 226.

¹⁸⁸⁶ *Id.*

¹⁸⁸⁷ See OLADE/University of Calgary Study, *supra* note 3, at 95.

specific equipment, processes, or design, such as the “best available technology”.¹⁸⁸⁸

Legislation in the region also frequently references foreign environmental standards. An example may be found in the widespread adoption of energy-related standards such as vehicle efficiency and emissions, fuel quality and technical standards for the manufacture of end-use appliances. Another example is the adoption of international standards, under conventions for the protection of the marine environment, to prevent oil contamination.

In addition to environmental legislation for energy activities relying on the command-and-control approach, several countries in the region have embraced market-oriented instruments as tools for environmental protection and sustainable development.¹⁸⁸⁹ Most countries also provide fiscal incentives and subsidies to encourage environmental control by energy actors, which may be found in both sectoral and environmental statutes. Examples of incentives being used include tax breaks on the purchase of pollution abatement equipment and subsidies to promote development and use of modern renewable sources of energy. A few countries in the region, such as Chile, Colombia and Peru, are using more sophisticated tools such as pollution charges and tradable permits.¹⁸⁹⁰

Primarily as a response to the international financial community, several countries of the region have begun to adopt policies that favor utilizing market mechanisms and economic instruments as tools for environmental protection and sustainable economic development.¹⁸⁹¹ An OLADE-sponsored study of the power sector found that in the Andean countries, available instruments include charging for resource use, payments for

¹⁸⁸⁸ *Id.*

¹⁸⁸⁹ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 216.

¹⁸⁹⁰ *Id.* at 216.

¹⁸⁹¹ See OLADE, POWER SECTOR, *supra* note 209, at 35.

polluting, special investment conditions, contract fulfillment guarantees, taxes, subsidies, and also, in the case of Bolivia, the possibility of establishing negotiable permit systems.¹⁸⁹²

Chile provides the best example of a Latin American country that has embarked in economic-based approaches in the energy-related and environmental areas.¹⁸⁹³ However, Chile's implementation of environmental instruments has been pending for over a decade.¹⁸⁹⁴ Concerns over the use of economic instruments (in Chile and elsewhere) include: establishing (or bidding) allowances for regulated sources; how to deal with sources whose emissions would be below threshold limits; and, the ability of the environmental agency to administer and enforce emissions trading schemes. Further, as the Chilean experience shows, implementation of such tools is likely to face stiff opposition in the legislative bodies. Furthermore, the private sector may be reluctant to embrace emissions-trading systems, afraid of changes to the rules and a lack of clear and timely information.

Market-based approaches, particularly emissions trading, could help reduce energy-related pollution mainly in the large urban areas of Latin America, under the appropriate scheme and institutional oversight. Moreover, "[t]he adoption of economic instruments may be the closest that some [Latin American] jurisdictions come to implementing a structure for industrial cooperation in environment and energy matters."¹⁸⁹⁵ However, the implementation of economic instruments requires an institutional framework that is coordinated and integrated, but such a framework is not

¹⁸⁹² *Id.*

¹⁸⁹³ *See supra* Chapter 6 §6.7.

¹⁸⁹⁴ *Id.*

¹⁸⁹⁵ *See* Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 216.

apparent in most countries, as noted previously when discussing the environmental institutional frameworks in the region.

Public Participation and Consultation with Indigenous People

Environmental and social issues in connection with energy developments are increasingly attracting public awareness in Latin America, and most countries require public hearings in the environmental review process. Public participation may be required as a result of ratification of international agreements, constitutional provisions or environmental statutes. The Constitution of Ecuador, for example, expressly requires prior public participation for any decision that may affect the environment, and calls for the communities to be adequately informed.¹⁸⁹⁶ In Colombia the right to public involvement in environmental matters is not expressly granted in the Constitution, but public participation is listed in the essential principles of the Colombian State and is included in the environmental framework law.¹⁸⁹⁷

Public participation “in developing, implementing and supervising environmental standards is perhaps where most regulatory activity is seen in the countries of the region, especially with regard to energy development and attention to ethnic minorities.”¹⁸⁹⁸ Progress has also been made in terms of participation in the environmental impact assessment process and regarding the filing of administrative or judicial action in connection with environmental rights.

In general the legal framework in Latin America, however, seems inadequate to deal effectively and fairly with environmental and social issues raised by local concerned

¹⁸⁹⁶ CONST. art. 88 (Ecuador).

¹⁸⁹⁷ CONST. art. 3 (Colom.). *See supra* Chapter 7 § 7.8.

¹⁸⁹⁸ *See* OLADE, POWER SECTOR, *supra* note 209, at 33-34.

individuals, indigenous people and non-governmental organizations (NGOs).¹⁸⁹⁹ Some countries restrict intervention to interested or aggrieved persons and NGOs, while others provide open access and some do not have any provisions on this topic.¹⁹⁰⁰ Further, public participation is generally limited to project assessment and approval processes. The lack of provisions for intervenor funding is another common feature throughout the region. The only country that contemplates some kind of funding for intervenors in the environmental assessment process is Bolivia.¹⁹⁰¹

Several countries require that the environmental studies be undertaken by a qualified third party, usually an environmental assessment professional registered with the environmental authorities. Such is the case in countries like Brazil, Peru, and Venezuela. The element of impartiality introduced by the intervention of a third independent party may be reinforced by holding this party liable for damages under certain circumstances, as happens in Brazil. This type of legislation can prove very powerful, if enforced. For instance, in connection with the approval of a hydro project in Brazil, the environmental agency (IBAMA) levied a multi-million dollar fine on the document's author—a Brazilian consulting firm—. ¹⁹⁰²

Consultation with indigenous people, not just an opportunity for public participation, may be required as a result of ratification of the International Labour Organization's *Indigenous People Convention*, constitutional provisions or the environmental statutes. But few references to indigenous communities' rights are found in environmental laws and regulations. Moreover, "[w]here present, provisions on

¹⁸⁹⁹ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 208.

¹⁹⁰⁰ See OLADE/University of Calgary Study, *supra* note 3, at 100.

¹⁹⁰¹ *Id.* at 208.

¹⁹⁰² See Chapter 5 § 5.13.

indigenous rights are limited, paternalistic, and generally fail to directly include these communities in environmental and resource-related decision-making and management.”¹⁹⁰³ Some statutes provide an environmental justice review, mandating that determinations regarding the use of natural resources cannot be to the detriment of minorities communities, and can only be taken after consultation with representatives of those communities.¹⁹⁰⁴

Cases in Brazil and Colombia illustrate the main questions and issues that typically arise when applying the requirement of adequate involvement and consultation. In Brazil, back in 2001 a federal judge in the State of Pará ruled that the Brazilian Constitution prohibits construction of dams in indigenous areas without the informed, prior consent of the affected communities.¹⁹⁰⁵ Circumventing the ruling, in July 2005, the Brazilian Congress passed legislation authorizing the project provided it survives an array of feasibility studies, including economic, technical, environmental and “anthropological studies” involving consultation with indigenous groups. It remains to be seen whether the legislative act authorizing the project to move forward withstands a legal challenge on whether it satisfies the constitutional requirement of prior informed consent.

The case involving the U’wa indigenous people in Colombia, mentioned earlier, also shows the legal and practical problems of satisfying the consultation requirement of indigenous groups.¹⁹⁰⁶ Unsatisfied with the consultation process in connection with an oil development, the U’wa people brought legal actions that resulted in conflicting rulings

¹⁹⁰³ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 226.

¹⁹⁰⁴ *Id.* at 227. See, e.g., Chapter 7 § 7.8.

¹⁹⁰⁵ See *New Momentum for Amazon Dam Project?*, ECOAMÉRICAS, August 2005, Vol. 7. No. 10, at 4. See also, *supra* Chapter 5 § 5.13.

¹⁹⁰⁶ See *supra* Chapter 7 § 7.8; Culler, *supra* note 1208, at 335-338.

between the highest administrative tribunal and the Constitutional court.¹⁹⁰⁷ On one hand, the Constitutional Court held that the U'wa people were properly consulted about the project. On the other hand, the highest administrative law tribunal (*Consejo de Estado*) held that public consultation was insufficient because, although there had been public meetings to discuss plans for oil exploration, the U'wa leadership was not present. Although the U'wa could not get relief in Colombian courts, they gained support from the Inter-American Commission of Human Rights.¹⁹⁰⁸

As the U'wa case shows, consultation and participation of indigenous communities may be hindered by problems identifying legitimate representatives who voice the communities' real needs and concerns and may enter into commitments binding on their respective communities.¹⁹⁰⁹ Thus, a practical problem in the consultation process is identifying legitimate representatives who voice the communities' concerns and may enter into commitments binding on their respective communities.¹⁹¹⁰

In any event, a greater level of citizen activism is seeking to reorient administrative action towards energy and environmental sustainability through the courts and administrative tribunals, seeking to balance development and environmental protection.¹⁹¹¹ As an OLADE-sponsored report noted, "[t]he combination of new legal participatory tools and growing environmental awareness makes these [Latin American] jurisdictions the depositories of a high level of experience in dealing with environmental issues in the legal field."¹⁹¹²

¹⁹⁰⁷ See Culler, *supra* note 1208, at 335-336.

¹⁹⁰⁸ *Id.* at 336-337.

¹⁹⁰⁹ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 227. See also, Chapter 10 § 10.11.

¹⁹¹⁰ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 227.

¹⁹¹¹ See OLADE, POWER SECTOR, *supra* note 209, at 34

¹⁹¹² *Id.*

Habitat and Biodiversity Protection

While environmental law has generally progressed throughout the region, legislation for the protection of habitat and biodiversity has evolved a lesser degree.¹⁹¹³ This is particularly troubling because of the region's diminishing reserves of biological resources. Moreover, exploitation of the countries' energy resources, in particular oil and gas reserves, usually takes place in ecologically-sensitive areas.

The concept of habitat and species protection as well as the protection of ecosystems *per se* is evolving slowly in Latin America. The region seems to favor individual resource-management legislation rather than the protection of ecosystems in an integrated manner. Impacts on ecosystems by energy activities are generally addressed in the region through environmental review and licensing. Not all the countries in the region, however, make specific reference to ecosystem protection in environmental impact assessment legislation. Countries like Colombia, Ecuador, and Mexico do, but even in these countries, references to ecosystems are generally limited to requirements that sensitive ecosystems be identified in environmental assessments for mitigation purposes.¹⁹¹⁴ Nonetheless, at least one country in the region, Mexico, has included harm or damage to ecosystems as a criminal offense.¹⁹¹⁵

Protection of habitat and species may also result from the implementation of protected areas legislation and national parks legislation. However, protected areas and species statutes in Latin America, "generally belong to the youngest generation of environmental legislation, added to or superimposed over older protection

¹⁹¹³ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 218.

¹⁹¹⁴ See OLADE/University of Calgary Study, *supra* note 3, at 84-85.

¹⁹¹⁵ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 222.

instruments.”¹⁹¹⁶ A trend in the region is that of attending to species conservation *in situ*.¹⁹¹⁷

Protection management schemes are difficult to reconcile with pre-existing ones such as national parks, protected forests or indigenous reserves. The treatment of pre-existing rights within protected areas is another problematic issue. Some regimes specify that preexisting rights to the delimitation and creation of protected areas shall be subject to environmental legislation, but, in general, no clarification is provided. In addition, “provisions making room for exceptions to the application of the basic protection regimes are not uncommon, rendering them particularly vulnerable to competing development interests.”¹⁹¹⁸

Ultimately, the courts will have to decide, on a case by case basis, the issue of preexisting rights and environmental protection in protected areas. The Argentine case *Oikos v. Repsol-YPF*, discussed above, dealt with this issue.¹⁹¹⁹ Briefly, in 1993, Repsol-YPF won a 25-year oil concession encompassing a wetland ecosystem, which the provincial authorities had declared a reserve in 1980 and was later designated for conservation under the *Ramsar* treaty in 1995. The oil developer argued that its contract should be honored because it predated a provincial law prohibiting developments in protected areas. But, in March 2005, the Supreme Court in Mendoza held that environmental-protection measures should take precedence over private rights.

¹⁹¹⁶ *Id.* at 223.

¹⁹¹⁷ See OLADE, POWER SECTOR, *supra* note 209, at 34.

¹⁹¹⁸ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 223.

¹⁹¹⁹ See *Oikos v. Repsol-YPF*, *supra* note 621.

Environmental Law Enforcement

Despite fairly developed enforcement legislation and constitutional habeas systems for the protection of environmental rights, environmental law enforcement in general, and particularly in connection with energy activities, remains weak throughout Latin America. Moreover, ineffective, or simply lack of enforcement, is perhaps the major obstacle to improving the effectiveness of environmental law and fostering sustainable energy law.¹⁹²⁰ Enforcement is notably feeble when the State is the main or sole energy developer or operator, like in the oil upstream industry in Mexico or Venezuela.¹⁹²¹

The reasons for weak enforcement vary from country-to-country, but there are several common features in the Latin American region.¹⁹²² Over the past decades, the countries of the region have embarked upon an important process of reforming the administrative apparatus, “and significant progress has been made in terms of effectiveness and efficiency in the management of environmental matters on a governmental level.”¹⁹²³ However, it has been clearly identified that “enforcement problems seems to be caused more by lack of human and financial resources and institutional capacity than by lack of adequate legislation.”¹⁹²⁴ Reportedly, most environmental agencies remain underfunded and understaffed, creating serious inconsistencies and potential lack of coordination in administration and enforcement.¹⁹²⁵

As for the legal aspects that affect enforcement of environmental provisions, it is

¹⁹²⁰ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 231 .

¹⁹²¹ *Id.* at 208.

¹⁹²² FARN, COMPLIANCE AND ENFORCEMENT I; FARN, COMPLIANCE AND ENFORCEMENT II, *supra* note 36.

¹⁹²³ See OLADE, POWER SECTOR, *supra* note 209, at 34.

¹⁹²⁴ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 231.

¹⁹²⁵ *Id.* at 232.

important to note that the countries considered in this study are civil law jurisdictions. The civil law approach to the application of environmental law affects enforcement procedures. In civil law countries energy or environmental provisions generally need to be interpreted in conjunction with the basic legal concepts contained in the codes or laws of general application. “However, such general laws may not adequately fill every gap in addressing the complexities of environmental matters.”¹⁹²⁶ Further, in civil law system, the judiciary lacks law-making powers to fill in the gaps necessary to apply energy or environmental laws—or related issues in the areas of administrative law and criminal law—and has limited remedial powers.¹⁹²⁷

Another important consideration is that the Latin American countries considered herein follows the French/Spanish approach to administrative law, which utilizes a separate set of legal principles for matters involving the government’s actions and omissions, contracts, and liability; and an independent administrative law jurisdiction (termed *jurisdicción contencioso-administrativa*). Thus, enforcement jurisdiction is divided between the civil, penal and administrative courts. Legal violations are defined as criminal, civil or administrative from the outset, and their application follows distinct and separate legal paths.¹⁹²⁸

Administrative violations follow strict liability rules and are dealt with within the administrative law jurisdiction, while civil offences follow basic civil liability rules and are considered by the civil courts. Criminal offenses require *mens rea* and fall within the penal court system.¹⁹²⁹ For the most part, enforcement of environmental laws in Latin

¹⁹²⁶ OLADE/University of Calgary Study, *supra* note 3, at 77.

¹⁹²⁷ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 215.

¹⁹²⁸ *Id.* at 243.

¹⁹²⁹ *Id.* at 242.

America is taking the form of fines, particularly in the oil and gas sector. “Indeed, most countries’ administrative laws only stipulate fines and/or cancellation or suspension of administrative prerogatives and the like, while criminal law adds the possibility of incarceration.”¹⁹³⁰ Typically, the Office of the Attorney General has the duty to investigate and prosecute reported or known illegal activities whether administrative, civil or criminal.

As a general rule, criminal law under civil law systems applies only to natural persons (not to corporate entities as in common law jurisdictions).¹⁹³¹ Corporate entities may only be punished through the administrative system, however. This principle blocks the implementation of effective deterrence and enforcement systems against corporate polluters. Nevertheless, some limited flexibility has already been taken introduced in the application of criminal law. Some countries in the region recognize the protection of the environment *per se* in their criminal codes. But, in the majority of Latin American countries, environmental protection through criminal law is connected to the protection provided to property or health.¹⁹³²

The approach towards civil liability taken across the Latin American countries offers hurdles in environmental law enforcement. Unless specific provisions exist on environmental liability, it is necessary to apply general principles of law to address issues of environmental liability. This implies a remission to civil, commercial, and other laws of general application, where the standard of care, causation and the extent of liability is governed by rules set under such codes or general laws.¹⁹³³ “No special rules on

¹⁹³⁰ *Id.*

¹⁹³¹ *Id.*

¹⁹³² *Id.* at 243-244.

¹⁹³³ *Id.* at 243.

assignment of liability, restoration, the allowable extent of a claim of damages and losses, including economic loss due to environmental damage, may be cited,” noted the 1998 OLADE/University of Calgary study.¹⁹³⁴ Some progress has been made in this front since 1998, however. For instance, Argentina’s 2002 Environmental Framework Law defines environmental damage, determines the rules for liability and remediation, and mandates environmental insurance.¹⁹³⁵

The complexities involved in the enforcement of environmental laws in Latin America are well illustrated in the case against the Texaco Corporation (currently ChevronTexaco) concerning the company’s activities in the Amazon region of Ecuador from 1965 to 1992. During this period, Texaco allegedly caused severe environmental harm in areas inhabited by indigenous people. These people filed cases in the United States grounded on claims such as negligence, public nuisance, private nuisance, strict liability, trespass, and violations actionable under the U.S. Alien Tort Act.¹⁹³⁶ Texaco responded by submitting a motion to dismiss the cases on several grounds, including international comity, *forum non conveniens*, and failure to join *PetroEcuador* and the Republic of Ecuador as indispensable parties to the case. After nearly a decade of litigation in the United States, the court granted Texaco’s motion to dismiss.¹⁹³⁷ But the court, noting that there was no mandate for Texaco to submit to Ecuadorian jurisdiction, compelled Texaco to abide by an Ecuadorian judgment.

