

technical, to facilitate compliance with offset requirements, or it could just be a simple colour code system to show high, reduced or very low emissions.

3.3.5. Bioenergy research and development

Bioenergy laws also typically contain provisions for the promotion of research and development, especially in production methods and use. In some countries the government has an explicit obligation to assign resources for bioenergy research and development activities. In Peru, for example, the government is required to promote scientific research in the development and use of renewable energy, and to allocate funding for this purpose.⁴⁴ The imposition of a binding obligation to secure funding for bioenergy research and development may create more favourable conditions for investment.

PART II – SUMMARY OF LEGAL AND POLICY INITIATIVES

1. OVERVIEW

This part of the study provides a brief overview of existing or proposed legislation on biofuels in selected developing countries in Latin America, Africa and Asia, as well as policy initiatives. The countries chosen for analysis were the result of a survey sent to FAO country representatives by the Development Law Service (LEGN) of the FAO Legal Office. FAO country representatives were invited to provide information on existing or proposed legislation, policies and programmes to promote the production and use of bioenergy and biofuels in their respective countries. The information received is summarized in this part. Although it is far from exhaustive, the summaries do identify a broad range of legislative initiatives and policies on bioenergy in developing countries which will merit further study.

Many developing countries have been actively involved in legislating measures to promote biofuels based on approaches that parallel those of the three leading biofuels producers: Brazil, the European Union and the United States. In Latin America, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Nicaragua, Paraguay, Peru and Uruguay have recently enacted legislation

⁴⁴ *Decreto Supremo N° 013-2005-EM, supra* note 41.

toward these ends, while Chile and El Salvador have drafted legislation which is expected to be passed in the near future. In Southeast Asia, Indonesia and the Philippines have also recently enacted laws to regulate the production and use of biofuels.

The long experience of Brazil in ethanol production over the last three decades has served as a model for many other South American countries which have been particularly active in recent years in promoting the production and use of biofuels through new legislative initiatives. In Southeast Asia, several initiatives and pilot projects are being developed to encourage ethanol and biodiesel production from palm oil. However, with the exception of a few countries, such as the Philippines and Indonesia, there appear to be fewer regulatory frameworks in place for bioenergy in Asia. Africa appears to have the least regulation and policies for bioenergy which may slow the development of the sector.

In addition to legislation, most of the countries surveyed have established national programmes to promote the production and use of biofuels. Some of these programmes were designed before the development of a specific law promoting biofuels, such as was the case in Argentina or Peru. Some countries, such as Chile, El Salvador and Panama, have established a national policy on biofuels but have not yet enacted accompanying legislation. In other countries, such as Ecuador and Nicaragua, legislative initiatives have preceded the formulation of a national programme on biofuels. In these cases, the legislation mandates the development of a national programme and establishes guidelines for its implementation.

As seen in the preceding Part, one of the key features of legislation to promote biofuels is the creation of an institutional framework and the designation of an authority responsible for implementation. As biofuels are regarded as substitutes to conventional transport fuels and part of the national energy matrix, they usually fall under the scope of national energy ministries. There may already be an institution in place, depending on the country, or it may be explicitly created by the law. The choice of which ministry to designate as the implementing authority varies by country, depending on the local context. For example, in the Mexican and Nicaraguan legislation, the ministry responsible for agriculture is designated as the implementing authority. In Colombia and Paraguay, the legislation allocates a more limited role to the agriculture ministry. In other jurisdictions, the ministry of the environment may be the implementing authority, while the national ministry of commerce and finance

has the responsibility for overseeing tax incentives and other financial provisions related to biofuel production, use and trade.

The degree of detail of the legislation also varies from one country to another. Some countries, such as Ecuador, Nicaragua and Uruguay, have passed laws or government decrees that declare the production and use of biofuels in the country to be of national interest but do not regulate related activities in detail. Such basic laws generally provide for the designation of an implementing authority and, in some cases, they outline the basis of a national biofuels policy or programme. Other countries, including Argentina, Paraguay, Peru and the Philippines, have opted to enact national laws which regulate many aspects of biofuel production and use in much greater detail.

Most of the laws surveyed contain the following provisions:

- purpose of the law;
- definitions of bioenergy and biofuels;
- institutional framework;
- licensing requirements for biofuel producers;
- requirements for technical specifications for biofuel production;
- mandatory blending targets;
- tax incentives for the production of biofuels; and
- sanctions or penalties for non-compliance with the law.

Very few of the laws surveyed address broader environmental or socio-economic goals. However, such goals may be outlined at the project implementation level. For example, Namibia's Kavango Biofuel Project makes clear reference to the international environmental requirements established under the Kyoto Protocol to qualify for carbon credits and has provisions to encourage employment and the distribution of other economic benefits to farmers the local level. Other examples will be explored below.