In May 2003, the plaintiffs took the case to the Ecuadorian court system. In

¹⁹³⁴ *Id.* at 244.

¹⁹³⁵ Argentina’s Environmental Law, *supra* note 536, arts. 27-34.

¹⁹³⁶ See BOSSELMAN ET AL., *supra* note 47, at 495. & 478-489.

¹⁹³⁷ *Id.* at 489-493. See *Jota v. Texaco Inc.*, 157 F.3d 152 (2d. Cir. 1998); *Aguinda v. Texaco, Inc.*, 142 F.Supp.2d 534 (S.D.N.Y. May 30, 2001) (*Aguinda II*); *Judgment Affirmed as Modified by Aguinda v. Texaco, Inc.*, 303 F.3d 470 (2nd Cir. (N.Y.) Aug 16, 2002) (*Aguinda III*).

Ecuador, Texaco argues that the plaintiffs' claims are baseless because it fulfilled cleanup commitments made with the Ecuadorian government. Notwithstanding, a court decided to hear the case and ordered a field survey to assess the environmental contamination alleged by the plaintiffs. The applicability of liability rules to these finding could determine the outcome of the Texaco case. Because there were no specific environmental liability rules in place during most of the time of the alleged pollution, the case could be decided based on the Civil Code's general liability rules.¹⁹³⁸ By 1979, the Constitution of Ecuador included a provision that established the right to "an environment free of contamination," and the country had some environmental statutes in place. But Ecuadorian environmental law at the time Texaco was performing its oil contract was basically consisted of general exhortations to protect the environment and prevent contamination. Thus, the determination of Texaco's liability in Ecuadorian courts could be extremely difficult.

¹⁹³⁸ See Kalas, *supra* note 1313, at 47.

A Final Note on Sustainable Energy Law and Policy for Latin America

As one of the world's largest oil and natural gas producing and exporting regions, Latin America faces the challenge of protecting its environment while continuing to develop its hydrocarbons industry for some time. Dependence on export revenues from hydrocarbons by most countries of the region makes certain that the sector will continue to operate, but strict environmental compliance is warranted. As for domestic energy consumption, the region has the potential to wean itself from using the more polluting sources, namely oil and coal, given its substantial natural gas reserves and hydropower potentials as well as through the use of its considerable untapped modern renewable energy resources. Indeed, "[t]he region has sufficient energy reserves for its consumption needs and for export to other regions of the world; based on actual consumption (basis: year 2003 and proven reserves) the total reserves of oil and gas, however, would serve the demand for no more than 30 years."¹⁹³⁹

The region accounts for 8 percent of the world's carbon dioxide emissions.¹⁹⁴⁰ Nonetheless, since the region has received the "developing country" status in the Kyoto Annexes it is not obligated to reduce existing emissions.¹⁹⁴¹ Further, "[t]here is a clear statement that actual priorities are given to push the economic growth of the region and that this priority is overruling any request of emission reduction from power generation."¹⁹⁴² In any event, a regulatory framework requiring emission reduction from power generation and other energy-related sources must be explored. Indeed, as stated in a OLADE-sponsored report published in 2005, "[i]t is envisaged that in about 10 years

¹⁹³⁹ See OLADE, POWER SECTOR, *supra* note 209, at 10.

¹⁹⁴⁰ *Id.* at 9.

¹⁹⁴¹ *Id.*

¹⁹⁴² *Id.* at 13.

emission reduction will be a strong subject of the region and refurbishment of power plants with regard to emission reduction facilities will become an issue.”¹⁹⁴³

Regional demand for electricity is expected to continue to grow steadily: The power market is growing by 4-5 percent.¹⁹⁴⁴ It will be dominated by the growth of power demand in Brazil, which has been estimated will increase by two-and-a-halftimes from 2000 to 2030, growing at an average annual rate of 3.2 percent.¹⁹⁴⁵ To meet this big increase, the country will need to expand all the power sector’s segments: generation, transmission and distribution networks. On short to medium term, the outlook for new installations of power generation—in Brazil and elsewhere in the region—will be mainly based on natural gas, and the favorite technology seems to be the highly efficient combined cycle gas turbines.¹⁹⁴⁶

The Latin American region already relies on natural gas as an important source of energy, and demand is expected to increasing in the future. Therefore, additional domestic consumption of natural gas should be encouraged to reduce the percentage of oil and coal in the energy mix. Natural gas offers many environmental benefits for the region. First, it allows industry to switch from petroleum or coal to cleaner-burning natural gas. As for electric generation, the Latin American countries have already turned their attention to natural gas fired facilities given that large hydroelectric dams are more expensive and take longer to build, not to mention the environmental and social problems. Burning natural gas, however, is not pollution-free and necessitates the use of best available control technology and stringent monitoring. Second, natural gas usage can

¹⁹⁴³ *Id.* at 13.

¹⁹⁴⁴ *Id.* at 11.

¹⁹⁴⁵ *Id.* at 13 & 127.

¹⁹⁴⁶ *Id.* at 13.

help improve air quality by replacing diesel or gasoline in buses and trucks. In the residential sector, natural gas is a perfect substitute for bottled liquefied petroleum gas, and also less-harming than kerosene or other fossil fuels used at the household level. Importantly, natural gas usage is becoming increasingly feasible throughout the region as major pipelines are built, creating domestic and regional gas networks.¹⁹⁴⁷

Hydropower represents a strong option for power generation in Latin America “and will play an important role in the energy mix of the region for the long term.”¹⁹⁴⁸ Further, the promotion of modern renewables energy sources must take center stage in the years to come in order to secure a sustainable energy future. Regional use of the clean development mechanism (CDM) and other tools under the *Climate Change Convention* and the Kyoto Protocol would likely contribute to the development of modern technologies powered by wind, solar and geothermal energy. Further, biofuels, mainly ethanol and biodiesel, can play an important role in achieving a diverse energy mix and cutting down on harmful air emissions from fossil fuel sources. Capturing methane, primarily from large urban sanitary landfills, provides an additional source for electric generation. Indeed, CDM projects have been certified for Brazil, and others are undergoing the certification process.¹⁹⁴⁹ Colombia and Mexico, indeed the entire region, should take advantage of the CDM mechanisms to properly manage landfills.¹⁹⁵⁰

Policies and legislation that promote a more rational use of energy would also result in improvements in the region’s environment and economic prosperity. In particular, the renewable portfolio standard (RPS) mechanism and demand side

¹⁹⁴⁷ See OLADE, Report 2004, Regional Overview, *supra* note 2. See *infra* Tables 7.5, 7.6, 7.7 & 7.8.

¹⁹⁴⁸ See OLADE, POWER SECTOR, *supra* note 209, at 10.

¹⁹⁴⁹ See OLADE, Report 2004, Regional Overview, *supra* note 2.

¹⁹⁵⁰ *Id.*

management (DSM) offer many opportunities to improve energy and environmental sustainability. The Latin American countries have pledged that in 2010 they would use 10 percent renewable energy in the regional energy mix, as a voluntary, non-binding commitment.¹⁹⁵¹ So far, however, the RPS tool is used only in Brazil. In contrast, DSM seems to be the favorite efficiency-centered approach currently being implemented in the region as part of the sustainable development strategy for the energy sector.¹⁹⁵²

The main challenge for a sustainable energy future lies in addressing energy concerns both in large urban centers and in remote rural areas. Latin American suffers from the ill-pattern of increasingly large urban cities and impoverishing rural communities. It has been estimated that around 70-75 percent of the population of these countries lives in urban centers.¹⁹⁵³ Indeed, “[i]n the short term, governments in LAC [Latin America and the Caribbean] have the formidable task of making cities more hospitable venues for economic development while improving the living conditions of the poor.”¹⁹⁵⁴

Further, the region’s sustainable energy future requires that issues be addressed from a joint energy and environmental policy perspective at a very early stage in the development process. The 1998 OLADE/University of Calgary Study highlighted the importance of this issue as follows:

Energy policy and decision-makers must strive to incorporate in the design of their plans a recognition of the interconnectedness implied in the concept of sustainable development. Thus, new energy infrastructure needs must be addressed following a carefully planned strategy that should

¹⁹⁵¹ *Id.*

¹⁹⁵² See OLADE/University of Calgary Study, *supra* note 3, at 38, 76, 77 & 80.

¹⁹⁵³ See WORLD BANK, ENVIRONMENTAL STRATEGY, *supra* note 188, at 105; DAWN IN THE ANDES REPORT, *supra* note 85, at 75.

¹⁹⁵⁴ WORLD BANK, ENVIRONMENTAL STRATEGY, *supra* note 188, at 105.

look at mitigating the impact of meeting present as well as future needs. Among other things, large scale mega-projects devised to supply energy to urban centers must be evaluated in view of their potential to deplete economic and natural resources in rural areas, to increase poverty and to precipitate migration to the cities with consequent impact on urban demand and supply patterns. An integrated development strategy must carefully consider and provided for the needs of rural communities, including indigenous peoples' groups. *The importance of the need to enhance living conditions in the poor rural and remote areas of the Latin American countries goes further than the need to break the poverty-degradation and migration cycles.*¹⁹⁵⁵

Improving the population's quality of life through equitable access to energy is also a topic that is at the head of policy programs throughout the Latina American region and has direct impact on the relationship between environmental protection and development. "This concern tends to give way to legislative promotion of alternative energy development, particularly regarding energy access by rural sectors and those located in remote areas relative to existing supply networks."¹⁹⁵⁶

It is evident that some activity in this direction is already being taken at a domestic level.¹⁹⁵⁷ But, it is doubtful that the sustainable development objectives that have been adopted by many governments are being adequately promoted.¹⁹⁵⁸ Moreover, a movement away from state intervention to privatization in the energy sector raises the challenge. Would it discourage or complicate an integrated approach to energy and environmental planning? Would it discourage investment in environmentally-sound energy projects? Would it further weaken environmental compliance and enforcement in

¹⁹⁵⁵ See OLADE/University of Calgary Study, *supra* note 3, at 69 (emphasis added). See also Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 245.

¹⁹⁵⁶ See OLADE, POWER SECTOR, *supra* note 209, at 34.

¹⁹⁵⁷ See Katz de Barrera-Hernandez & Lucas, *supra* note 4, at 244.

¹⁹⁵⁸ *Id.* at 208.

the energy sector? These questions remain unanswered both in policy documents and in legislative efforts.

Implementing environmentally-friendly and long-term energy policies in Latin America requires a regional effort. There is an urgent need for a consistent and clear set of regional principles governing the environmental implications of energy developments. Moreover, the ongoing regional energy integration, mainly in natural gas and electricity, could offer great benefits to environmentally-sound development and economic growth. Integration of energy production with the region's high demand centers would improve access to energy services needed to for the region's economic growth.¹⁹⁵⁹ Regional energy integration would further enhance market potential and likely contribute to attract much need investment in the sector. Energy and environmental sustainability demands that there be a systematic regional effort to accomplish these goals. Therefore, a regional energy framework that possesses the tools to incorporate the environmental dimension into the ongoing energy integration should be seriously considered in the Latin American region.

In conclusion, the most environmentally benign scenario for the region is for additional uses of natural gas and modern renewable energy resources, with oil and coal use diminishing in importance, and improved energy efficiency. The expansion of regional natural gas and electricity markets, increased utilization of renewables and improvements in energy efficiency are necessary for the energy prospect of Latin America. The adoption of cleaner technologies in the energy and transportation sectors avoids pollution management, mitigation and abatement that is expensive for the

¹⁹⁵⁹ See OLADE/University of Calgary Study, *supra* note 3, at 6.

countries of the region. Further, most Latin American countries cannot afford further degradation of air quality in urban centers or to clean up polluted areas, when faced with necessary expenditures for poverty alleviation, social programs and improvements in infrastructure. With implementation of sustainable energy and environmentally-sound development policies, the region will achieve a more sustainable future that allows for a growth in energy production, energy efficiency in generation and use, and an improvement in environmental quality.

APPENDIX A – OVERVIEW OF ENERGY IN LATIN AMERICA

*Latin America's Energy Sector in Brief*¹⁹⁶⁰

A survey of energy resources in Latin America reveals that the region is well endowed with renewable and non-renewable energy sources.¹⁹⁶¹ With respect to renewables, the countries in the region are large producers and consumers of, and highly dependent on, hydroelectric power, which is relatively abundant in all countries.¹⁹⁶² But, while the region has taken advantage of its hydropower potential, other renewable energy resources (solar, wind and geothermal energy) remain mostly untapped.¹⁹⁶³ With regards to non-renewable energy sources, despite having exploited hydrocarbons for over a century, the region still has significant reserves, mostly in the form of oil and natural gas and, to a lesser extent, of coal.¹⁹⁶⁴ In figures, Latin America has about 10 percent of the world's oil reserves, 5 percent of the world's natural reserves, and 2 percent of the world's coal reserves.¹⁹⁶⁵ In addition, about 23 percent of the world's hydroelectric potential is found in the region.¹⁹⁶⁶

Given its vast energy resources it is not surprising that Latin America produces more energy than it consumes. Latin American production and consumption of hydrocarbons as well as oil exports to the rest of the world, particularly to the United

¹⁹⁶⁰ In this section, references to Latin America (or to “the region”) include not just the countries considered in this study but to all the Latin American and Caribbean countries that are part of the OLADE.

¹⁹⁶¹ See generally OLADE, Report 2004, *supra* note 2; OLADE, POWER SECTOR, *supra* note 209. See also OLADE/University of Calgary Study, *supra* note 3, at 4-7.

¹⁹⁶² See *infra* Tables 6.1 & 6.4.

¹⁹⁶³ *Id.*

¹⁹⁶⁴ See *infra* Tables 2.1, 3.1 & 4.1. See also WORLD ENERGY ASSESSMENT, *supra* note 16, at 457.

¹⁹⁶⁵ See OLADE, Report 2004, *supra* note 2, World Overview, at 1; OLADE, POWER SECTOR, *supra* note 209, at 10-11.

¹⁹⁶⁶ See OLADE, POWER SECTOR, *supra* note 209, at 10.

States, continue to grow, though at a lower rate than reserves are found.¹⁹⁶⁷ Oil exports to the rest of the world account for the region's surplus production. According to the *World Energy Assessment* primary energy use in Latin America, that is, commercial energy or energy traded in the marketplace and exchanged at the going market price, is about 4.3 percent of the world's commercial energy.¹⁹⁶⁸ Most of the energy produced and consumed in the region is in the form of hydrocarbons. Energy consumed by type of source is, as follows: oil products (46 percent), electricity (15.5 percent), biomass (15.2 percent), natural gas (13.7 percent) and others (9 percent).¹⁹⁶⁹ This consumption pattern (by type of source) has remained constant during the past decade.

With respect to the region's power sector, the installed generation capacity is 52 percent hydroelectric, 45 percent thermoelectric, 2 percent nuclear, and 1 percent geothermal, wind, solar and biomass.¹⁹⁷⁰ Over 90 percent of this capacity is owned by public utilities, while the rest belongs to self-generators. As a result, electrical production comes mainly from hydropower (56 percent) and fossil fuels (40 percent); the remainder comes from nuclear energy (3 percent), and geothermal, wind and photovoltaic systems (1 percent).¹⁹⁷¹ The electrical power produced by self-generators was 12 percent of the total production. The OLADE points out that, "more and more countries are becoming interconnected with others, allowing them to make the best use of the reserves and complementarities of the supply, as well as the non-simultaneities of the demand."¹⁹⁷²

Due to its geographical location, Latin America has the resources to produce

¹⁹⁶⁷ See *infra* Tables 2.2, 2.4, 3.2, 4.2 & 4.4.

¹⁹⁶⁸ See WORLD ENERGY ASSESSMENT, *supra* note 16, at 33 & 457.

¹⁹⁶⁹ See OLADE, Report 2004, *supra* note 2, Figure 11.

¹⁹⁷⁰ *Id.*, Regional Overview, at 3.

¹⁹⁷¹ *Id.*

¹⁹⁷² *Id.*

significant amounts of energy from hydropower and other modern renewable resources.¹⁹⁷³ While renewable energy includes energy obtained from hydropower and the burning of firewood, the term modern renewable energy is used herein, as in the *World Energy Assessment*, “to distinguish between traditional renewables used directly with low conversion technology and renewables using capital intensive high-tech energy conversion such as solar, wind, geothermal, biomass, or ocean energy to produce state-of-the-art fuels and energy services.”¹⁹⁷⁴

According to the *World Energy Assessment*, the region’s potential for hydropower production represents 23 percent of total world potential.¹⁹⁷⁵ As for Latin America’s share of world geothermal energy potential, it equals that of North America, with both regions ranking at the top on a worldwide basis.¹⁹⁷⁶ The potential amount of energy from biomass in the region is about 50 percent of the world total.¹⁹⁷⁷ The annual wind energy potential for the region is about 10 percent of the world’s potential, and the annual solar energy potential is about 7 percent of the world’s potential.¹⁹⁷⁸ Most governments are still assessing their country’s energy potential from modern renewable sources, as well as studies for the installation of autonomous generation system (or off-grid system) and the viability of connecting renewable stand-alone systems to the national interconnected grid.

For the most part, Latin American nations have not taken full advantage of their renewable energy potentials. Additionally, due to various factors, the actual energy potential from renewable resources may be lower than the figures above would suggest.

¹⁹⁷³ See generally WORLD ENERGY ASSESSMENT, *supra* note 16.

¹⁹⁷⁴ *Id.* at 457.

¹⁹⁷⁵ *Id.* at 152. See also WU, *supra* note 458, at 5.

¹⁹⁷⁶ WORLD ENERGY ASSESSMENT, *supra* note 16, at 165.

¹⁹⁷⁷ *Id.* at 158.

¹⁹⁷⁸ *Id.* at 163 & 164.

Indeed, it has been noted that “[t]his apparent abundance of reserves in the region can be misleading because they are highly concentrated in a few countries and there are other factors that limit the extent to which they can be developed at competitive prices.”¹⁹⁷⁹ For instance, although economically feasible, large hydropower projects raise financial, social and environmental problems likely to hinder its development. As a result, “[large] hydropower generation will only play a significant role in a handful of countries over the next few years.”¹⁹⁸⁰ Similarly, geographical factors and the high cost of technology are likely to limit the actual potential from unconventional renewable energy sources such as geothermal, solar, and wind.¹⁹⁸¹

Hydropower Potentials

Latin America has tremendous hydro energy potential “due to its favorable climate and geographical condition.”¹⁹⁸² The *World Energy Assessment* distinguishes between the theoretical potential, the technical potential and the actual potential, which takes into account the economic, social and environmental aspects of hydropower.¹⁹⁸³ Hydro energy potential is a factor of water runoff. “By applying knowledge of the hydrological cycle, the world-wide amount of runoff water can be assessed quite accurately. Hydroelectricity is obtained by mechanical conversion of the potential energy of water. An assessment of its energy potential requires detailed information on the location and geographical factors of runoff water”¹⁹⁸⁴ The theoretical potential is given

¹⁹⁷⁹ Jaime Millan, Inter-American Development Bank, *The Future Of Large Dams in Latin America and the Caribbean: IDB's Energy Strategy for the Region* (1999), at 1, available at <http://www.iadb.org>.

¹⁹⁸⁰ See OLADE et al., Country Profiles, *supra* note 776, at 165.

¹⁹⁸¹ *Id.*

¹⁹⁸² See WU, *supra* note 458, at 5.

¹⁹⁸³ See WORLD ENERGY ASSESSMENT, *supra* note 16, at 152.

¹⁹⁸⁴ *Id.*

by the world's water balance (the hydrological cycle).¹⁹⁸⁵ South America has the world's highest precipitation, but also the highest runoff.¹⁹⁸⁶ "[R]unoff water per unit of land area in South America is at least two times that elsewhere."¹⁹⁸⁷ However, the calculation of theoretical hydropower potential is the convolution of runoff water with average altitudes, and Asia has the largest potential, because its average altitude.¹⁹⁸⁸

The technical potential is "based on simplified engineering criteria with few, if any, environmental considerations."¹⁹⁸⁹ These assessments lack uniformity and differ substantially from country-to-country. Moreover, the technical potential "has not been fully measured for most developing countries. In Brazil for example, hydroelectricity is responsible for 96 percent of electricity generation. Of ... [Brazil's] technical hydropower potential, more than one-third is accounted as estimated."¹⁹⁹⁰ The economic potential assessment of hydropower involves economic, geological, technical, social and environmental considerations. The *World Energy Assessment* concludes that a utilization rate of 40-60 percent of a region's technical potential is a reasonable assumption.¹⁹⁹¹

According to the OLADE, Brazil has the largest hydro energy potential, followed by Colombia, Peru, Mexico and Venezuela.¹⁹⁹² The average utilization rate of hydropower technical potential varies significantly in the countries of the region. Generally, countries with non-existent or limited oil resources have maximized their hydropower potential. But, even countries in the region with substantial hydrocarbon

¹⁹⁸⁵ *Id.* at 153.

¹⁹⁸⁶ *Id.*

¹⁹⁸⁷ *Id.*

¹⁹⁸⁸ *Id.*

¹⁹⁸⁹ *Id.* at 153.

¹⁹⁹⁰ *Id.* at 154.

¹⁹⁹¹ *Id.*

¹⁹⁹² See OLADE, Report 2004, *supra* note 2, Regional Overview, at 3.

resources take advantage of their hydrology for power generation, such as Brazil, Venezuela, Argentina, and Mexico.¹⁹⁹³

As noted above, it is estimated that about 56 percent of the total electricity production in the region is generated by means of hydro energy.¹⁹⁹⁴ Brazil has the largest hydroelectric generation in the region, which is about 96 percent.¹⁹⁹⁵ Other South American countries also produce a significant amount of their total electric power output with hydro energy resources.¹⁹⁹⁶ The share of hydro energy in total installed capacity is over 60 percent in Brazil, Colombia and Venezuela; between 40-60 percent in Ecuador and Peru; and, between 20-40 percent in Chile, Bolivia, Argentina and Mexico).¹⁹⁹⁷ The share of hydro energy in total installed capacity in Brazil has been declining steadily in several countries, such as Brazil, Chile and Colombia (in favor of fossil fuel generation), and at a lesser pace in other countries, including Argentina, Bolivia, Ecuador, Peru and Mexico; while it increased in Venezuela.¹⁹⁹⁸

Geothermal Energy Potentials

Geothermal energy is defined as the heat stored within the Earth.¹⁹⁹⁹ Geothermal energy resources are the amounts of heat from the Earth's interior that could theoretically or potentially be tapped. The annual geothermal energy potential (accessible resource base) of the Latin American region represents 18.6 percent of world total, as estimated in

¹⁹⁹³ See *infra* Table 6.1 & 6.5.

¹⁹⁹⁴ See *infra* Table 6.1. See OLADE, Report 2004, *supra* note 2, Regional Overview, at 3.

¹⁹⁹⁵ See *infra* Table 6.1. See also Brazil, *First National Communication Pursuant to the United Nations Framework Convention on Climate Change* 182-184 (2004) [Brazil's UNFCCC Report].

¹⁹⁹⁶ *Id.*

¹⁹⁹⁷ See *infra* Table 6.5.

¹⁹⁹⁸ *Id.*

¹⁹⁹⁹ WORLD ENERGY ASSESSMENT, *supra* note 16, at 165.

the *World Energy Assessment*.²⁰⁰⁰ The region's share of world total annual geothermal energy potential is equal to North America's potential, both ranking at the top on a worldwide basis.

Geothermal resources in the region, nonetheless, have not been harnessed extensively. Geothermal energy has a minimal share of energy supply.²⁰⁰¹ The only country that reported geothermal energy production in the region is Mexico.²⁰⁰² Actually, Mexico's modern renewable energy initiatives focused initially on geothermal resources. Located in a volcanic region, the country has substantial geothermal energy capacity.²⁰⁰³ The regions with more potential are the Baja California region and the Mexican volcanic belt along the central regions of the country.²⁰⁰⁴

Some experts affirm that "[t]he outlook for geothermal energy is possibly the best in the world."²⁰⁰⁵ Geothermal electricity potential in Mexico could reach 8,000 megawatts, which is the greatest potential in the world after Indonesia.²⁰⁰⁶ Other experts have provided more conservative estimate of around 2,400 megawatts.²⁰⁰⁷ The Mexico's Institute of Ecology states that, of the total potential, 1,000 megawatts are readily

²⁰⁰⁰ *Id.*

²⁰⁰¹ *See infra* Table 5.3.

²⁰⁰² *Id.*

²⁰⁰³ *See* MEXICO, INSTITUTO NACIONAL DE ECOLOGIA, MEXICO AND CLIMATE CHANGE 26-27 (1998) [Mexico's INE, *Mexico and Climate Change*], available at <http://www.ine.gob.mx>; MEXICO, INSTITUTO NACIONAL DE ECOLOGIA, ESTRATEGIA NACIONAL DE ACCIÓN CLIMÁTICA 84 (2000) [Mexico's INE, *Climate Change Strategy*], available at <http://www.ine.gob.mx>. *See also*, M. Martínez & R. Best, *Developments in Geothermal energy in Mexico - Part Thirty-Two. Supply and Demand Perspectives for the year 2000*, 11 Heat Recovery Systems & CHP (1991), 91, 91.

²⁰⁰⁴ SENER, PROSPECTIVA 2001, *supra* note 1343, at § 5.2.1,

²⁰⁰⁵ OLADE et al., Country Profiles, *supra* note 776, at 9. *See also*, EurObserv'er, *Boiling Energies*, 139, Systemes Solaires (2000) 34, 41.

²⁰⁰⁶ EIA, Mexico, *supra* note 449.

²⁰⁰⁷ MANLIO COVIELLO, COMISIÓN ECONÓMICA PARA AMÉRICA LATINA, NACIONES UNIDAS, FINANCIAMIENTO Y REGULACIÓN DE LAS FUENTES DE ENERGÍA NUEVAS Y RENOVABLES: EL CASO DE LA GEOTERMIA (United Nations 1998).

available.²⁰⁰⁸ The Mexican Energy Secretariat (*Sener*) takes the position that geothermal power should be expanded, but acknowledges high costs in this kind of projects, in particular due to the special drilling equipment required in volcanic areas.²⁰⁰⁹

As of 2004, there were three main geothermal energy power generating complexes in Mexico with a combined installed capacity of 960 megawatts, amounting to 2.5 percent of total installed capacity for electricity-making.²⁰¹⁰ The Mexican government is planning expansions at existing complexes, and the construction of new facilities to add 325 megawatts.²⁰¹¹ Even after these projects are completed and brought online (totaling 1,280 megawatts), only a small amount of Mexico's known geothermal potential will have been exploited.²⁰¹² All of Mexico's geothermal electricity units are owned and operated by the federal electric utility (CFE), and the government has stated it has no intention to privatize its geothermal facilities.²⁰¹³

South America also offers promising developments of geothermal energy. In Argentina, where assessments of geothermal energy sources began around 1995, a significant potential has been estimated.²⁰¹⁴ Chile's geothermal energy potential is noteworthy as well, but mostly untapped and in remote mountainous terrains.²⁰¹⁵ In 1999, the Chilean government has reported to the UNFCCC Secretariat that geothermal energy

²⁰⁰⁸ Mexico's INE, Mexico and Climate Change, *supra* note 2003, at 26-27.

²⁰⁰⁹ SENER, PROSPECTIVA 2001, *supra* note 1343, at § 5.2.1.

²⁰¹⁰ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 7.

²⁰¹¹ See EIA, Mexico, *supra* note 449. See also Nora Blanca Morales, *Estimación del potencial eléctrico del yacimiento de Los Humeros, Puebla, México* 16 *Revista Mexicana de Geoenergía* (2000) 117, 120.

²⁰¹² See EIA, Mexico, *supra* note 449.

²⁰¹³ *Id.*

²⁰¹⁴ See DANIEL BOUILLE ET AL., PEW CENTER ON GLOBAL CLIMATE CHANGE, DEVELOPING COUNTRIES AND GLOBAL CLIMATE CHANGE: ELECTRIC POWER OPTIONS IN ARGENTINA 7 (2000). See also OLADE et al., Country Profiles, *supra* note 776, at 16.

²⁰¹⁵ See OLADE et al., Country Profiles, *supra* note 776, at 180.

was not being used for electricity generation.²⁰¹⁶ In 2000, a law on geothermal energy has established the legal basis for such concessions and provisions for the use of this resource.²⁰¹⁷

Colombia has a lesser amount of geothermal energy potential, but still important. Geothermal reconnaissance studies began in the late 1960s in the Andean regions.²⁰¹⁸ In the 1980s, these studies extended to other areas of the country. These efforts resulted in many pre-feasibility studies, but there has been no real effort to exploit them. A single geothermal-energy project in the Andean region, with a 150 megawatts capacity, has advanced to the planning stage.²⁰¹⁹

Ecuador has also been studying its geothermal potential for years, but none of the projects had been completed. The Ecuadorian government estimates that the country's geothermal energy generation potential can be as high as 500 megawatts.²⁰²⁰ The more promising geothermal fields could be developed in association with Colombia (around 400 megawatts).²⁰²¹ Further studies are underway in hopes of attracting private investment for their development.

The geothermal energy potential of Peru could be as high as 2,000 megawatts.²⁰²² Seven areas have been identified as having promissory geothermal energy production.²⁰²³ Perhaps the most favorable areas with geothermal potential are located in the south, near

²⁰¹⁶ Chile, *First National Communication Pursuant to the United Nations Framework Convention on Climate Change* (1999) [Chile's UNFCCC Report], available at <http://www.unfccc.int/>. See also OLADE et al., Country Profiles, *supra* note 776, at 180.

²⁰¹⁷ See *supra* Chapter 6 § 6.4; Chile's Geothermal Energy Law, *supra* note 951.

²⁰¹⁸ OLADE et al., Country Profiles, *supra* note 776, at 189.

²⁰¹⁹ EIA, Colombia, *supra* note 449.

²⁰²⁰ EIA, Ecuador, *supra* note 449.

²⁰²¹ *Id.*

²⁰²² OLADE et al., Country Profiles, *supra* note 776, at 205.

²⁰²³ Peru, *First National Communication Pursuant to the United Nations Framework Convention on Climate Change* 15 (2001) [Peru's UNFCCC Report].

the border with Chile.²⁰²⁴ Despite a law enacted in 1997 to promote geothermal energy, no developments have been reported.²⁰²⁵

Wind Energy Potentials

The assessed annual wind energy potential for the region is about 10 percent of the world's wind potential.²⁰²⁶ Wind energy potential is measured as a factor of wind power density, which is the amount of watts that could be generated per square meter at a certain height above the ground. As explained in the *World Energy Assessment*,

A region's mean wind speed and its frequency distribution have to be taken into account to calculate the amount of electricity that can be produced by wind turbines. Wind resources can be exploited in areas where wind power density is at least 400 watts per square meter at 30 meters above the ground (or 500 watts per square meter at 50 meters).²⁰²⁷

A widely used classification of wind energy power refers to class 3 winds as those with average annual wind power density exceeding 250-300 watts per square meter at 50 meters.²⁰²⁸ It is estimated that about 35 percent of the land in Latin America has class 3 (and above) winds.²⁰²⁹ For most areas the measurement of wind power density is not available. In those instances, the simplest way to evaluate wind potential is to measure wind velocities. This type of measurement is available for meteorological stations and specific wind surveys. Typically, wind velocities are registered in miles per second or in kilometers per second.

Mexico stands out in the region for promoting the first commercial wind

²⁰²⁴ *Id.*

²⁰²⁵ *See supra* Chapter 10 § 10.4.

²⁰²⁶ *See* WORLD ENERGY ASSESSMENT, *supra* note, 16 at 163-164.

²⁰²⁷ *Id.*

²⁰²⁸ *Id.*

²⁰²⁹ *Id.* at 164.

developments. Although wind potential has not been completely assessed in the country, it has become the most promising renewable energy alternative in Mexico.²⁰³⁰ According to initial measurements over 5,000 megawatts of wind energy potential are feasible.²⁰³¹ The *Sener* estimates average installation costs to be US\$1,000 for each kilowatt and generation cost between 5 and 11 cents per kilowatt/hour.²⁰³² This is the second-lowest cost for modern renewable energy sources in the country, after biomass resources. The official forecast, however, calls for only 187 megawatts of wind generation capacity by 2010.

Argentina has a very favorable outlook for wind energy.²⁰³³ Wind energy potentials in the country are among the highest in the world.²⁰³⁴ Actually, wind energy has been used for pumping water in the Pampas for over a hundred years.²⁰³⁵ Wind power has been promoted mainly by electricity cooperatives. “Electricity cooperatives have installed about 12 megawatts in wind turbines, notwithstanding the fact that the cost of the energy produced in 1997 was more than double the spot price of power.”²⁰³⁶

Of the regions of Argentina, the Patagonia has the most favorable conditions for wind power generation. Proposed projects in Patagonia could generate 3,000 megawatts, enough to meet 12 percent of the country’s energy demands by 2010.²⁰³⁷ This notable wind potential cannot be fully harnessed, however, due to the lack of interconnection with the main consumption areas in the north of the country. But the viability of

²⁰³⁰ OLADE et al., Country Profiles, *supra* note 776, at 5.

²⁰³¹ Mexico’s INE, Climate Change Strategy, *supra* note 2003, at 84.

²⁰³² SENER, PROSPECTIVA 2001-2010, *supra* note 1343, at § 5.2.1.

²⁰³³ See OLADE et al., Country Profiles, *supra* note 776, at 16; BOUILLE ET AL., *supra* note 2014, at 7.

²⁰³⁴ OLADE et al., Country Profiles, *supra* note 776, at 16.

²⁰³⁵ *Id.* at 16 & 160; Bouille et al., Pew Report, Argentina, *supra* note 2014, at 7.

²⁰³⁶ BOUILLE ET AL., *supra* note 2014, at 7.

²⁰³⁷ EIA, Argentina, *supra* note 449. See also OLADE et al., Country Profiles, *supra* note 776, at 16.

interconnecting the southern grid system with the northern grid could change wind generation dramatically.

Wind energy potential in Brazil has been estimated at 21,700 megawatts.²⁰³⁸ Most of this potential (over 90 percent) is found in northeastern Brazil, particularly in coastal areas where the average wind speed reach 8-19 miles per second.²⁰³⁹ A study sponsored by the PEW Center on Global Climate Change, estimated that wind power could be harnessed in Brazil, increasing to 2 percent of installed capacity by 2015.²⁰⁴⁰ According to another PEW-sponsored report, wind could supplement hydropower in some regions of Brazil.²⁰⁴¹ Under the *Programa de Incentivo às Fontes Alternativas de Energia Elétrica* (PROINFA), 1,100-megawatts of wind energy capacity is being installed in Brazil.²⁰⁴² Under the *Programa de Desenvolvimento Energético dos Estados e Municípios* (PRODEEM), wind turbines are being installed in remote and isolated communities that are unconnected and may never be connected the national grid.²⁰⁴³

Chile's wind potential is estimated at 25,000 megawatts, mostly in the southern regions of the country, regarded another of the windiest regions in the world.²⁰⁴⁴ However, the largest potential market for commercial wind power appears to be in northern Chile, where remote communities and industries demand electricity. Currently wind power is mainly used to pump water and for small aerogenerators.²⁰⁴⁵ In an effort to increase rural coverage, the government of Chile, together with the United Nations

²⁰³⁸ OLADE et al., Country Profiles, *supra* note 776, at 166.