2. REVIEW OF SELECTED NATIONAL POLICIES AND LAWS

2.1. Argentina

In Argentina, there have been several legislative initiatives related to biofuels in recent years. Resolution 1.156/2004⁴⁵ of the Secretariat of Agriculture, Livestock, Fisheries and Food established the National Biofuels Programme (*Programa Nacional de Biocombustibles*), whose principal objectives are to:

- promote the production and sustainable use of biofuels as a renewable source of energy alternative to fossil fuels, with special attention to biodiesel from vegetable and animal oils and ethanol from sugar cane, maize and sorghum;
- support and advise rural sectors on the development of facilities used in the production of biofuels as an opportunity for local and regional development;
- cooperate with public institutions devoted to research into and expansion of the use of biofuels; and
- promote public and private investment.

To complement the National Biofuels Programme, Law No. 26.093⁴⁶ was enacted in April 2006 to establish measures to promote the production and sustainable use of biofuels over a 15-year period. It mandates a minimum 5 percent blending requirement both for ethanol and biodiesel with gasoline and diesel, respectively, effective 1 January 2010. It also establishes requirements for the mandatory use of biofuels in government vehicles and public transportation. Finally, it provides for the following investment incentives for the biofuels industry in Argentina:

- VAT exemption;
- corporate tax exemption for three years; and
- excise tax exemption on biofuels.

The law creates a National Advisory Board for the Promotion of Production and Sustainable Use of Biofuels (*Asesora Nacional para la Promoción de la*

⁴⁵ *Resolución 1156/2004 de la Secretaría de Agricultura, Ganadería, Pesca y Alimentos por la que se crea el Programa Nacional de Biocombustibles* (2004).

⁴⁶ *Ley 26.093/06 de régimen de regulación y promoción para la producción y uso sustentables de biocombustibles* (2006).

Producción y Uso Sustentables de los Biocombustibles) which is comprised of a representative from each of the following bodies:

- Secretariat of Energy;
- Secretariat of Agriculture;
- Secretariat of Livestock, Fisheries and Food;
- Secretariat of Environment and Sustainable Development;
- Secretariat of the Treasury;
- Secretariat of Economic Policy;
- Secretariat of Commerce and Industry;
- Secretariat of Science and Technology;
- any other public or private institutions which may contribute to the fulfilment of the tasks allocated to the implementing authority.

The board serves in an advisory role and is to be convened when necessary to provide assistance to the implementing authority in legal, technical and administrative aspects of the biofuel industry.

Under Law No. 26.093, qualified companies and projects are eligible for the benefits deriving from the Kyoto Protocol Clean Development Mechanism (CDM) which was implemented in Argentina in 2001 under Law No. 25.438.⁴⁷ Finally, Law No. 26.093 includes provisions for offences and sanctions.

Law No. 26.093 was recently further regulated by Decree No. 109/2007,⁴⁸. According to this decree, all activities related to the production, blending, distribution, sale, consumption and sustainable use of biofuels shall be regulated under articles 2, 3 and 6 of Law No. 17.319 of 1967⁴⁹ to the extent they are not specifically regulated by Law No. 26.093 and its implementing Decree No. 109/2007.

Decree No. 109 establishes restrictions on the tax benefits applicable to biofuel production under Law No. 26.093. If the total number of projects

⁴⁷ *Ley 254383/01 de aprobación del Protocolo de Kyoto de la Convención marco del las Naciones Unidas sobre cambio climático* (2001).

⁴⁸ *Decreto 109/2007 sobre actividades alcanzadas por los términos de la Ley 26.093, autoridad de aplicación, funciones, Comisión Nacional Asesora, habilitación de plantas productoras y Régimen promocional.*

⁴⁹ *Ley 17.319 de Hidrocarburos* (1967).

exceeds the annual estimated volume of biofuels needed for the domestic market, the criteria set out in article 14 of the law shall be used to prioritize projects. Projects beyond the set annual volume are permitted to sell biofuels both in the domestic and international markets but they do not enjoy the same tax benefits.

Decree No. 109 designates the Secretariat of Energy, under the Ministry of Federal Planning, Public Investment and Services (MFPPIS), as the primary implementing authority, although the Ministry of Economy and Production is the implementing authority for tax issues related to biofuels. The MFPPIS is responsible, among other tasks, for:

- setting technical specifications for biofuels;
- monitoring biofuel activities in the country;
- setting the criteria that biofuel facilities must meet and certifying biofuel projects and facilities;
- applying sanctions in the event of non-compliance with the law;
- creating and updating a registry of biofuel producers;
- periodically publishing reference prices for all biofuels to be sold in the country; and
- providing an annual estimate of the total volume of biofuels required to meet domestic market needs.