²⁰³⁹ *Id.*; ROBERTO SCHAEFFER ET AL., PEW CENTER ON GLOBAL CLIMATE CHANGE, DEVELOPING COUNTRIES AND GLOBAL CLIMATE CHANGE: ELECTRIC POWER OPTIONS IN BRAZIL 13 (Pew 2000).

²⁰⁴⁰ See ROBERTO SCHAEFFER ET AL., *supra* note 2039, at ii, 13, 16, 23 & 26.

²⁰⁴¹ CHANDLER ET AL., *supra* note 777, at 11.

²⁰⁴² *Id.* at 7. See Brazil, PROINFA Law, *supra* note 768. See *supra* Chapter 5 § 5.4.

²⁰⁴³ OLADE et al., Country Profiles, *supra* note 776, at 166.

²⁰⁴⁴ *Id.* at 180.

²⁰⁴⁵ See Chile, First UNFCCC Report, *supra* note 2016.

Development Program (UNDP) and the Global Environment Facility (GEF), launched a project for the implementation of modern renewables in rural areas and remote islands.²⁰⁴⁶ The project is aimed at assessing the country's wind potential, establishing technical rules and a certification processes for renewables, and providing training in project design, installation and management.²⁰⁴⁷

In Colombia, the greatest wind potential is found in the Caribbean coast and islands.²⁰⁴⁸ Windmills for water pumping have also been used extensively for decades. The first commercial wind power project in Colombia, within the framework of the CDM mechanist, is a 20-megawatts wind farm in the northern coastal region, which is owned by a regional electric utility.²⁰⁴⁹ Ecuador's wind energy potential is concentrated along the Pacific coast, in the Galapagos Islands, and in the plains along the Andes Mountains.²⁰⁵⁰ A hybrid wind-solar system operates in the Galapagos archipelago. Similarly, in Peru, preliminary studies for wind power indicate that the potential rests in coastal areas.²⁰⁵¹ As in the other countries of the region, wind energy has been used for water-pumping for decades. More recently, a few wind turbines are generating electricity, one of which is connected the grid.²⁰⁵²

Solar Energy Potentials

Solar energy resources in the region have an immense theoretical potential. Availability of solar energy depends on geographic variations, weather conditions and

²⁰⁴⁶ See EIA, Chile, *supra* note 449.

²⁰⁴⁷ *Id.*

²⁰⁴⁸ See OLADE et al., Country Profiles, *supra* note 776, at 188.

²⁰⁴⁹ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 7.

²⁰⁵⁰ See EIA, Ecuador, *supra* note 449.

²⁰⁵¹ See OLADE et al., Country Profiles, *supra* note 776, at 205.

²⁰⁵² Peru's UNFCCC Report, *supra* note 2023, at 15.

land availability.²⁰⁵³ Using rough estimates of these factors, the *World Energy Assessment* indicates that the region has about 7 percent of the world's annual solar energy potential.²⁰⁵⁴ This calculation of solar energy potential is made in terms of primary energy before conversion to final energy; therefore, the amount of final energy depends on the efficiency of the conversion technology used.

Mexico is blessed with abundant sunshine. Over 75 percent of the country has a potential of 5 kilowatts per square meter per day, twice as much than for the United States.²⁰⁵⁵ Solar energy is viewed as the best option for rural areas and to complement summer peak demand in northern areas.²⁰⁵⁶ Installation costs for PV systems are higher than wind and biomass options, however. Reportedly, PV systems cost approximately US\$3,500 to US\$7,000 per kilowatt to install and 25 to 150 cents per kilowatt generated.²⁰⁵⁷ The Mexican government has already sponsored the installation of over 50,000 PV systems under programs for rural electricity.²⁰⁵⁸

A primary motivation behind the Mexican programs is to reduce carbon emission in the country.²⁰⁵⁹ Data gathered in the course of these programs indicates that the conventional technology most commonly displaced by solar energy is gasoline-driven motor-pump for PV water-pumping systems.²⁰⁶⁰ Mexico's National Commission for Energy Savings (*Comisión Nacional para el Ahorro de Energía*, CONAE), and the National Association for Solar Energy, (*Asociación Nacional para Energía Solar*),

²⁰⁵³ WORLD ENERGY ASSESSMENT, *supra* note 16, at 163.

²⁰⁵⁴ *Id.*

²⁰⁵⁵ *Id.*; OLADE et al., Country Profiles, *supra* note 776, at 5.

²⁰⁵⁶ SENER, PROSPECTIVA 2001-2010, *supra* note 1343, at § 5.2.1.

²⁰⁵⁷ *Id.*

²⁰⁵⁸ *Id.*; EIA, Mexico, *supra* note 449; Mexico's INE, Climate Change Strategy, *supra* note 2003, at 85.

²⁰⁵⁹ See Elizabeth Richards et al., *Photovoltaics in Mexico: A Model for Increasing the Use of Renewable Energy Systems*, 13 *Advances in Solar Energy* 16, 21.

²⁰⁶⁰ *Id.*

partnered to promote solar programs in the country, but there are no reports of large commercial projects in Mexico for generating electricity from solar power.²⁰⁶¹

In 2001, solar generation capacity was estimated around 15 megawatts and is expected to increase to 24 megawatts by 2010.²⁰⁶² Mexico is also becoming a preferred location for the manufacturing of solar installations.²⁰⁶³ The major use of solar energy in Mexico, however, appears to be for water heating for residences and hotels.²⁰⁶⁴ There are over 50 registered manufacturers of solar heaters in the country.²⁰⁶⁵ The price to install these systems is approximately US\$2,000 to US\$4,000 per kilowatt and 10 to 25 cents per kilowatt generated.²⁰⁶⁶ Another possibility to use solar energy is in combination with wind energy, through hybrid systems, which could be a promising option for certain locations. Mexico's federal utility (CFE) operates two pilot plants with hybrid systems (wind-solar-diesel) in Baja California Sur.²⁰⁶⁷ These systems were established in 1998 as a Mexico-United States initiative on joint implementation under the UNFCCC.²⁰⁶⁸

Turning to South America, in Argentina solar resources vary from 2 kilowatts per square meter per day in the Patagonia region, during the month of lowest insolation, to 3-6 kilowatts per square meter per day in northern areas.²⁰⁶⁹ In Bolivia, solar power has been installed in some isolated mountain villages, where about 2,000 PV systems are in

²⁰⁶¹ Mexico, *Second National Communication pursuant to the United Nations Framework Convention on Climate Change* (2001) [Mexico's Second UNFCCC Report], at 231. *See also* Mexico, *First National Communication pursuant to the United Nations Framework Convention on Climate Change* (1997) [Mexico's First UNFCCC Report].

²⁰⁶² SENER, PROSPECTIVA 2001-2010, *supra* note 1343, at § 5.2.1.

²⁰⁶³ *See e.g.*, Renewable Energy Today, *Sanyo Energy S.A. de C.V. Plant in Monterrey, Mexico Beginning Next Year*, December 12, 2002.

²⁰⁶⁴ OLADE et al., Country Profiles, *supra* note 776, at 5.

²⁰⁶⁵ Mexico's Second UNFCCC Report, *supra* 2061, note at 233.

²⁰⁶⁶ SENER, PROSPECTIVA 2001-2010, *supra* note 1343, at § 5.2.1.

²⁰⁶⁷ EIA, Mexico, *supra* note 449.

²⁰⁶⁸ Mexico's Second UNFCCC Report, *supra* note 1343, at 309.

²⁰⁶⁹ OLADE et al., Country Profiles, *supra* note 776, at 16; Bouille et al., *supra* note 2014, at 7.

operation.²⁰⁷⁰ As a result of Brazil's PRODEEM program, around 6,000 solar energy installations are employed in isolated communities, schools, medical clinics, and community centers, mainly to pump water, for public lighting and for electricity generation.²⁰⁷¹

Solar energy potential in Chile is greatest in areas north of Santiago, where it is about 6 kilowatts per square meter per day during the periods of lowest insolation.²⁰⁷² Indeed, the Chilean government has reported that this renewable source is used primarily in the north of Chile "as this region has some of the highest solar radiation levels in the world."²⁰⁷³ In addition, solar systems are reportedly used to heat water for household use and for electricity generation for isolated and scattered homes.²⁰⁷⁴

Solar energy potential in Colombia varies in the different geographic areas of the country, which has been evaluated nationwide by the Colombian Institute of Hydrology, Meteorology and Environmental Studies, *Instituto de Hidrología, Meteorología y Estudios Ambientales (Ideam)*, as follows: 200-2,200 kilowatts per square meter per year in the northern Guajira region, 1,800-2000 in the Caribbean coast and Orinoco-Amazon regions, 1,600-1,800 in the Andean region and 1,400-1,600 in the Pacific coast.²⁰⁷⁵ Many solar installations are systems for rural telecommunications used by the Colombian National Telecommunications Company (TELECOM), which has been using these types of systems since 1979.²⁰⁷⁶ The other PV systems in use were reportedly installed to

²⁰⁷⁰ EIA, Bolivia, *supra* note 449.

²⁰⁷¹ OLADE et al., Country Profiles, *supra* note 776, at 166; EIA, Brazil, *supra* note 449.

²⁰⁷² *Id.* at 180.

²⁰⁷³ Chile, First UNFCCC Report, *supra* note 2016.

²⁰⁷⁴ *Id.*; OLADE et al., Country Profiles, *supra* note 776, at 180; EIA, Chile, *supra* note 449.

²⁰⁷⁵ OLADE et al., Country Profiles, *supra* note 776, at 188.

²⁰⁷⁶ *Id.* at 187.

provide electricity to isolated communities and households.²⁰⁷⁷ Solar-thermal domestic units have also been used since the early seventies, mostly in large cities. These units have proven to be economically competitive with electric heaters in such locations.²⁰⁷⁸ In Ecuador, oil companies and tourism enterprises have installed small solar systems in remote locations.²⁰⁷⁹

Peru's solar potential is considerable, with high average altitude and proximity to the Equator that yields a potential of 5.8 kilowatts per square meter per day.²⁰⁸⁰ However, the Peruvian government reported only PV installations amounting to 3 megawatts in its communication to the UNFCCC.²⁰⁸¹ The government is implementing a plan for rural electrification of communities of the Peruvian Amazon using PV systems that received co-financing by the GEF.²⁰⁸² Solar-thermal energy potential is also high and there is an increasing demand for such systems throughout the country.²⁰⁸³

Biomass Potentials

According to the *World Energy Assessment*, the potential amount of energy from biomass in the region is about 50 percent of the world total.²⁰⁸⁴ Currently, the main biomass energy resources used in the region is ethanol derived from sugar cane bagasse.²⁰⁸⁵ The positive growth in production is mainly owing to the increasing output in Brazil, whose production of sugar cane over 65 percent of total production in the

²⁰⁷⁷ *Id.*

²⁰⁷⁸ *Id.*

²⁰⁷⁹ See EIA, Ecuador, *supra* note 449.

²⁰⁸⁰ OLADE et al., Country Profiles, *supra* note 776, at 205; Peru's UNFCCC Report, *supra* note 2023, at xx & 14.

²⁰⁸¹ Peru's UNFCCC Report, *supra* note 2023, at 14.

²⁰⁸² *Id.* at 59.

²⁰⁸³ *Id.* at 15.

²⁰⁸⁴ WORLD ENERGY ASSESSMENT, *supra* note 16, at 158.

²⁰⁸⁵ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 7. See *infra* Table 5.2.

region.²⁰⁸⁶ Other large producers of sugar cane in the region are Colombia, and Mexico; lesser, but important as a source of energy is found in Argentina, Peru and Bolivia.²⁰⁸⁷

Biomass energy resources in Mexico are not significantly used in productive sectors of the Mexican economy. Initially, the Mexican government started exploring biomass potential focusing on developing small-scale project for individual farms or rural communities using manure as primary fuel. Bagasse used for fuel at sugar mills is the main reported use of biomass for industrial process. It is estimated that bagasse supplies 1.6 percent of the national consumption of energy.²⁰⁸⁸ To expand bagasse use for co-generation, the Mexican government established a biomass cogeneration development program with support from the U.S. Agency for International Development (USAID).²⁰⁸⁹ Ethanol from sugar cane is an additional biomass source that could be used in the country. Hybrid systems using fuel oil and bagasse have also been installed in the country.

Another underutilized biomass energy resource in Mexico is biogas from municipal landfills that could produce approximately 150 megawatts.²⁰⁹⁰ Up until 2001, only two permits totaling 11 megawatts had been issued to take advantage of biomass energy in municipal landfills. Mexico's Energy Secretariat (*Sener*) estimates biomass energy costs range between US\$630 to US\$1,170 per kilowatt, and generation costs

²⁰⁸⁶ See *infra* Table 5.2.

²⁰⁸⁷ *Id.*

²⁰⁸⁸ Mexico's First UNFCCC Report UNCCC, *supra* note 2061, at III-10. See OLADE et al., Country Profiles, *supra* note 776, at 5. See also MOOMAW, W.R., ENVIRONMENTAL CHALLENGES AND OPPORTUNITIES OF THE EVOLVING NORTH AMERICAN ELECTRICITY MARKET: ASSESSING BARRIERS AND OPPORTUNITIES FOR RENEWABLE ENERGY IN NORTH AMERICA, COMMISSION FOR ENVIRONMENTAL COOPERATION OF NORTH AMERICA 3 (CEC 2002).

²⁰⁸⁹ OLADE et al., Country Profiles, *supra* note 776, at 7; SENER, PROSPECTIVA 2001-2010, *supra* note 1343, § 5.2.1.

²⁰⁹⁰ *Id.*

around 4-6 cents per kW/h.²⁰⁹¹ These are the lowest costs for modern renewable energy options in the country. Consequently, additional biomass electric generation and combined heat and power (CHP) biogas projects are expected in future years.

The Brazilian experience in the use of sugar cane as a renewable energy resource is a special case regionally and worldwide. Sugar cane production yields two major alternative sources of energy: automotive ethanol and bagasse used to generate electricity.²⁰⁹² As a result of the oil crisis in 1973, Brazil launched a program to encourage the production of ethanol from sugar cane to be used as a fuel substitute and its byproduct (bagasse) to be used in electric generation. Thus, the ethanol program has been a key element of Brazil's energy policy for over thirty years.

As a result of the ethanol program, and government subsidies to implement it, sugar cane cultivation increased significantly in Brazil, which at the same time resulted in widespread use of bagasse for co-generation by the sugar industry.²⁰⁹³ The potential power generating capacity from sugar mills is estimated to reach 3,200 megawatts, most with the potential for connection to the grid.²⁰⁹⁴ It has been estimated that more than 90 percent of this bagasse-fired electricity (termed "biomass co-generation") by sugar mills could be available for sale to other industrial users or utilities.²⁰⁹⁵

Most biomass co-generation projects in Brazil are located in southern part of the nation.²⁰⁹⁶ The program to promote ethanol use and bagasse cogeneration "is noteworthy because it finances more efficient power generation that channels surplus electricity to

²⁰⁹¹ *Id.*

²⁰⁹² CHANDLER ET AL., *supra* note 777, at 7.

²⁰⁹³ See OLADE et al., Country Profiles, *supra* note 776, at 165.

²⁰⁹⁴ *Id.*

²⁰⁹⁵ *Id.* at 166.

²⁰⁹⁶ EIA, Brazil, *supra* note 449.

power utilities on a steady basis. Almost 1,000 megawatts of bagasse-fired cogeneration capacity has been created, some 40 percent of that added in 1999-2001.”²⁰⁹⁷ According to experts co-generation is becoming increasingly competitive in Brazil: “Bagasse-fueled generation can supplement hydropower very effectively at costs as low as \$0.03 per kilowatt-hour.”²⁰⁹⁸

In addition to ethanol, Brazil is promoting the use of biodiesel. Two key benefits would be achieved with promoting biodiesel. First, researchers at the University of São Paulo have estimated that biodiesel could produce a 17 percent decrease in sulfur emissions of diesel-powered trucks and a 7.5 percent reduction in the greenhouse-gas emissions of the same.²⁰⁹⁹ Second, biodiesel would help the Brazil’s diesel imports which represent 10 percent of the refined diesel it consumes.²¹⁰⁰ In addition, biodiesel can fire-up power stations, particularly in remote areas where vegetable oil and sugarcane ethanol can be made in abundance. Thus, biodiesel might become cheaper than conventional diesel, which has to be trucked into the region.

In Bolivia, biomass is an important energy alternative in the lower lands of the country near the Brazilian border. Biomass represents 18 percent of total energy consumption in Chile, mostly from uses in small furnaces, industrial ovens and homes.²¹⁰¹ Chile has indicated that two generating facilities use forest waste as fuel, and a third plant uses waste from paper mills to generate steam and electricity.²¹⁰² The total installed capacity of the three plants is 37 megawatts.

²⁰⁹⁷ CHANDLER ET AL., *supra* note 777, at 7.

²⁰⁹⁸ *Id.* at 11.

²⁰⁹⁹ See *Brazil adding biodiesel to its fuels mix*, ECOAMÉRICAS, July 2004, Vol. 6. No. 9, at 6.

²¹⁰⁰ *Id.*

²¹⁰¹ EIA, Bolivia, *supra* note 449.

²¹⁰² Chile’s UNFCCC Report, *supra* note 2016.

Renewable Energy Uses

In 2004, electricity generated from modern renewables resources was about one percent of total electricity generated in the region.²¹⁰³ Mexico is the country with the largest share of electricity generated from modern renewables resources followed by Argentina.²¹⁰⁴ While Mexico harnesses modern renewable resources more than any other country in the region, it merely produces around 2 percent of its energy from these resources.²¹⁰⁵ The Mexican Energy Secretariat (*Sener*) forecasts a significant increase in modern renewable energy capacity in the next decade.²¹⁰⁶ Some experts believe that the NAFTA has created significant opportunities to develop both renewable energy and energy efficiency technologies in the country.²¹⁰⁷

In Bolivia, only small amounts of electricity from modern renewables are generated, mostly from biomass, but the country expects to harness these resources to serve the millions of unserved inhabitants scattered throughout this mountainous country. In its first national inventory of GHG emissions under UNFCCC, Bolivia indicated that sources of energy included biomass (11 percent) and hydro energy (5.7 percent), in addition to natural gas (65 percent) and crude oil (19 percent).²¹⁰⁸ “Other energy sources, such as solar energy and geothermal energy are barely exploited,” acknowledged the Bolivian government.²¹⁰⁹

In Chile, a country highly dependent on imported hydrocarbon resources,

²¹⁰³ See *infra* Table 6.1.

²¹⁰⁴ *Id.*

²¹⁰⁵ *Id.* See also, EIA, Mexico, *supra* note 449.

²¹⁰⁶ SECRETARÍA DE ENERGÍA DE MÉXICO, PROPOSAL FOR THE ELECTRICAL SECTOR MODERNIZATION (2002), at § 4.1.

²¹⁰⁷ OLADE et al., Country Profiles, *supra* note 776, at xxi.

²¹⁰⁸ Bolivia, *First National Communication Pursuant to the United Nations Framework Convention on Climate Change* (2000) [Bolivia’s UNFCCC Report], Executive Summary § 2.

²¹⁰⁹ *Id.* See also EIA, Bolivia, *supra* note 449.

substitution of oil and gas with modern renewables has become a governmental priority during the last decade.²¹¹⁰ But the use of modern renewables sources accounts only for 0.2 percent of primary energy use in Chile.²¹¹¹ In 1993, the share of non-conventional primary energy consumption was as follows: biogas (90 percent), micro-hydroelectricity (9 percent), solar thermal (1.2 percent), solar photovoltaic (PV) 0.1 percent, and wind generation (0.07 percent).²¹¹² An estimated 1 million rural inhabitants in Chile lack access to the grid and there is a public commitment to reach the unserved population.²¹¹³ According to the Chilean government, “[r]ural electricity generation seems to be one of the best places where this [modern renewable energy] could be used. Using autonomous generation systems [off-grid] (such as photovoltaic, wind and micro-hydroelectric systems) to supply power to rural areas has an advantage in that the investment needed to extend the conventional electricity network is greater than that needed to develop these systems on a local scale.”²¹¹⁴ It is worth noting that Chile’s UNFCCC report highlights that the policies adopted in this area are consistent with Chile’s global energy policy: non-conventional energy sources compete under equal conditions with traditional energy sources.

In the Andean countries, use of renewables is minimal, although they are becoming more feasible energy sources as well. In 2004, Colombia ranked second in the region, regarding generation of electricity from non-conventional resources.²¹¹⁵ Several sources indicate that Colombia has important opportunities for developing modern

²¹¹⁰ OLADE et al., Country Profiles, *supra* note 776, at 179.

²¹¹¹ Chile, First UNFCCC Report, *supra* note 2016.

²¹¹² *Id.*

²¹¹³ OLADE et al., Country Profiles, *supra* note 776, at 179.

²¹¹⁴ Chile’s UNFCCC Report, *supra* note 2016.

²¹¹⁵ See *infra* Table 6.4

alternative energy systems from solar, wind, biomass, and geothermal energy resources.²¹¹⁶ According to Ecuador's report to the UNFCCC, renewable energy use is *de minimis*, but the country's energy plan includes tapping solar energy for water heating in the residential sector and rural electrification with PV systems.²¹¹⁷ Venezuela has virtually no modern renewable energy generation capacity installed in the country, with the exception of biomass in the forms of bagasse and wood waste used in cogeneration sugar mills and paper mills.

Hydrocarbon Resources, Production, Exports and Imports

Turning to hydrocarbons, resources include oil (about 12 percent of world reserves), natural gas (about 5.3 percent) and coal (about 1.7 percent).²¹¹⁸ These resources are distributed unevenly as well.²¹¹⁹ Mexico and Venezuela have the largest reserves, with their combined shares accounting for around 85 percent of the oil and 65 percent of the natural gas in the region.²¹²⁰ In fact, an assessment of hydrocarbon resources in Latin America reveals two groups of nations: those that have significant hydrocarbon resources and those that have few or no such resources.²¹²¹

This analytical approach yields a geographic division as well: Mexico and the South American countries have all been endowed with varying shares of developed or potential oil and gas resources,²¹²² whereas the Central American countries rely heavily

²¹¹⁶ See OLADE et al., Country Profiles, *supra* note 776, at 185.

²¹¹⁷ Ecuador, *First National Communication Pursuant to the United Nations Framework Convention on Climate Change* 89-91 (2000) [Ecuador's UNFCCC Report].

²¹¹⁸ See OLADE/University of Calgary Study, *supra* note 3, at 6; WORLD ENERGY ASSESSMENT, *supra* note 16, at 139.

²¹¹⁹ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 1.

²¹²⁰ See *infra* Table 2.1 & 3.1.

²¹²¹ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 1-2.

²¹²² *Id.*; OLADE/University of Calgary Study, *supra* note 3, at 25 & 53. The exceptions are Paraguay and Uruguay with no known hydrocarbon reserves. See *infra* Tables 4.1 & 4.4.

on foreign oil, importing about 95 percent their oil consumption.²¹²³ Mexico and Venezuela supply petroleum to the Central America countries under the *San José Pact* and the *Caracas Energy Accord*.²¹²⁴ Central America plays an important regional role in the oil business as transit center for oil, via the Panama Canal and the Trans-Panama Pipeline.

Within the group comprising Mexico and the South American nations there are three basic subgroups: the oil exporting countries, the oil importing countries and the countries that are nearly or fully self-sufficient.²¹²⁵ The big oil exporters are Mexico and Venezuela, followed by Colombia, Argentina and Ecuador. Indeed, Venezuela and Mexico rank in the top ten crude oil producers of the world, with substantial volumes of their exports going to the United States. Argentina is the third largest producer of petroleum in the region. Colombia, which shares similar geological characteristics with Venezuela has the second largest oil reserves in the region and exports most of its oil to the United States. Similarly, Ecuador, the fifth largest producer of oil in South America trails Venezuela as the second largest single source of crude oil from South America into the United States.²¹²⁶ About 75 percent of the oil produced in the region is sent to the United States, 20 percent to Western Europe and 5 percent to the Asia-Pacific region.²¹²⁷ A third of total petroleum imports by the United States have a source in Latin America.

Brazil, far out in front by volume, leads the oil importer group, followed by Chile. Brazil is the largest oil importer in the region, accounting for about 40 percent of the

²¹²³ OLADE et al., Country Profiles, *supra* note 776, at xvii; OLADE/University of Calgary Study, *supra* note 3, at 70. *See infra* Table 2.3.

²¹²⁴ *See* EIA, Central America, *supra* note 449.

²¹²⁵ *See* LATIN AMERICAN OIL COMPANIES, *supra* note 429, at ix. *See infra* Tables, 2.2, 2.3 & 2.4.

²¹²⁶ *See* OLADE, Report 2004, *supra* note 2, Regional Overview, at 1.

²¹²⁷ WU, *supra* note 458, at 3.

region's total oil imports.²¹²⁸ Chile is the second largest importer of oil, accounting for about 20 percent of the region's total imports.²¹²⁹ Bolivia and Peru are nearly or fully self-sufficient. As a whole, the South America countries import about 37 percent of their oil requirements, due principally to high hydrocarbon demand in Brazil and Chile.²¹³⁰

Mexico is the largest natural gas producer, followed by Argentina, Venezuela, Brazil, Bolivia and Colombia.²¹³¹ All natural gas produced in the region is currently consumed domestically, with increasing regional trade, particularly among the South American countries. Intraregional gas trade in the Southern Cone has increased rapidly since the early nineties when it was limited to Bolivia (exporter) and Argentina (importer).²¹³²

During the last decade, gas trade increased as these countries developed their gas resources towards exporting to neighboring countries. Argentina and Bolivia are major exporters of natural gas, supplying Chile, Brazil and Uruguay all the production that is not used domestically. Indeed, Argentina has been a major source of supply to other countries in the region such as Brazil, Chile, Paraguay and Uruguay. In particular, Chile is heavily reliant on this source of supply. Peru has the fourth largest amount of natural gas reserves in South America, and may soon become a net exporter through its Camisea project and the proposed LNG facility.

Venezuela and Bolivia, the countries with the largest gas reserves, could become a major exporters in the region. As noted by the OLADE:

Bolivia has such large reserves of natural gas that it could become a

²¹²⁸ See *infra* Table 2.3.

²¹²⁹ *Id.*

²¹³⁰ *Id.*; OLADE et al., Country Profiles, *supra* note 776, at xvii.

²¹³¹ See *infra* Table 2.2.

²¹³² WU, *supra* note 458, at 3.

significant exporter in the region, especially if it embarks upon LNG, but the country is plagued by internal differences on how it should develop its natural gas, and whether to negotiate access through a Chilean port, a country with which it has had a historical battle that has left it land-locked, or a Peruvian port, a more costly option. Paradoxically, Venezuela which possesses the most reserves in the region has yet not begun to monetize its natural gas, largely because much of this gas is associated, and is re-injected to enhance its oil production.²¹³³

Coal reserves and resources have a lesser role in energy supply, consumption and exports than oil and gas in Latin America. Coal reserves in the region account for less than 2 percent of world total, while production is approximately 1 percent of world production.²¹³⁴ Colombia is the major producer, followed by Mexico and Venezuela.²¹³⁵ “Coal exports from Latin America were virtually non-existent until the mid-1980s, when Colombia’s El Cerrejón mining project started mass production.”²¹³⁶ The region nearly doubled its coal output from 1991 to 2000.²¹³⁷ Until 1991 the region was a net importer of coal.²¹³⁸ Today, about 42 percent of the coal production is dedicated to export to the European Union and the United States.²¹³⁹ In the region, Brazil is the largest importer of coal, followed by Mexico and Chile.²¹⁴⁰ Coal met only 5 percent of primary energy demand in Latin America in 2003, of which 65 percent was used in Brazil.²¹⁴¹ The OLADE notes that “coal actually only plays a minor role as an energy source for power production; however, with the depletion of oil and natural gas reserves in about 30 years,

²¹³³ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 3.

²¹³⁴ OLADE, Report 2004, *supra* note 2, Tables 1.3.1 & 1.3.2.

²¹³⁵ See *infra* Table 4.2.

²¹³⁶ See WU, *supra* note 458, at 4.

²¹³⁷ OLADE, Report 2000, *supra* note 2, at 50.

²¹³⁸ WU, *supra* note 458, at 2; OLADE, Report 2000, *supra* note 2, at 51.

²¹³⁹ See OLADE, POWER SECTOR, *supra* note 209, at 11.

²¹⁴⁰ OLADE, Report 2001, *supra* note 2, at 26. See *infra* Table 4.3.

²¹⁴¹ See OLADE, POWER SECTOR, *supra* note 209, at 11.

coal may gain a more preferential position in the power sector.”²¹⁴²

Colombia is one of the major coal exporters in the world.²¹⁴³ Colombia’s coal reserves consist mostly of high-quality bituminous coal and to a lesser degree metallurgical coal. Consequently, coal exports, mainly to the United States, have become an important segment of the country’s economy. In fact, coal accounts for more export revenues than coffee, ranking as the number two export after petroleum. Coal production is mainly from deposits in the Guajira and Cesar regions, which are privately developed and include some of the largest coal mining operations in the region and the largest open-cast coalmine in the world.

Energy Consumption

Industry is the economic sector in the region accounting for the highest energy consumption, followed by transportation.²¹⁴⁴ Most industrial activities in the region are fueled primarily by natural gas, a favorable characteristics from an environmental viewpoint.²¹⁴⁵ Further, consumption of natural gas in industrial uses is rising steadily, particularly in Brazil, Chile and Colombia. The transportation sector is completely dependent on oil products, which results in alarming air pollution problems, particularly in urban centers.²¹⁴⁶

At least two related factors underlie the growing importance of natural gas in the region. First, there is a trend among Latin American countries to introduce natural gas as a substitute for other energy sources traditionally used in other sectors. Second,

²¹⁴² *Id.* at 10.

²¹⁴³ *See infra* Table 4.4.

²¹⁴⁴ *See infra* Tables 7.1 & 7.4; OLADE, Report 2004, *supra* note 2, Figure 10.

²¹⁴⁵ *See infra* Table 7.5.

²¹⁴⁶ *See infra* Table 7.8.

environmental concerns are driving increased use of natural gas.²¹⁴⁷ In its 2000 report, OLADE presented the view that “energy consumption in the region's industrial sector has been characterized over the last 10 years by the growth in the share of electricity, a decline in the share of liquid fuels and biomass, and a trend toward higher shares of natural gas.”²¹⁴⁸

Economic expansion in the region is driving a demand for electricity, which results in a move towards increasing electric generation with fossil fuels—particularly natural gas—and a move away from the region’s reliance on hydroelectric power.²¹⁴⁹ In 1991 installed power generation was 163,000 megawatts, reaching 223,000 in 2000, an average annual growth rate of 3.56 percent.²¹⁵⁰ By 2004 power generation capacity increased to 258,330 megawatts.²¹⁵¹ The OLADE has forecast 290,000 megawatts of installed capacity by 2010.²¹⁵² As of 2006, hydropower generation accounts for the largest share of the region’s total electric generating capacity (55 percent), followed by thermoelectric generation (42 percent); nuclear energy (2 percent, and only in Argentina, Brazil and Mexico); and non-hydro renewable energy sources (1 percent).²¹⁵³

Firewood is the predominant source of energy for the residential sector, which is the cause of alarming health problems.²¹⁵⁴ The share of firewood in final energy demand of the residential sector is above 30 percent in Mexico and Brazil, and over 40 percent in countries such as Chile and Peru.²¹⁵⁵ The use of firewood in the region in the residential

²¹⁴⁷ Wu, *supra* note 458, at 29.

²¹⁴⁸ OLADE, Report 2000, *supra* note 2, at 21.

²¹⁴⁹ OLADE/University of Calgary Study, *supra* note 3, at 6-7. *See infra* Tables 6.1 & 6.4.

²¹⁵⁰ *See* OLADE, Report 2000, *supra* note 2, at 19 & 56.

²¹⁵¹ *See infra* Table 6.4.

²¹⁵² OLADE/University of Calgary Study, *supra* note 3, at 6.

²¹⁵³ *See infra* Tables 6.1 & 6.4; OLADE, Report 2004, *supra* note 2, Figure 9.

²¹⁵⁴ *See infra* Tables 5.4 & 7.6.

²¹⁵⁵ *See infra* Table 7.6.

sector, however, has been slightly diminishing due to the substitution for other sources of energy, mainly liquefied petroleum gas, electricity and natural gas.²¹⁵⁶ The main oil product consumed in the residential sector is liquefied petroleum gas, accounting for over 90 percent of all products.²¹⁵⁷ Natural gas is the energy source with the highest growth rate in the residential sector.

Energy Indicators and Prices of Energy

To evaluate the performance of the energy sector and its environmental impacts several energy indicators have been developed, which are presented below. Energy intensity measures final energy consumption versus Gross Domestic Product (GDP). The purpose of this indicator is to measure efficiency in the use of energy per GDP unit. Thus, energy intensity helps record any variation in the evolution of energy efficiency in a regional context or in a country-by-country or sector-by-sector basis. In 2004, average energy intensity in the region recorded 1.6 thousand barrels of oil equivalent (kboe) (using US\$1995), similar to the records obtained in 2003 and in 1995.²¹⁵⁸

Per capita electricity consumption in the region was 1,560 kilowatts/hour per inhabitant in 2004, increasing from 1,288 in 1995.²¹⁵⁹ In 2004, per capita electricity consumption was highest in Chile, followed by Venezuela, Argentina, Brazil and Mexico.²¹⁶⁰ Residential consumption per person has remained at about 400 kWh.²¹⁶¹ Electric power service coverage indicates the percentage of inhabitants served with electricity. According to the OLADE, electricity coverage is highly variable in the region.

²¹⁵⁶ See *infra* Tables 5.4 & 7.6.

²¹⁵⁷ See *infra* Table 7.6.

²¹⁵⁸ See *infra* Table 10.2.

²¹⁵⁹ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 4. See *infra* Table 6.6.

²¹⁶⁰ See *infra* Table 6.6.

²¹⁶¹ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 4. See *infra* Table 6.6.

It ranges from countries that have a 95 percent coverage rate for their population, such as Chile and Venezuela, to other where coverage is below 60 percent.²¹⁶² The average coverage estimate for the region in 2004 was 88 percent.²¹⁶³ The vast majority of the countries have reached coverage above 60 percent. This confirms the need to address rural energy demand with affordable renewable decentralized systems.

As noted by the OLADE, it is difficult to compare average electricity prices among the countries of the region because of diverse rate systems, the variable exchange rates, and increased participation by self-generators, co-generators and unregulated users, whose prices are not always available.²¹⁶⁴ In order to provide a referential basis, the OLADE has converted into US dollars the average monthly prices that are reported in local currency. Using these figures, it is clear that prices of energy in the region increased significantly during the 1990s, but less so during the last decade (except gasoline prices which keep increasing drastically).²¹⁶⁵ In fact, prices in general seem to have stabilized during the period 1995-2004 (with the exception of gasoline).