Decree No. 109 provides for the Secretariat of Environment and Sustainable Development to adopt necessary measures in support of article 17 of Law No. 26.093, whereby qualified companies and projects are eligible for benefits deriving from the CDM.

2.2. Chile

In May 2006, a working group was created with the aim of formulating a national policy for biofuels and an appropriate legal framework to promote its development in the country. This working group was composed of the National Energy Commission (*Comisión Nacional de Energía*), the National Environment Commission (*Comisión Nacional de Medio Ambiente*), the Electricity and Fuels Agency (*Superintendencia de Electricidad y Combustibles*) and the Ministries of Agriculture and Transport, among others. In November 2006, the government formulated a National Energy Security Policy with a National Policy for the Promotion of Biofuels (*Política de Estado para desarrollo de biocombustibles*).

The working group submitted a proposed Law on Biofuels at the end of 2006 which is expected to be passed in the coming months. The stated purpose of the law is to reduce Chile's dependency on imported oil and to contribute to the development of the agricultural sector. In order to achieve these goals, the proposed law provides for a 5 percent biofuel blend requirement in gasoline and diesel and provides for incentives that include tax exemptions on biofuels. An *ad hoc* working group has been created to define national quality standards for ethanol and biodiesel for sale in Chile.

Along with these initiatives, the country has also expressed its commitment to promote biofuels under the National Agricultural and Forest Policy, which contains five Strategic Points. Under Point No. 3, the policy provides that national agriculture shall contribute to the development of renewable energies through the supply of feedstock devoted to the production of biofuels. This policy lists the promotion of biofuels as one of the priority actions for 2007.

2.3. Colombia

Colombia has pursued several legislative initiatives in recent years to promote the production and use of renewable energy and bioenergy, including specific legislation on bioethanol and biodiesel, as well as technical specifications and blending requirements.

In 2001, Colombia passed Law No. 697⁵⁰ to promote the use of alternative energy sources by establishing the Programme for the Rational and Efficient Use of Energy (*Programa de Uso Racional y Eficiente de la Energía y demás formas de energía no convencionales*). The law designated the Ministry of Mines and Energy as the implementing authority for policies and legal instruments to promote the use of alternative sources of energy to fossil fuels. The same year, Law No. 693⁵¹ was passed to mandate the use of ethanol fuel. It requires the addition of 10 percent ethanol to gasoline beginning in 2006 in Colombian cities with populations exceeding 500 000 while in cities with fewer than 500 000 inhabitants, the government may authorize a lower ethanol blend.

⁵⁰ *Ley 697 de 2001 mediante la cual se fomenta el uso racional y eficiente de la energía, se promueve la utilización de energías alternativas y se dictan otras disposiciones. Diario Oficial N° 44.573, de 5 de octubre de 2001.*

⁵¹ *Ley 693 de 2001 por la cual se dictan normas sobre el uso de alcoholes carburantes, se crean estímulos para su producción, comercialización y consumo, y se dictan otras disposiciones. Diario Oficial N° 44.564, de 27 de septiembre de 2001.*

Decree No. 3862 of 2005⁵² provides further details to Law No. 693, by establishing that blending ethanol with gasoline is not an industrial or productive process, meaning that it is therefore exempt from the taxes that would otherwise apply to these processes.

In 2004, Law No. 939⁵³ was enacted to encourage the production of biofuels through additional incentives. The law exempts the production of new biofuels crops, including palm, from taxes for the ten years 2005–2015, and provides for the Ministry of Mines and Energy and the Ministry of Environment, Housing and Land Use and Planning to determine a fixed percentage of biodiesel to be blended with conventional diesel and to be exempt from taxes. In addition, it requires the Ministry of Agriculture and Rural Development to direct a portion of the domestic oleaginous plants used as feedstock toward the production of biofuels. Decree No. 1970 of 2005⁵⁴ establishes a number of requirements that biofuels producers must meet to obtain tax exemptions under Law No. 939.

In 2003, the Ministry of Mines and Energy issued Resolution No. 180687⁵⁵ establishing technical specifications for ethanol fuel. The resolution provides that technical specifications should be in accordance with the quality standards and environmental specifications set for the sale of fuel alcohol in Colombia under Resolution No. 447⁵⁶ issued by the Ministry of Mines and Energy and the Ministry of Environment, Housing and Land Use and Planning. Resolution No. 180687 also requires producers to obtain a quality certificate so as to be able to sell ethanol in the country and allows them to

⁵² *Decreto 3862 de 28 de octubre de 2005 por el cual se reglamenta la Ley 693 de 2001 relativa a normas sobre el uso de alcoholes carburantes.*

⁵³ *Ley 939 de 2004 por medio de la cual se subsanan los vicios de procedimiento en que incurrió en el trámite de la Ley 818 de 2003 y se estimula la producción y comercialización de biocombustibles de origen vegetal o animal para uso en Motores diesel y se dictan otras disposiciones. Diario Oficial N° 45.778 de 31 de diciembre de 2004.*

⁵⁴ *Ley 1970 del Ministerio de Agricultura y Desarrollo Rural por la cual se reglamenta parcialmente la Ley 939 de 2004.*

⁵⁵ *Resolución 180687 de 2003 del Ministerio de Minas y Energía por la cual se expide la regulación técnica prevista en la Ley 693 de 2001, en relación con la producción, acopio, distribución y puntos de mezcla de los alcoholes carburantes y su uso en los combustibles nacionales e importados.*

⁵⁶ *Resolución 447 del Ministerio de Ambiente Vivienda y Desarrollo Territorial y Ministerio de Minas y Energía por la cual se modifica parcialmente la Resolución 898 del 23 de agosto de 1995, que regula los criterios ambientales de calidad de los combustibles líquidos y sólidos utilizados en hornos y calderas de uso comercial e industrial y en motores de combustión interna.*

export ethanol only after national needs are met.⁵⁷ Further legislation to promote the production and use of biodiesel is also currently under preparation.

2.4. Costa Rica

In September 2006, the Ministry of Agriculture and the Ministry of Environment and Energy of Costa Rica established a unified National Commission on Biofuels (*Comisión Nacional de Biocombustibles*) under Decree No. 33357.⁵⁸ The decree repealed Decree No. 31087 of 2003 and Decree No. 31818 of 2004 which had previously established two separate Commissions, the Technical Commission on Ethanol and the Technical Commission on Biodiesel.

Under Decree No. 33357, the commission is composed of representatives from various ministries and other public and private institutions involved in the production of biofuels. It is responsible for proposing an action plan containing strategies over the short and long term to encourage the use of biofuels in Costa Rica in cooperation with the Ministry of Environment and Energy and the Ministry of Agriculture and Livestock. The commission is also mandated to carry out monitoring activities. Finally, it is responsible for proposing any reforms needed to ensure an appropriate legal framework to promote biofuels in the country.

2.5 Ecuador

In December 2004, the Ecuadorean Government passed Decree No. 2332⁵⁹ which established a Consultative Council for Biofuels (*Consejo Consultivo de Biocombustibles*) which would have three main responsibilities: formulating general policies related to the production and use of biofuels and the agricultural production of energy crops in the country, designing appropriate mechanisms to support agricultural and industrial sectors involved in biofuel production and ensuring that the consumer price of biofuels does not exceed that of conventional fuels.

⁵⁷ *Resolución 180687 de 2003, artículo 16.*

⁵⁸ *Derogación de los Decretos Ejecutivos 31087 MAG MINAE y 31818-MAG-MINAE y Creación de la Comisión Nacional de Biocombustibles* (2006).

⁵⁹ *Decreto Ejecutivo 2332 de 2004 por el que se declara de interés nacional la producción, comercialización y uso de biocarburantes así como la producción agrícola destinada a la preparación de biocarburantes. Publicado en el Registro Oficial N° 482.*

A National Programme on Biofuels (*Programa de Biocombustibles*) was developed in 2005 for implementation by the Ministry of Energy and Mines. This programme comprises two phases, first the introduction of biofuels at local level through two pilot projects (one for ethanol and another for biodiesel) and later the introduction of biofuels at the national level. Under the first phase, an ethanol pilot project planned for a 5 percent ethanol blend with gasoline requirement for sale and use in the city of Guayaquil, a percentage that would be increased up to 10 percent in the second phase at the national level. The biodiesel pilot project required a 5 percent biodiesel blend within the Metropolitan District of Quito, with the same percentage to be implemented at the national level in the second phase. Since January 2007, after a change in government, the National Programme on Biofuels has been under review.⁶⁰

2.6. El Salvador

El Salvador has a National Policy for the Promotion of Renewable Energies and Alternative Fuels (*Política del Fomento de las Energías Renovables o Combustibles Alternos para el Sector Transporte*). Under this policy, there is a programme to promote the use of alternative fuels in the transport sector which aims to reduce by 10 percent the use of gasoline and by 15 percent the use of diesel by incorporating ethanol and biodiesel, respectively. This measure seeks to improve vehicle emissions while creating a potential export source and reducing oil imports.