The residential sector has received the highest price spikes in the 1990s, followed by the transportation sector and the industrial sector. During this period, average prices of residential electricity in the region increased by 5.6 percent, of industrial electricity by 2 percent, and of commercial electricity by 3 percent.²¹⁶⁶ During the same period, average prices of residential liquefied petroleum gas rose steeply by 11 percent, of residential

²¹⁶² See OLADE, Report 2004, *supra* note 2, Regional Overview, at 6.

²¹⁶³ *Id.*

²¹⁶⁴ See OLADE, Report 2004, *supra* note 2, Regional Overview, at 5.

²¹⁶⁵ See *infra* Tables 9.1.1, 9.1.2, 9.1.3, 9.2.1, 9.2.2, 9.2.3, 9.3.1 & 9.3.1. See also, OLADE, Report 2000, *supra* note 2 at 27.

²¹⁶⁶ See *infra* Tables 9.1.1 & 9.2.1. See OLADE, Report 2000, *supra* note 2 at 27.

natural gas by 6.76 percent and industrial natural gas by 3.31 percent.²¹⁶⁷ Gasoline (transportation) recorded price increases of 4.58 percent, diesel of 5.57 percent, industrial fuel of 4.85 percent and jet fuel of 3.44 percent.²¹⁶⁸

Residential electricity had an average price in the region of US\$8 per megawatt/hour in the year 2004.²¹⁶⁹ The average price of industrial electricity was equivalent to around US\$6 megawatt/hour in 2004, down from US\$7 megawatt/hour in 2001.²¹⁷⁰ In 2004, the highest prices for residential electricity were reported in Ecuador and Peru, with values over US\$12 megawatt/hour, whereas the lowest prices corresponded to Argentina and Venezuela.²¹⁷¹ Similarly, the highest prices for industrial electricity were observed in Ecuador and Peru, whereas the lowest were recorded in Argentina.²¹⁷² The highest prices for regular gasoline in terms of US\$/barrel have been reported in Brazil and Peru, the lowest prices in Venezuela.²¹⁷³

Carbon Dioxide, Other Air Emissions and Climate Change

The Latin American region accounts for 8 percent of the world's carbon dioxide emissions.²¹⁷⁴ Energy-related activities are the main cause of anthropogenic climate change by causing most of the GHGs responsible for such effect in the Latin American region. Carbon dioxide emissions in the region have increased dramatically in the last three decades.²¹⁷⁵ Specifically, carbon dioxide more than doubled between 1973 and

²¹⁶⁷ See *infra* Tables 9.1.3 & 9.2.2. See OLADE, Report 2000, *supra* note 2 at 27.

²¹⁶⁸ See *infra* Tables 9.2.3, 9.3.1 & 9.3.1. See OLADE, Report 2000, *supra* note 2 at 27.

²¹⁶⁹ See *infra* Table 9.1.1.

²¹⁷⁰ See *infra* Table 9.2.1. See OLADE, Report 2000, *supra* note 2 at 27.

²¹⁷¹ See *infra* Table 9.1.1. See OLADE, Report 2004, *supra* note 2, Regional Overview, at 5.

²¹⁷² See *infra* Table 9.2.1.

²¹⁷³ See *infra* Table 9.3.1.

²¹⁷⁴ See OLADE, POWER SECTOR, *supra* note 209, at 9.

²¹⁷⁵ See *infra* Table 8.1.

2004.²¹⁷⁶ In addition to carbon dioxide, the GHGs whose atmospheric concentrations are being augmented by emission from human activities in the region are methane and nitrogen oxides. Emissions of nitrogen oxides in the region also increased significantly.²¹⁷⁷

Country-by-country, Mexico is the largest emitter of carbon dioxide followed by Brazil, Venezuela, Argentina, Chile and Colombia.²¹⁷⁸ The transportation sector is the principal emitter of carbon dioxide.²¹⁷⁹ The electric power generation sector is the second-largest carbon dioxide emitter and industry is ranked third.²¹⁸⁰ Air emissions of other pollutants have also escalated significantly in recent decades. In particular, emissions of carbon monoxide, sulfur dioxide (the main cause of acid deposition) and hydrocarbons in the region have doubled in the last three decades.²¹⁸¹

²¹⁷⁶ *Id.*

²¹⁷⁷ *See infra* Table 8.4.

²¹⁷⁸ *Id.*

²¹⁷⁹ *See infra* Table 8.7.

²¹⁸⁰ *Id.*

²¹⁸¹ *See infra* Tables 8.2, 8.3 & 8.5.

APPENDIX B – TABLES AND FIGURES

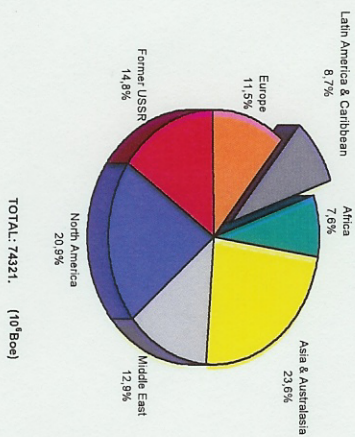
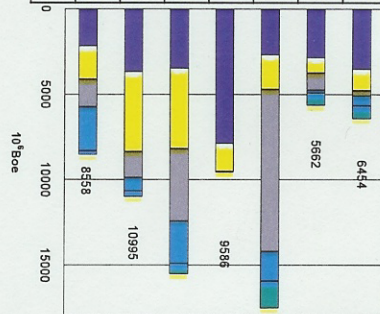
2.1	Oil Reserves
2.2	Oil Production
2.3	Oil Imports
2.4	Oil Exports
3.1	Natural Gas Reserves
3.2	Natural Gas Production
4.1	Coal Reserves
4.2	Coal Production
4.3	Coal Imports
4.4	Coal Exports
5.1	Firewood Production
5.2	Bagasse Production
5.3	Geothermal Energy Supply
5.4	Share of Firewood in Final Energy Demand of the Residential Sector
6.1	Electricity Generation by Type of Plant
6.2	Electricity Generation 1995-2003-2004
6.3	Installed Capacity Electric Power Sector
6.4	Installed Capacity for Power Generation by Type of Plant
6.5	Share of Hydro energy in Total Installed Capacity
6.6	Per Capita Electricity Consumption
7.1	Energy Demand of the Industrial Sector
7.2	Energy Demand of the Residential Sector
7.3	Energy Demand of the Commercial Sector
7.4	Energy Demand of the Transportation Sector
7.5	Share of Energy Sources in Final Energy Demand of the Industrial Sector
7.6	Share of Energy Sources in Final Energy Demand of the Residential Sector
7.7	Share of Energy Sources in Final Energy Demand of the Commercial and Services Sector
7.8	Share of Energy Sources in Final Energy Demand of the Transport Sector

8.1	Total Emissions of CO ₂
8.2	Total Emission of Sulfur Oxide Sox
8.3	Total Emission of Carbon Monoxide CO
8.4	Total Emissions of Nitrogen Oxide NO _x
8.5	Total Emissions of Hydrocarbons
8.6	Evolution of CO ₂ Emissions in Industrial Sector
8.7	Evolution of CO ₂ Emissions in Transport Sector
8.8	Evolution of CO ₂ Emissions in Residential Sector
8.9	Evolution of CO ₂ Emissions in Own Energy Production and Consumption
9.1.1	Electricity Prices in Residential Sector
9.1.2	Natural Gas Prices in Residential Sector
9.1.3	LPG Prices in Residential Sector
9.2.1	Electricity Prices in Industrial Sector
9.2.2	Natural Gas Prices in Industrial Sector
9.2.3	Fuel Oil Prices in Industrial Sector
9.3.1	Gasoline Prices in Transportation Sector
9.3.2	Diesel Oil Prices in Transportation Sector
10.1	Demand – GDP Elasticity
10.2	Energy Intensity

Source: Latin American Energy Organization, *Energy Report of Latin America and the Caribbean (2004)*.

PRODUCCION MUNDIAL DE ENERGIA / WORLD ENERGY PRODUCTION (10⁶ Boe) 2003

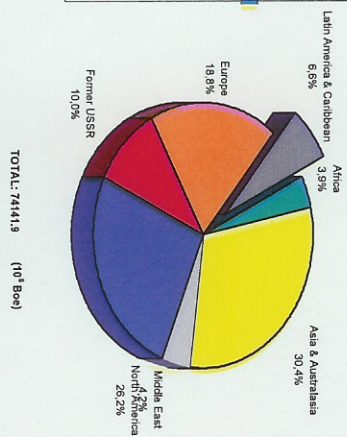
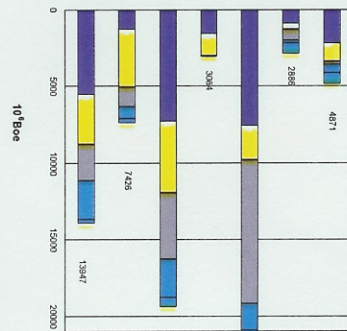
REGION	Oil Petróleo	Natural Gas	Coal Carbon M.	Electricity Electricidad	Biomass Biomasa	TOTAL
Latin America & Caribbean	3,556.50	1,242.06	318.66	572.02	764.33	6,453.57
Africa	2,869.65	917.28	990.78	157.32	726.98	5,662.01
Asia & Australasia	2,707.67	2,013.98	9,494.88	1,754.01	1,557.80	17,528.34
Middle East	7,880.85	1,670.99	4.32	21.92	7.93	9,585.71
North America	3,480.33	4,734.11	4,212.42	2,512.25	589.12	15,538.23
Former Soviet Union	3,687.28	4,699.44	1,516.68	779.00	312.85	10,995.26
Europe	2,197.07	1,950.57	1,610.58	2,544.17	285.46	8,557.85
TOTAL	26,389.37	17,218.43	18,148.31	8,340.40	4,224.47	74,320.97



CONSUMO MUNDIAL DE ENERGIA / WORLD ENERGY CONSUMPTION (10⁶ Boe) 2003

REGION	Oil Petróleo	Natural Gas	Coal Carbon M.	Electricity Electricidad	Biomass Biomasa	TOTAL
Latin America & Caribbean (*)	2,180.73	1,195.31	197.77	557.75	739.29	4,870.84
Africa	869.28	433.06	700.39	157.32	726.98	2,886.04
Asia & Australasia	7,559.45	2,240.24	9,412.02	1,754.01	1,557.80	22,523.51
Middle East	1,548.49	1,444.01	61.97	21.52	7.93	3,084.02
North America	7,282.75	4,651.25	4,358.70	2,512.25	559.12	19,404.05
Former Soviet Union	1,263.87	3,778.64	1,281.97	779.00	312.85	7,425.34
Europe	5,526.01	3,251.91	2,369.53	2,544.17	255.46	13,947.08
TOTAL	26,229.58	16,894.41	18,382.34	8,326.13	4,199.43	74,141.89

(*) Includes final consumption, transformation center consumption and losses.



TOTAL: 74141.3 (10⁶ Boe)

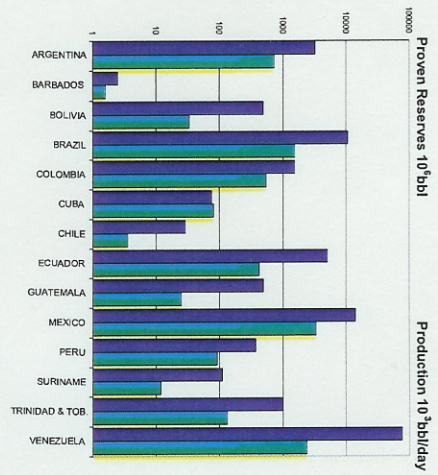
LATINO AMERICA & EL CARIBE: CONSUMO DE ENERGIA / ENERGY CONSUMPTION 2003

COUNTRY	POPULATION 10 ³ Inhab	GROSS DOMESTIC PRODUCT(3) 10 ⁶ 1995 US\$	FINAL ENERGY CONSUMPTION 10 ³ Boe	PER CAPITA GDP (3) 1995 US\$/inhab	PER CAPITA FINAL CONSUMPTION Boe/inhab	ENERGY INTENSITY (2) (3) Boe/10 ³ 1995 US\$	CONSUMPTION				CO2 EMISSIONS*	
							FINAL ELECTRICITY GWh	PER CAPITA kWh/inhab	OIL PRODUCTS TOTAL (1) 10 ³ Boe	PER CAPITA Boe/inhab	ELECTRICITY GENERATION 10 ³ tons	OVERALL ENERGY SECTOR 10 ³ tons
ARGENTINA	(A) 38 401	(B) 246 647	(C) 314 726	(B/A) 6 423	(C/A) 8 2	(C/B) 1 3	(D) 80 026	(D/A) 2 084	(E) 174 210	(E/A) 4 5	(F) 20 457	(G) 121 514
BARBADOS	270	1 843	1 897	6 826	7 0	1 0	782	2 895	2 495	9 2	578	1 085
BOLIVIA	8 898	8 485	19 599	954	2 2	2 3	3 665	412	15 280	1 7	1 728	8 022
BRAZIL	177 268	759 611	1 146 394	4 285	6 5	1 5	329 771	1 860	595 385	3 4	19 925	300 535
COLOMBIA	44 562	103 030	168 338	2 312	3 8	1 6	36 518	819	90 881	2 0	6 488	56 917
COSTA RICA	4 245	16 270	18 381	3 833	4 3	1 1	6 708	1 580	12 764	3 0	438	5 905
CUBA	11 306	48 360	61 984	4 277	5 5	1 3	12 469	1 103	42 355	3 7	7 225	24 711
CHILE	15 774	96 253	148 738	6 102	9 4	1 5	41 895	2 656	91 453	5 8	13 822	55 025
ECUADOR	13 343	23 749	48 047	1 760	3 6	2 0	8 366	627	49 048	3 7	3 266	20 030
EL SALVADOR	6 638	11 681	23 114	1 760	3 5	2 0	4 839	729	14 259	2 1	1 569	6 166
GUAYANA	94	289	454	3 176	4 8	1 5	130	1 379	522	5 5	79	214
GUATEMALA	12 309	19 093	50 523	1 551	4 1	2 6	5 808	472	22 298	1 8	2 781	11 120
HAITI	766	575	5 295	751	6 9	9 2	644	840	3 661	4 8	607	1 559
HONDURAS	8 827	3 641	12 534	412	1 4	3 4	283	32	3 964	0 4	206	1 652
JAMAICA	7 001	5 023	23 637	717	3 4	4 7	3 817	545	13 725	2 0	1 514	6 364
MEXICO	2 651	5 379	17 554	2 029	6 6	3 3	6 516	2 458	25 313	9 5	5 695	10 917
NICARAGUA	103 301	484 332	701 409	4 689	6 8	1 4	160 384	1 553	636 419	6 2	113 350	369 997
PANAMA	5 489	4 309	16 308	785	3 0	3 8	1 653	301	9 204	1 7	1 522	3 935
PARAGUAY	3 116	9 842	16 678	3 159	5 4	1 7	4 359	1 399	12 893	4 1	1 610	5 465
PERU	5 922	8 731	26 853	1 474	4 5	3 1	4 315	729	51 622	1 5	3 323	24 989
DOMINICAN REPUBLIC	27 149	66 143	77 056	2 436	2 8	1 2	20 206	744	41 070	4 7	7 631	16 714
SURINAME	8 819	18 270	38 567	2 072	4 4	2 1	11 893	1 349	4 151	9 8	1 034	2 294
TRINIDAD & TOBAGO	423	588	4 188	1 390	9 9	7 1	1 339	3 166	254 216	194 5	4 458	26 122
URUGUAY	1 307	8 157	65 562	6 241	50 2	8 0	5 876	4 496	9 719	2 9	16	4 080
VENEZUELA	3 408	16 670	16 035	4 892	4 7	1 0	62 477	2 445	181 508	7 1	28 279	128 948
TOTAL	25 554	63 492	256 399	2 485	10 0	4 0	820 706	1 529	2 367 420	4 4	247 599	1 218 205
REGIONAL AVERAGE	536 840	2 030 474	3 280 308	3 782	6 1	1 6						

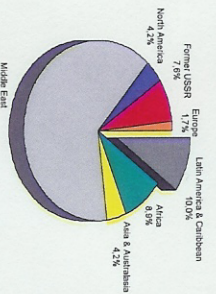
(*) OLADE estimate based on Energy Balances and IPCC Methodology \ Estimación OLADE con base en Balances Energéticos y Metodología IPCC
(1) Final Consumption + Transformation Center Consumption \ Own Consumption \ Consumo Final + Consumo en Centros de Transformación + Consumo Propio
(2) Final Energy Consumption / Gross Domestic Product \ Consumo Final de Energía / Producto Interno Bruto
(3) Information of 2003 (base year 1995) \ Información de 2003(año base 1995)

PETROLEO / OIL 2003

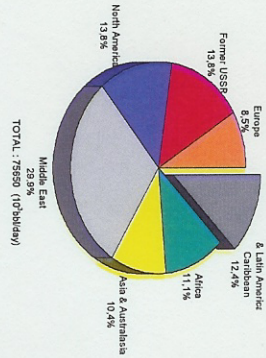
COUNTRY	PROVEN RESERVES 10 ⁹ bbl	PRODUCTION 10 ³ bbl/day	R/P Years
ARGENTINA	3,258.65	749.71	12.05
BOLIVIA	14,119.64	483.15	11.45
BRAZIL	4,861.11	1,542.40	16.85
COLOMBIA	1,542.40	541.33	7.81
COSTA RICA	0.00	7.83	2.55
CHILE	29.00	417.80	33.18
ECUADOR	0.00	0.00	54.83
GUATEMALA	483.15	24.72	11.45
GUAYANA	0.00	0.00	
HAITI	0.00	0.00	
HONDURAS	0.00	0.00	
MEXICO	14,119.64	3,377.76	11.45
NICARAGUA	0.00	0.00	
PANAMA	0.00	0.00	
PERU	374.05	81.35	11.22
DOMINICAN REP.	0.00	0.00	
TRINIDAD & TOB.	110.00	13.66	20.14
VENEZUELA	77,393.31	2,404.06	80.19
REGIONAL TOTAL	114,826.34	9,409.41	33.37