To implement the policy, the government is currently developing the legal framework, several studies are currently under preparation and the government is executing pilot projects with a focus on domestic biodiesel production. A draft Law on Incentives and Promotion of Biodiesel (*Anteproyecto de Ley de incentivos y fomento del uso del Biodiesel*) and the biodiesel technical specification are currently under review.

2.7. Guatemala

In the 1980s, due to an increase in the price of oil and a crisis caused by a fall in sugar prices, Guatemala passed Decree-Law No. 17-85⁶¹ on fuel alcohol. The decree-law established that ethanol should be blended with conventional gasoline in a percentage not to exceed 20 percent, with a view to secure a

⁶⁰ Rothkopf, 2007, p. 92.

⁶¹ *Decreto Ley N° 17-85 – Ley del alcohol carburante* (1985).

domestic market for ethanol at set prices and quotas. The Ministry of Energy and Mines was responsible for monitoring the production, distribution, blending and quality of ethanol sold in the country. The decree-law established some incentives, including import tariff exemptions for machinery and equipment used to produce ethanol. In addition, ethanol producers were obliged to pay an anticipated 2.5 percent tax on production.

In the 1990s, a draft Law on Gasoline Oxygenation (*Propuesta de Ley de oxigenación de las gasolinas*) sought to require a certain percentage of ethanol in gasoline sold in the country. However, this draft law was never passed because it prohibited the importation of ethanol although the domestic industry could not guarantee sufficient ethanol production to meet domestic needs.

Apart from these initiatives directly targeted towards biofuels, in 2003 Guatemala passed Decree-Law No. 52-03⁶² on incentives to promote the development of renewable energy projects. The decree-law provides for the following incentives, applicable for a period of ten years from the start date of a commercially operative project:

- VAT exemption and excise tax exemption on imports of equipment and machinery used in renewable energy projects;
- personal income tax exemption;
- corporate tax exemption; and
- emission reduction certification for renewable energy projects.

Under the decree-law, the Ministry of Energy and Mines implemented Regulation No. 211 of 2005⁶³ which establishes a set of definitions, administrative requirements and procedures in order for projects to qualify for incentives.

⁶² Decreto N° 52/03 – *Ley de incentivos para el desarrollo de proyectos de energía renovable Diario de Centro América No. 91, 10 de noviembre de 2003.*

⁶³ *Acuerdo Gubernativo N° 211-2005, Reglamento de la Ley de incentivos para el Desarrollo de Proyectos de Energía Renovable.*

2.8. Honduras

In 1988, the Government of Honduras enacted Decree No. 79.88, containing the Law on Alcohol Fuel (*Ley de Alcohol Carburante*).⁶⁴ More recently, it has introduced legislative initiatives to promote the production and use of biofuels to increase employment, improve energy self-sufficiency and contribute to pollution reduction at the global and local level.

In September 2006, a draft Law on the Production and Use of Biofuels (*Proyecto de Ley para la Producción y Consumo de Biocombustibles*) was submitted to the National Congress to create an appropriate legal framework to encourage biofuels production and use in Honduras. This draft law would establish a Technical Unit of Biofuels under the Secretariat of Industry and Commerce as the authority responsible for the implementation of the law. The draft law provides for the unit to establish the percentage of biofuels to be blended with conventional fuels as well as their technical specifications, and to formulate appropriate policies to produce biofuels from domestic feedstock. The draft legislation establishes requirements for biofuel producers to meet in order to benefit from tax exemptions set out in the draft law. For instance, biofuel producers must purchase at least 51 percent of feedstock from domestic farmers.

For those meeting the established requirements, the tax benefits include:

- exemption from tax on the purchase of any equipment related to the production of biofuels for 15 years;
- corporate tax exemption for 10 years; and
- excise tax exemptions for import of machinery and equipment.

The draft law also mandates the Secretariat of Agriculture and Livestock to promote research into the sustainable production of biofuel feedstocks and to establish incentive mechanisms to promote biofuels in the agricultural sector. In addition, it sets out legal enforcement mechanisms including criminal and civil sanctions if biofuels are produced without meeting technical and administrative requirements. Upon enactment, the legislation will repeal Decree No. 79.88.

⁶⁴ Decreto N° 79.88 de 12 de julio de 1988 que contiene la Ley del Alcohol Carburante.

2.9. Indonesia

Indonesia is the world's second largest palm oil producer after Malaysia, but it was not until after global fuel prices soared and Indonesia became a net fuel importer that the Indonesian Government began to actively pursue alternative energy industries, including biofuels produced from palm oil. The government reduced and then eliminated fuel price subsidies in 2005, allowing the biofuel industry to become economically viable. Since then, the government has enacted legislation to encourage the use of biofuels, including Presidential Regulation No. 5/2006⁶⁵, Presidential Instruction No. 1/2006⁶⁶ and Presidential Decree No. 10/2006.⁶⁷

In 2005, the Minister of Energy and Mineral Resources issued a National Energy Management Blueprint (NEMB) in support of the National Energy Policy (NEP). Article 4 of the NEMB establishes national strategies for the management and use of energy resources including a roadmap for each alternative energy sector. It provides a target for biodiesel use of 1.5 million kilolitres in 2010 (10 percent of national transportation diesel oil consumption) and targets an increase of up to 6.4 million kilolitres in 2025 (20 percent of national transportation diesel oil consumption, or 5 percent of total national diesel oil).

Presidential Regulation No. 5/2006 implements the NEMB. It states that the purpose of the NEP is to ensure a secure domestic energy supply and to encourage sustainable development. Article 2 establishes a target for biofuels to contribute at least 5 percent of the total national energy consumption by 2025. Presidential Instruction No. 1/2006 establishes the framework for coordination among ministries to promote the supply and use of biofuels. It designates ministries responsible for formulating and implementing policies, including incentives, tariffs and trading systems, as well as standards and procedures for cultivation methods, processing, quality testing, the supply and distribution of biofuels, the provision of land and the development of research and technology. Specific to agricultural production, articles 3 and 4 provide that the Ministry of Agriculture shall encourage the provision and development of bio-fuel plants including seeds and seedlings, whereas the

⁶⁵ Presidential Regulation No. 5/2006 on National Energy Policy.

⁶⁶ Presidential Instruction No. 1/2006 on Supply and Utilization of Biofuels as Alternative Energy.

⁶⁷ Presidential Decree No. 10/2006 on Establishment of National Team for Biofuel Development.

Ministry of Forestry shall provide licences regulating the use of unproductive lands for biofuel plantations.

Indonesia established biodiesel standard SNI 04-7182-2006 which was approved by the National Standardization Agency under on 22 February 2006.⁶⁸ The biodiesel standard was formulated by taking into account similar standards already applied in other countries such as ASTM D6751 in the US and EN 14214:2002 in the EU. On 17 March 2006, the Oil and Gas Directorate-General of the Department of Energy and Mineral Resources issued a decree regarding the quality and specification of two types of diesel oil.⁶⁹ This decree regulates the use of fatty acid methyl ester up to the maximum of 10 percent of the volume of automotive diesel fuel with which it is to be blended. The biodiesel to be mixed has to meet the biodiesel standard SNI 04-7182-2006.

2.10. Mexico

In April 2007, Mexico passed the Law on the Promotion and Development of Bioenergy (*Ley de Promoción y Desarrollo de los Bioenergéticos*).⁷⁰ Its purpose is to encourage the use and production of bioenergy as a key step to achieving national energy self-sufficiency and sustainable development; to provide support to the agricultural sector; and to contribute to pollution reduction. The preamble refers to the goal of improving the air quality of metropolitan areas in Mexico.

The 2007 law mandates a minimum 10 percent ethanol blended with gasoline in the major urban areas of the country, with maize and sugar cane as the primary domestic feedstocks used for biofuel production. While the law does not specify the criteria for determining which urban areas are subject to the biofuels blend requirement, it provides for the government to prioritize projects to promote bioenergy production in economically disadvantaged areas. It also has provisions to uphold indigenous community rights. In cooperation with the competent regional governments, the Secretariat of Agriculture, Livestock, Sustainable Development, Fisheries and Food is given authority to:

⁶⁸ Decree No. 73/KEP/BSN/2006 (22 February 2006).

⁶⁹ Decree No. 3675K/24/DJM/2006 (17 March 2006).

⁷⁰ *Ley de Promoción y Desarrollo de los Bioenergéticos de 27 de abril de 2007*.

- promote research and development activities related to bioenergy;
- advise farmers on any issues related to the production of bioenergy feedstocks;
- determine the date of entry into force of mandatory biofuel blendings in the main urban areas of the country; and
- formulate and implement economic incentive programmes to build biofuel facilities.

The law specifically mandates that qualified projects are eligible for benefits deriving from the Kyoto Protocol Clean Development Mechanism. However, the law is subject to the provisions of the General Law for Ecological Balance and Environment Protection (*Ley General del Equilibrio Ecológico y la Protección al Ambiente*)⁷¹ as well as other environmental laws. All activities related to the production, distribution and use of bioenergy must comply with regulations issued by the Secretariat of Environment and Natural Resources in coordination with the Secretariat of Health. The law also provides a list of offences and states that, in addition to criminal and civil sanctions, violations of the law may lead to the removal of any public financial support for qualified projects.