WORLD RESERVES



WORLD PRODUCTION



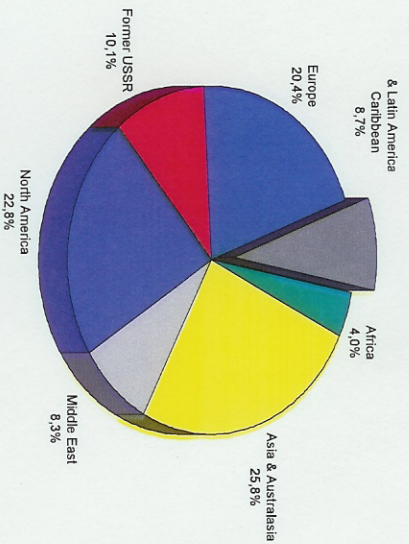
PETROLEO / OIL 2003

REGIONAL TRADE AND OIL REFINING CAPACITY (1st bbl/day)

COUNTRY	OIL REFINING CAPACITY	E X P O R T S (1)		I M P O R T S (1)	
		OIL	OIL PRODUCTS	OIL	OIL PRODUCTS
ARGENTINA	625.00	229.81	148.20	2.70	5.10
BOLIVIA	0.00	0.00	0.00	0.00	5.84
BRAZIL	54.00	2.71	0.00	0.00	5.84
COLOMBIA	2 041.51	248.87	245.68	361.75	166.01
COSTA RICA	398.00	229.83	65.42	1.17	0.87
CUBA	25.00	0.00	0.14	10.45	29.50
CHILE	150.00	0.00	0.00	26.89	60.30
ECUADOR	227.00	34.33	34.33	201.73	52.45
EL SALVADOR	184.80	252.32	38.43	0.00	33.82
GUATEMALA	44.04	0.00	3.41	19.14	26.44
GUAYANA	0.00	0.00	0.00	0.00	1.55
HONDURAS	22.50	22.59	0.00	0.00	64.61
JAMAICA	0.00	0.00	0.00	0.00	10.26
MEXICO	1 540.00	0.00	0.64	0.00	17.88
NICARAGUA	35.00	0.00	2.51	17.25	38.88
PANAMA	20.00	1 864.07	169.85	0.00	55.64
PARAGUAY	60.00	0.00	0.00	17.10	189.09
PERU	7.50	0.00	3.83	0.00	8.70
DOMINICAN REP.	159.30	28.80	41.13	1.83	40.03
TRINIDAD & TOB.	52.00	0.00	0.00	83.37	37.26
URUGUAY	7.00	1.52	0.97	40.89	77.73
VENEZUELA	175.00	71.53	97.54	86.04	19.59
REGIONAL TOTAL	50.00	1 560.90	479.81	32.65	9.06
	1 770.15	4 503.15	1 338.56	903.09	977.82

(1) Includes intra-regional trade
Oil products: (LPG+Gasoline+Kerosene +Jet Fuel +Fuel Oil+Diesel Oil)

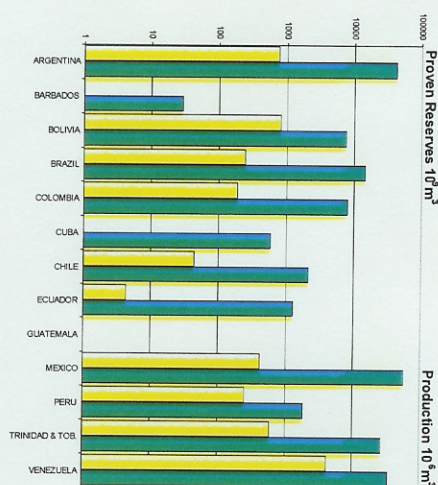
WORLD REFINING CAPACITY



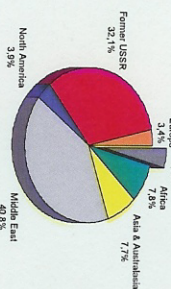
TOTAL : 82694.2 (10⁶ bbl/day)

GAS NATURAL / NATURAL GAS 2003

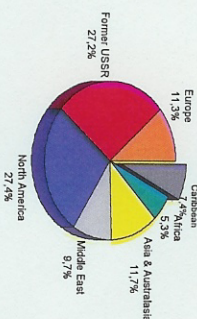
COUNTRY	PROVEN RESERVES 10 ⁹ m ³	PRODUCTION 10 ⁶ m ³	R / P
ARGENTINA	766.18	42,434.82	18.66
BARBADOS	0.11	28.95	3.80
BOLIVIA	810.70	7,624.62	106.33
BRAZIL	1,224.22	1,213.22	16.87
COLOMBIA	188.04	8,113.52	29.95
COSTA RICA	0.00	0.00	
CUBA	70.50	584.00	120.72
ECUADOR	44.00	2,119.86	20.22
EL SALVADOR	0.00	1,175.32	3.21
GUATEMALA	0.00	0.00	
GUAYMALA	0.00	0.00	
HONDURAS	0.00	0.00	
JAMAICA	40.51	57,653.69	7.30
NICARAGUA	0.00	0.00	
PANAMA	0.00	0.00	
PARAGUAY	246.79	1,844.64	133.76
PERU	1,224.22	1,213.22	16.87
DOMINICAN REP.	0.00	0.00	
GUININEE	597.80	28,646.03	21.82
URUGUAY	0.00	0.00	
VENEZUELA	44,144.41	33,729.66	129.66
REGIONAL TOTAL	7,432.41	117,193.14	30.23



WORLD RESERVES

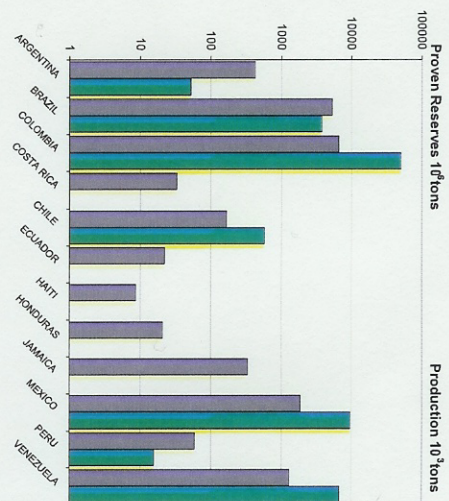


WORLD PRODUCTION

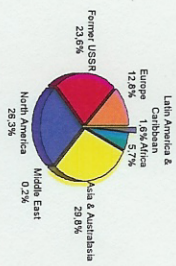


CARBON MINERAL / COAL 2003

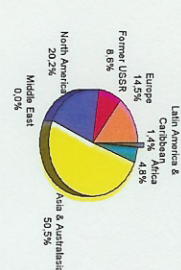
COUNTRY	PROVEN RESERVES	PRODUCTION	R / P
	10 ⁶ tons	10 ³ tons	Years
ARGENTINA	403.05	52.80	8.155.54
BARBADOS	0.00	0.00	
BOLIVIA	0.00	0.00	
BRAZIL	5,359.20	3,783.90	1,393.89
COLOMBIA	6,521.70	50,029.46	130.36
COSTA RICA	32.60	0.00	
CUBA	0.00	0.00	
DOMINICAN REP.	0.00	0.00	
ECUADOR	142.00	573.26	287.32
EL SALVADOR	0.00	0.00	
GUATEMALA	0.00	0.00	
GUAYANA	0.00	0.00	
HAITI	8.70	0.00	
HONDURAS	21.00	0.00	
JAMAICA	3,233.00	0.00	
MEXICO	1,329.40	9,600.00	191.42
NICARAGUA	0.00	0.00	
PANAMA	1.00	0.00	
PARAGUAY	0.00	0.00	
PERU	56.66	15.67	3,743.46
DOMINICAN REP.	0.00	0.00	
SURINAME	0.00	0.00	
TRINIDAD & TOB.	0.00	0.00	
UNITED STATES	0.00	0.00	
VENEZUELA	1,288.38	6,812.21	154.84
REGIONAL TOTAL	15,672.31	70,672.28	226.62



WORLD RESERVES



WORLD PRODUCTION

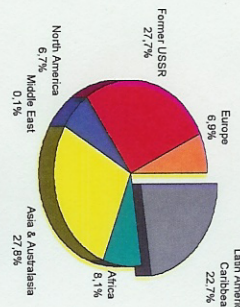


TOTAL: 8117 (10⁶ tons)

ELECTRICIDAD / ELECTRICITY 2003

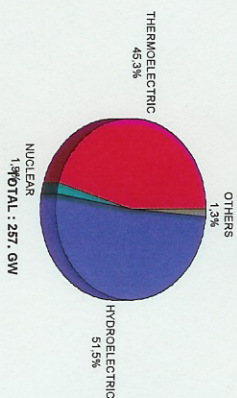
COUNTRY	HYDROPOWER POTENTIAL (MW)	INSTALLED CAPACITY BY TYPE OF PLANT (MW)					TOTAL
		HYDRO	THERMO.	NUCLEAR	OTHERS*		
ARGENTINA	44,500.00	9,782.73	19,772.00	1,018.00	26.33	30,599.06	
BARBADOS	0.00	0.00	209.50	0.00	0.00	209.50	
BOLIVIA	190,000.00	479.20	872.86	0.00	1.20	1,353.26	
BRAZIL	260,000.00	67,791.80	16,705.80	2,007.00	0.00	86,504.60	
COLOMBIA	93,085.00	8,893.34	4,690.15	0.00	70.00	13,653.49	
COSTA RICA	6,220.00	1,295.63	395.57	0.00	247.76	1,938.96	
CUBA	650.00	57.40	3,901.30	0.00	0.40	3,959.10	
CHILE	26,046.00	4,279.14	6,456.94	0.00	2.00	10,738.08	
ECUADOR	23,467.00	1,733.58	1,410.00	0.00	397.80	3,541.38	
EL SALVADOR	2,165.20	442.00	514.60	0.00	262.40	1,219.00	
GUATEMALA	0.00	0.00	32.00	0.00	0.00	32.00	
GUAYANA	10,890.00	627.30	1,352.80	0.00	29.00	2,009.10	
HAITI	7,600.00	0.50	307.50	0.00	0.00	308.00	
HONDURAS	173.00	63.00	181.00	0.00	0.00	244.00	
JAMAICA	5,000.00	465.70	578.30	0.00	0.00	1,044.00	
MEXICO	24.00	23.60	667.10	0.00	120.00	810.70	
NICARAGUA	51,387.00	9,649.94	37,560.74	1,365.00	962.55	49,538.23	
PANAMA	1,700.00	104.40	510.65	0.00	77.50	692.56	
PARAGUAY	3,698.80	833.00	491.00	0.00	231.20	1,555.20	
PERU	12,516.00	7,410.00	6.10	0.00	0.00	7,416.10	
DOMINICAN REP.	61,832.40	3,032.31	2,937.05	0.00	0.70	5,970.06	
SURINAME	2,010.00	542.10	4,184.20	0.00	804.00	5,530.30	
TRINIDAD & TOB.	2,420.00	189.00	200.00	0.00	0.00	389.00	
URUGUAY	0.00	0.00	1,416.00	0.00	0.00	1,416.00	
VENEZUELA	1,815.00	1,538.00	633.00	0.00	0.00	2,171.00	
REGIONAL TOTAL	46,000.00	12,491.00	8,086.00	0.00	0.00	20,577.00	
OTHERS: GEO-THERMAL * SOLAR * WIND	853,189.40	131,724.67	114,072.17	4,390.00	3,232.84	253,419.68	

WORLD HYDROPOWER POTENTIAL



SOURCE: International Water Power & Dam Const.(Sep 80)

WORLD INSTALLED CAPACITY



SOURCE: Calculated by OLADE on the basis of US-DOE information

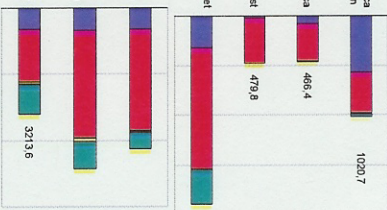
ELECTRICITY / ELECTRICIDAD 2003

GENERATION BY TYPE OF PLANT [GWh]

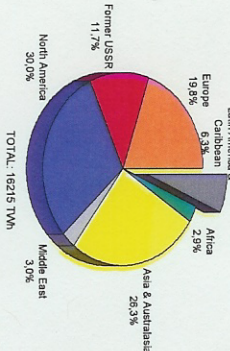
COUNTRY	HYDRO	THERMO.	NUCLEAR	OTHERS(I)	TOTAL
ARGENTINA	33,177.00	50,695.00	7,596.00	75.00	92,053.00
BARBADOS	0.00	1,670.90	0.00	0.00	1,670.90
BELIZE	2,313.72	1,735.42	0.00	0.00	4,049.14
BOLIVIA	290,006.42	60,785.74	14,080.40	0.00	364,872.56
COLOMBIA	35,652.42	11,729.84	0.00	0.00	47,382.26
COSTA RICA	6,021.86	157.15	0.00	1,385.88	7,564.89
CUBA	78.00	15,631.20	0.00	0.00	15,699.20
CHILE	24,176.51	20,678.49	0.00	0.00	45,055.00
ECUADOR	7,152.52	4,346.75	0.00	0.00	11,501.27
EL SALVADOR	1,704.62	1,690.23	0.00	1,728.66	4,123.51
GUATEMALA	2,176.59	4,189.46	0.00	195.02	6,561.07
GUAYANA	0.00	815.74	0.00	0.00	815.74
HAITI	197.00	315.00	0.00	0.00	512.00
HONDURAS	1,745.00	2,764.91	0.00	0.00	4,509.91
JAMAICA	353.46	6,792.52	0.00	0.00	7,146.01
MEXICO	19,753.00	167,554.99	10,502.00	5,946.00	203,754.99
NECAYACUA	297.35	2,021.91	0.00	270.70	2,590.00
PARAGUAY	2,761.11	0.42	0.00	0.00	2,761.53
PERU	18,537.50	4,346.83	0.00	0.00	22,028.33
DOMINICAN REP.	1,562.18	11,026.72	0.00	0.00	13,488.90
STURINAVE	859.71	535.84	0.00	0.00	1,455.55
TRINIDAD & TOB.	0.00	6,406.60	0.00	0.00	6,406.60
URUGUAY	1,000.00	1,000.00	0.00	0.00	2,000.00
VENEZUELA	80,177.33	29,639.56	0.00	0.00	109,816.89
REGIONAL TOTAL	570,086.47	409,491.65	31,454.40	9,009.46	1,020,737.98

* OTHERS: GEOTHERMAL-SOLAR-WIND

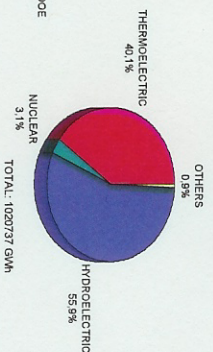
WORLD GENERATION BY TYPE OF PLANT [TWh]



WORLD GENERATION



LATIN AMERICA & CARIBBEAN



TOTAL: 16215 TWh
SOURCE: Calculated by CIADE on the basis US-DOE
revised information

PRECIOS INTERNOS CON IMPUESTOS AL CONSUMIDOR FINAL (DICIEMBRE/2003) / DOMESTIC CONSUMER PRICES WITH TAXES (DECEMBER/2003)

PAIS COUNTRY	MONEDA NACIONAL (M.N.) CURRENCY (N.C.)	PARIDAD M.N./US\$ EXCHANGE RATE N.C./US\$	COMBUSTIBLES (US\$/Gallon) - DOMESTIC FUELS (US\$/Gallon)						GAS L.P. L.P.G. US\$/kg	ELECTRICIDAD - ELECTRICITY US cent/kWh		
			GASOLINA REGULAR	GASOLINA EXTRA PREMIUM	DIESEL OIL	KEROSENE DOMESTICO HOUSEHOLD	JET FUEL	FUEL OIL		RESIDENCIAL	COMERCIAL	INDUSTRIAL
ARGENTINA	Pesos	2.91	2.15	2.38	0.24	1.54	1.29	0.80	0.34	4.14	4.44	2.08
BARBADOS	Barbadian Dollar	2.00	n/a	2.63	1.31	1.19	0.40	0.40	1.26	18.80	19.95	19.65
BOLIVIA	Boliviano	7.83	1.61	1.83	1.51	1.04	1.21	1.06	0.28	5.49	8.43	3.98
BRASIL	Real	2.89	2.62	2.53	1.82	1.28	1.15	0.74	0.77	8.27	7.27	3.84
COLOMBIA	Peso Colombiano	2,780.82	1.56	2.14	1.08	1.09	1.06	0.66	0.32	7.70	9.24	7.17
COSTA RICA	Colón	418.53	2.30	2.41	1.69	1.70	1.60	0.69	0.84	6.19	8.58	5.96
CUBA	Peso Cubano	1.00	1.51	1.89	1.08	0.32	1.14	0.73	0.24	14.26	10.45	8.35
CHILE	Peso Chileno	599.42	1.87	1.89	1.62	1.50	0.61	0.77	0.80	8.56	8.21	5.56
ECUADOR	Dólar	1.00	1.31	1.68	0.90	n/a	1.16	0.69	0.11	13.03	11.11	9.65
EL SALVADOR	Colón Salvador.	8.75	1.90	2.03	1.56	1.39	0.89	1.42	0.39	12.85	11.89	12.10
GUAYANA	Grenadian Dollar	2.70	n/a	2.03	1.54	1.14	n/d	n/d	0.98	22.10	23.40	18.80
GUATEMALA	Quetzal	8.04	1.87	1.93	1.37	1.55	1.20	1.14	0.51	7.93	6.21	7.48
GUAYANA	Guyanese Dollar	194.25	n/a	2.07	1.60	1.24	0.00	0.99	0.00	0.00	0.00	0.00
HAITI	Gourde	42.08	1.81	1.96	1.23	1.11	1.11	0.31	0.35	5.99	8.84	8.45
HONDURAS	Lempira	17.75	2.45	2.52	1.80	1.56	0.83	0.94	0.77	4.41	2.88	3.44
JAMAICA	Jamaican Dollar	60.52	1.63	1.76	1.50	1.42	1.13	0.78	0.60	17.44	15.03	11.55
MEXICO	Nuevo Peso	11.24	n/a	2.28	1.69	n/a	1.05	0.67	1.08	8.09	13.95	6.95
NICARAGUA	Córdoba de Oro	15.55	2.14	2.22	1.88	1.80	0.67	0.43	0.55	13.47	16.24	12.61
PANAMA	Balboa	1.00	1.83	1.87	1.44	0.99	1.00	0.75	0.63	12.10	11.80	9.90
PARAGUAY	Guarani	6,114.96	1.91	2.41	1.52	0.49	0.48	0.42	0.46	5.60	5.97	3.76
PERU	Nuevo Sol	3.46	2.48	3.22	2.10	2.10	n/d	0.86	0.92	11.37	7.59	7.20
REP. DOMINICANA	Peso Dominicano	37.25	1.61	1.82	1.21	1.22	1.11	1.20	0.32	9.53	10.60	10.82
SURINAME	Florin	401.00	n/a	2.11	1.55	1.36	1.36	0.25	0.72	17.10	17.30	13.10
TRINIDAD Y TOBAGO	Trinidad Dollar	6.30	1.24	1.30	0.77	0.61	1.26	0.51	0.37	3.51	3.73	4.62
URUGUAY	Peso Uruguayo	28.30	2.92	3.24	1.91	2.03	1.65	0.64	0.82	10.55	7.03	3.89
VENEZUELA	Bolívar	1,598.00	0.15	0.20	0.12	0.28	0.29	0.12	0.14	5.50	7.90	2.80

1 barrel=42 US gallons=158.98 liters / 1 barrel=42 gallons US=158.987 litros.