The Inter-secretarial Commission for Sustainable Rural Development (*Comisión Intersecretarial para el Desarrollo Rural Sustentable*), established under article 10 of the Law of Sustainable Rural Development of 2001,⁷² is responsible for programmes at the national, regional and local level to manage maize and sugar cane plantations for ethanol production as well as oilseeds for biodiesel production. The commission serves as an advisory body for the development of national strategies to encourage the promotion of bioenergy and is the central coordinating body for policies, programmes, projects and instruments that support, regulate and monitor the bioenergy industry.

2.11. Namibia

Although Namibia has yet to enact official legislation on biofuels, the government has shown its interest in the production of biodiesel obtained from

⁷¹ *Ley General del Equilibrio Ecológico y la Protección al Ambiente. Publicada en el Diario Oficial de la Federación, 28 de enero 1988.*

⁷² *Ley de Desarrollo Rural Sustentable (2001).*

domestic planted jatropha trees, mainly in the Kavango and Caprivi Regions. See Box 3. Policy measures to promote this industry are currently in development.

In August 2006, the government issued the National Bio-Oil Energy Roadmap, a strategy document which aims to achieve the desired contribution of a bio-oil energy industry into Namibia's Vision 2030. The roadmap seeks to integrate development goals, existing policy and government, NGO, aid agency and private sector resources to mobilize technology and resources and benefit from market opportunities for biofuels in Namibia. Under the roadmap, the planting of jatropha crops in certain areas of the country is encouraged in order to promote economic development. Among others, the roadmap establishes the following short-term objectives:

- biofuel blending requirements of up to 5 percent with commercial diesel;
- decentralized on-farm/village-level blending into agricultural diesel;
- exports to specialized niche markets; and
- developing small power stations in Namibia, which would attract carbon credits under the Kyoto Protocol's CDM.

The roadmap also outlines long-term objectives, such as:

- the establishment of bilateral and multilateral agreements and arrangements to promote the exchange of scientific know-how as well as to facilitate trade in carbon credits and other environmental goods and services;
- the establishment of a policy environment and a portfolio of policy instruments which support the development of a sustainable bio-oil energy industry in the country, especially to manage risks external to the project or the operator; and
- the proper and effective management of biofuels processes, products and market risks.

A National Bio-Oil Energy Committee has been established to implement the roadmap, chaired by the Namibian Agronomic Board and comprising the Ministry of Agriculture, Water and Forestry, the Ministry of Environment and Tourism and the Ministry of Mines and Energy, in addition to public and private stakeholders.

The roadmap requires *jatropha curcas* and any other plant used as an energy crop to be published in the official gazette in terms of section 2(a) of the Agronomic Industry Act of 1992.⁷³ This section establishes an in-principle agreement for biofuel producers and processors to pay fees to cover administration costs, once sizable crops have been harvested after three years of growth. The roadmap also states that appropriate liquid-fuel standards under the Petroleum (Exploration and Production) Act of 1991⁷⁴ should be published in the official gazette.

In addition, the roadmap provides for a designated national authority to be established to allow project proponents to register CDM projects under the Kyoto Protocol. For this authority to be operative, a draft Environmental Management Bill has to be passed by Parliament. This bill will require the Minister of Environment and Tourism to publish regulations in support of activities related to the implementation of the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

Box 3 - Example of a national project to promote biofuels
NAMIBIA'S KAVANGO BIOFUEL PROJECT

Namibia is currently providing incentives for investments in *jatropha* plantations to encourage biodiesel production among farmers on communal land in Kavango. The purpose of the project is to involve local communities in growing plantations of *jatropha curcas*, and establishing factories to produce bio-diesel and seed cake.

The project was started in 2006 with the establishment of five nurseries expected to grow over 200 million *jatropha* seedlings. Starting in 2008, a factory will be built to extract the oil from the seed, and another to process it into bio-diesel. It will take three years to be fully operational.

Under the provisions of the Kyoto Protocol, only land that was cleared prior to 1990 may be used if the project is to qualify for carbon credits. The Kavango Biofuel Project, in compliance with the Kyoto Protocol, shall only use land that was cleared prior to 1990 for purposes of growing *jatropha*. The process of identifying and mapping the land is currently in progress, based on satellite images. Fieldwork and a flight over the study area showed that vast areas have been cleared in the past, and much of that land is no longer cultivated. It is expected that the land cleared prior to 1990 will form a patchwork of fields, so that extensive continuous tracts of *jatropha* plantations are not envisaged.

⁷³ Agronomic Industry Act (1992).

⁷⁴ Petroleum (Exploration and Production) Act (1991).

There are about 24 000 rural families in the Kavango Region, and the project is expected to provide considerable economic benefits for local communities and the investors. If participating families use an average of 10 hectares for jatropha, then an estimated 8 000 to 13 000 families could participate in growing jatropha plantations.