NOTAS: n/a no aplicable
n/d no disponible
* datos preliminares

NOTES: n/a not applicable
n/d not available
* preliminary data

ABBREVIATIONS, ACRONYMS AND MEASUREMENTS

Barrels of oil equivalent	boe
Central American Free Trade Agreement	CAFTA
Carbon dioxide	CO ₂
Carbon monoxide	CO
Demand-side management	DSM
Dollars per barrels of oil equivalent	US\$/boe
Energy service companies	ESCOs
Global Environmental Facility	GEF
Environmental Impact Assessment	EIA
Environmental Multilateral Agreements	EMAs
Gross Domestic Product	GDP
Greenhouse gases	GHGs
Central American Free Trade Agreement	CAFTA
International Union for the Conservation of Nature and Natural Resources	IUCN
Kilometers	Km
Kilowatt	kW
Kilowatts-hours	kWh
Megawatts	MW
Megawatts per hour	MWh
Miles per second	m/s
Million barrels of oil equivalent	Mboe
Million metric tons	Mt
Million metric tons of carbon equivalent	MtCe
North American Free Trade Agreement	NAFTA
Nitrous oxide	NO ₂
Natural gas liquids	NGL
Particulate Matter	PM
Photovoltaic	PV
Renewable Portfolio Standard	RPS
Sulphur dioxide	SO ₂
Thousand barrels of oil equivalent	kboe
United Nations Conference on Environment and Development	UNCED
United Nations Educational Scientific and Cultural Organization	UNESCO
United Nations Framework Convention on Climate Change	UNFCCC
United Nations Development Programme	UNDP
United Nations Environment Programme	UNEP
United States Agency for International Development	USAID
United States Department of Energy	USDOE
World Summit on Sustainable Development	WSSD

GLOSSARY

Agenda 21 is a comprehensive plan of action to be taken globally, nationally and locally in every area to alleviate human impacts on the environment. It was adopted by more than 175 governments at the United Nations Conference on Environment and Development (UNCED) in 1992 (also known as the Rio Earth Summit).

Annex I Parties (UNFCCC) refers to a list in Annex I of the United Nations Framework Convention on Climate Change (UNFCCC) (see below) that includes 40 countries (mostly industrialized countries) plus the European Union that agreed to try to limit their greenhouse gas emissions.

Anthropogenic emissions are emissions attributed to human activities.

Autonomous generation system (or off-grid system) is an electric generation installation not connected to an interconnected electricity system. Usually, these systems include photovoltaic, wind and micro-hydroelectric systems to supply power to rural areas

Bagasse is a by-product of sugar cane and alcohol production and can be used to fuel power plants and combined heat and power (cogeneration) plants.

Biofuels are fuels obtained as a product of biomass conversion (such as alcohol or gasohol).

Biogas is a gas composed principally of a mixture of methane and carbon dioxide produced by anaerobic (without oxygen) digestion of biomass.

Biomass is organic (non-fossil) material of biological origin, a part of which constitutes an exploitable energy use. While the different forms of energy from biomass are always considered as renewable sources, their rates of renewability are different, depending on their nature and rate of exploitation.

Capacity building refers to developing skills and capabilities for technology innovation and deployment in the relevant government, private sector, academic, and civil institutions.

Clean Development Mechanism (CDM) is one of the three market mechanisms established by the Kyoto Protocol. The CDM enables industrialized countries to invest in emission reduction projects in developing countries and to receive credits for reductions achieved. It is designed to promote sustainable development in developing countries and assist Annex I Parties in meeting their greenhouse gas emission reduction commitments under the UNFCCC.

Climate change refers to changes in long-term trends in the average climate, such as changes in average temperatures. The Intergovernmental Panel on Climate Change (see below) uses the term as any change in climate over time, whether due to natural

variability or as a result of human activity. In UNFCCC usage, climate change refers to a change in climate that is attributable directly or indirectly to human activity that alters atmospheric composition.

Commission on Sustainable Development (CSD) is a Commission of United Nations member countries created in December 1992 to ensure effective follow-up of the UNCED (Rio Earth Summit), to monitor and report on implementation of the agreements at the local, national, regional and international levels.

Downstream activities in the hydrocarbons sector include transportation and distribution of hydrocarbon products.

Emissions are release of substances (e.g., greenhouse gases) into the atmosphere.

Emissions trading is a market mechanism that allows emitters (countries, companies or facilities) to buy emissions from or sell emissions to other emitters.

Energy intensity is the ratio between consumption of energy to a given quantity. It usually refers to the amount of primary or final energy consumed per unit of gross domestic or national product. It is used to measure the effectiveness of energy use and the consumption patterns of the different economies.

Energy efficiency is defined as the ratio of the desired (usable) energy output to the energy input or as the amount of utility or energy service provided by a unit of energy. It can be used as a measure of energy efficiency in end-use applications. In other words, energy efficiency is a measure of the energy used in providing a particular energy service. An increase in energy efficiency enables consumers to enjoy an increase in utility or energy service for the same amount of energy consumed or to enjoy the same utility of energy services with reduced energy consumption

Energy sector restructuring refers to encouraging market competition in energy supply (often by transfer of ownership from the public to the private sector), while removing subsidies and other distortions in energy pricing and preserving public benefits.

Energy services refer to the utility of energy. Units to measure the utility of energy vary between applications. For example, lumen is the natural unit in lighting services; however, for practical reasons kilowatt-hours is used instead.

Ethanol (ethyl alcohol) is alcohol produced by the fermentation of glucose. The glucose may be derived from sugary plants such as sugar cane and beets or from starchy and cellulosic materials by hydrolysis. It can be blended with petroleum products.

Externalities are benefits or costs resulting as an unintended byproduct of an economic activity that accrue to someone other than the parties involved in the activity. **Externalities of energy** are by-products of energy production and use that have an undesirable effect on the environment.

Final energy is the energy transported and distributed to the point of final use.

Firewood or Fuelwood refers to wood and wood products, possibly including coppices, scrubs, and branches, bought or gathered, and used by direct combustion.

Greenhouse effect is the insulating effect of atmospheric greenhouse gases (e.g., water vapor, carbon dioxide, methane, etc.) that keeps the Earth's temperature about 60°F warmer than it would be otherwise.

Greenhouse Gas (GHG) is any gas that contributes to the greenhouse effect. GHGs are heat-trapping gases in the atmosphere that warm the Earth's surface by absorbing outgoing infrared radiation and re-radiating part of it downward. Water vapor is the most important naturally occurring GHG, but the principal GHGs, whose atmospheric concentrations are being augmented by emission from human activities are carbon dioxide, methane, nitrous oxide, and halocarbons.

Grid is the infrastructural network that supplies energy. It is also known as the interconnected electricity system.

Hydrocarbon resources are occurrences of hydrocarbon in solids, liquids, and gas state. The term includes oil, natural gas, natural gas liquids and coal.

Infrastructure refers to the physical structures and delivery systems necessary to supply energy and end-users. In the case of power plants, the infrastructure is the high-tension wires needed to carry the electricity to consumers; in the case of natural gas, it is the pipeline network; in the case of liquid fuels, it is the fueling stations.

Installed generation capacity is the total amount of power that all existing electric power plants in a country could generate when running at full capacity.

Inter-American Development Bank (IDB) is the main source of multilateral financing for economic, social and institutional development in Latin America. It does so mainly through lending to public institutions, but it also funds some private projects, typically in infrastructure and capital markets development. It is headquartered in Washington, D.C. The IDB was established in 1959.

Intergovernmental Panel on Climate Change (IPCC) is a working group of experts established in 1988 by the World Meteorological Organization and the UNEP to provide the scientific and technical foundation for the UNFCCC, primarily through the publication of periodic assessment reports. The IPCC provides methodology for determining emissions of GHG and guidelines for national GHG inventories to be used in reports (National Communications) required under the UNFCCC. Most first National Communications pursuant to the UNFCCC are based on the IPCC's 1996 guidelines.

Joint Implementation (JI) is one of the three market mechanisms established by the

Kyoto Protocol. Joint Implementation occurs when an Annex B country invests in an emissions reduction or sink enhancement project in another Annex B country to earn emission reduction units. More broadly, joint implementation projects are mentioned in the UNCCC for parties to implement “policies and measures jointly with other Parties and may assist other Parties in contributing to the achievement of the objective of the Convention” (UNFCCC, Article 4 (2-a)).

Kyoto mechanisms are three market-based mechanisms established in the Kyoto Protocol that have the potential to help countries reduce the cost of meeting their emissions reduction targets. These mechanisms are **Joint Implementation** (Article 6), the **Clean Development Mechanisms** (Article 12), and **Emissions Trading** (Article 17).

Kyoto Protocol (to the UNFCCC) is an international agreement adopted in December 1997 in Kyoto, Japan, in furtherance of the UNFCCC. The Protocol contains legally binding emissions targets for industrialized (Annex I) countries for the post-2000 period. Together they must reduce their combined emissions of the six regulated GHGs by at least 5 percent by the period 2008-2012, calculated as an average over these five years.

Latin American Energy Organization (*Organización Latinoamericana de Energía, OLADE*) is an international public cooperation, coordination, and advisory agency, aimed essentially at promoting the integration, development, conservation, rational use, and marketing of the region's energy resources. The OLADE was created in 1973 by the Lima Convention, which has been ratified by 26 countries. OLADE's Permanent Secretariat is located in Ecuador.

Liberalization is the doctrine that advocates the greatest possible use of markets and the forces of competition to coordinate economic activity. It allows to the state only those activities that the market cannot perform.

Liquefied natural gas (LNG) is natural gas made up mainly of methane and ethane. It is often converted to the liquid form by having its temperature lowered (generally to facilitate its transportation).

Liquefied petroleum gas (LPG) are light hydrocarbons, principally propane and butane, which are gaseous under normal conditions and are maintained in a liquid state by and increase in pressure or lowering of temperature (generally to facilitate its transportation). It is obtained during the fractionation of the NGL or during the fractionation of the crude oil itself.

Methane (CH₄) is a gas produced by natural processes, but there are also substantial emissions from human activities such as landfills, livestock and livestock wastes, natural gas and petroleum systems, coalmines, rice fields, and wastewater treatment. Methane is among the six greenhouse gases to be curbed under the Kyoto Protocol.

Modern renewable energy resources is used herein, as in the World Energy Assessment (see below) to distinguish between traditional renewables used directly with

low conversion technology and renewables using capital intensive high-tech energy conversion such as solar, wind, geothermal, biomass, or ocean energy to produce state-of-the-art fuels and energy services. Geothermal energy cannot be strictly considered renewable, but is included for practical reasons.

National Inventory of Greenhouse Gases is an inventory of GHGs, typically for 1990 and/or a subsequent year, using the guidelines of the IPCC. National Inventories usually include six gases (carbon dioxide, methane, nitrous oxide, nitrogen oxide, carbon monoxide, and nonmetallic volatile organic compounds) and five sectors (energy, industrial processes, agriculture, land use change and forestry, and waste management).

Natural gas is a light paraffin hydrocarbon mixture, mainly methane, with small amounts of ethane and propane, and in variable proportions of nitrogen, carbon dioxide and hydrogen sulfide. Natural gas can be associated with crude oil or in independent form in unassociated gas wells.

Nitrus oxide (N₂O): Nitrus oxide results from natural processes, but there are also substantial emissions from human activities such as agriculture and fossil fuel combustion. Nitrus oxide is among the six GHGs to be curbed under the Kyoto Protocol.

Nitrus oxides (NO_x) are oxides formed and released in all common types of combustion at high temperature. Direct harmful effects of nitrogen oxides include human respiratory tract irritation and damage to plants. Indirect effects arise from their essential role in photochemical smog reactions and their contribution to acid rain problems.

Non-Annex I Parties (to the UNFCCC) are countries that have ratified or acceded to the UNFCCC that are not listed in Annex I of the UNFCCC.

Non-conventional energy sources include biogas, micro-hydroelectricity, solar thermal power, solar photovoltaic electricity and wind generation

Organization for Economic Co-operation and Development (OECD) is a multilateral organization of 29 industrialized nations, producing among them two-thirds of the world's goods and services. The objective of the OECD is the development of social and economic policies and the coordination of domestic and international activities.

Power is the rate at which energy is transferred and is commonly measured in **watts (W)**, where one watt is one joule per second.

Primary energy is the energy that is embodied in resources as they exist in nature. It refers to energy sources as they are obtained, whether directly, as in the case of hydropower or solar energy, or indirectly, after a process of extraction, such as oil, coal and geothermal energy. Primary sources of energy include: crude oil, natural gas, coal, hydroelectric power, geothermal energy, nuclear power, firewood, sugarcane residues, and other biomass resources. For the most part, primary energy is not used directly but is first converted or transformed into fuels or electricity.

Primary energy use usually refers to **commercial energy**; that is, energy that is traded in the marketplace and exchanges at the going market price.

Public Benefits Fund (PBF) is a financial mechanism created to serve the greater public interest by funding programs for environment and public health, services to the poor and disenfranchised, energy technology innovation, or other public goods not accounted for by a restructured energy sector.

Reserves are those occurrences of energy sources or mineral that are identified and measured as economically and technically recoverable with current technologies and prices. Reserves represent a portion of resources (see below). **Proven reserves** (of hydrocarbons) are volumes of hydrocarbons measured at atmospheric conditions that can be economically produced with the methods and applicable exploitations systems at the moment of the evaluation. The terms 'proven reserves' and 'reserves' (of hydrocarbons) are used as having the same meaning in this document.

Resources are those occurrences of energy sources or minerals with less certain geological and/or economic/technical recoverability characteristics, but that are considered to become potentially recoverable with foreseeable technological and economic development.

Secondary energy refers to energy products that are generated by processing primary energy within the country. Secondary energy includes fuels and other products made from primary energy sources, including: electricity, LPG, gasoline, kerosene, diesel and gas oil, fuel oil, coke, charcoal, liquefied gases and non-energy products (i.e. lubricants, plastics and other products which contain energy content, but are not used for the production of energy).

Subsidies are publicly supported cost reductions that may be granted to producers and consumers—directly, through price reductions, or in less visible forms, through tax breaks, market support or inadequate metering.

Sulphur oxides (SO_x) are oxides produced by the combustion of fossil fuels containing sulphur (particularly coal). Sulphur oxides, the most widespread of which is sulphur dioxide (SO₂), a colorless gas having a strong and acrid odor, are toxic at a given concentration for the respiratory system and gave harmful effects on the environment, in particular on buildings and vegetation. They contribute to the acid rain problem.

Sustainable energy, as the term is used in this document, means energy that is environmentally sound and highly safe, reliable and affordable. That is, energy that supports sustainable development.

United Nations Framework Convention on Climate Change (UNFCCC): A treaty signed at the 1992 Earth Summit in Rio de Janeiro that calls for the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous

anthropogenic interference with the climate system.” It directs that “such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner”. It also recognizes the right of less industrialized countries to economic development and that industrialized countries should shoulder greater responsibility for the problem. The treaty took effect in March 1994 upon ratification by more than 50 countries.

United Nations Framework Convention on Climate Change Secretariat (UNFCCC Secretariat) is the United Nations staff assigned the responsibility of conducting the affairs of the UNFCCC. In 1996 the Secretariat moved from Geneva, Switzerland, to Bonn, Germany.

United Nations Conference on Environment and Development (UNCED), also known as the Rio Earth Summit, was a major United Nations conference on the environment and development held in 1992.

Upstream activities in the hydrocarbons sector encompass exploration and production.

Waste-to-energy is energy generated from solid waste.

World Bank is a multilateral, United Nations affiliated lending institution which annually makes available roughly \$20 billion in loans to developing countries, mainly but not exclusively for large scale infrastructure projects. The World Bank Group comprises five agencies: the International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA), and the International Centre for Settlement of Investment Disputes (ICSID). The World Bank Group raises capital from both public sources and financial markets.

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