Families who choose to become jatropha farmers will be contracted to grow on land that was cleared prior to 1990. As not all of the inhabitants have access to such land, there are concerns about inequalities. The project envisions that those people who do not have access to qualified land would be considered first for other project-related opportunities such as work as tractor drivers, administrators and factory employees if the factory is located in Kavango.

For the first six years the Namibian company running the project, Prime Investment (Pty) Ltd will subsidize the participating farmers with food and payments as compensation for the maize and pearl millet that were previously grown. The farmers will contribute their land and labour, while all the capital costs will be met by the company. Farmers are expected to benefit through:

- initial monthly compensation for six years while the trees are maturing;
- the sale of the seed they produce;
- tradeable shares in the Farming Company and in the Industrial Company – Prime Investment (Pty) Ltd will initially hold a 60 percent share in both companies, while the Kavango Jatropha Farmers Association, a legally constituted body to be run by the growers and represent their interests, will hold the other 40 percent in both companies;
- security of land tenure under a long lease;
- training so that by 2012, each farmer will have a sufficient income and obtain a regular salary to allow for contractual lending from banks;
- products with a certain asset value; and
- enhanced skills in farming and business.

2.12. Nicaragua

In July 2006, Nicaragua passed Decree No. 42-2006,⁷⁵ aimed at reducing dependence on imported oil, encouraging reforestation efforts and achieving environment protection goals. It also provides for the application of the carbon credit system under the Kyoto Protocol and is designed to contribute to the economic and social development of rural areas.

⁷⁵ *Decreto N° 42-2006 por el que se declara de interés nacional la producción de biocombustible y bioenergía*. Published in the *Diario Oficial* No. 133 of 10 July 2006.

The decree authorizes the Ministry of Agriculture and Forests to formulate a National Programme on Biofuels and Bioenergy (NPBB) to promote investments and to support private initiatives in the sector. Under the decree, the NPBB must incorporate small, medium and large producers through strategic alliances. It must also encourage production by small family farms to reduce poverty in rural areas. The NPBB must establish favourable conditions to plant 200 000 hectares of African palm in specific areas on the Atlantic coast as well as maize and other ethanol feedstock on the Pacific coast.

The decree mandates the development of an appropriate legal framework and requires that a committee coordinated by the Ministry of Agriculture and Forests be constituted for this purpose. In addition to the development of a legal framework for biofuels, in January 2007 the government authorized the Ministry of Energy and Mines to formulate, coordinate and implement a Strategic Plan and Policy for the energy sector as well as to promote the use of renewable sources of energy in the country.

2.13. Panama

In Panama, a draft law has proposed a National Policy to Promote the Production and Use of Biofuels (*Política Nacional de promoción, fomento y desarrollo de la producción y uso de biocombustibles en el territorio nacional*). This policy aims at contributing to the improvement of the environment and human health as well as increasing energy self-sufficiency and encouraging growth and employment in the agriculture sector. Under the policy, Panama declares of national interest the domestic production of alternative renewable fuels produced from domestic feedstock of plant or animal origin as a substitute for conventional fuels.

Under the draft law, the Ministry of Commerce and Industry (MOCI) is designated as implementing authority of the policy through a National Administration of Hydrocarbons and Alternative Energies (*Dirección Nacional de Hidrocarburos y Energías Alternativas*). The administration will:

- determine the percentage of biofuels to be blended with conventional fuels;
- recommend and promote the enactment of appropriate legal instruments to facilitate the production and use of biofuels;

- recommend, in coordination with the Ministry of Agriculture and Farming (MAF) and the Ministry of Economy and Treasury, tax legislation and economic incentives as necessary to stimulate the production of biofuels in the country;
- determine the technical specifications for biofuels in coordination with the General Directorate of Standards and Technology (*Dirección General de Normas y Tecnología*);
- establish reference prices for biofuels;
- promote local and foreign investments aimed at the production, sale and use of biofuels;
- design action plans, pilot projects and mechanisms together with other government institutions so as to promote biofuels in the country;
- elaborate a programme to raise awareness on the use of biofuels among users and public institutions; and
- issue licences for the production, blending, transport, sale and import of biofuels.

The MAF is mandated to develop supporting mechanisms to stimulate the production of any kind of feedstock of plant or animal origin which may be used as raw material for biofuels. The MOCI, in coordination with other institutions, shall establish the safety conditions for the proper handling of biofuels.

The draft law provides that companies investing in the production, sale and use of biofuels within the country are exempt from import tariffs on any machinery or equipment used in the production and storage of biofuels made from national feedstock. However, ethanol is not exempt from taxes. Under the draft law, the provisions of article 1057-G of the Tax Code⁷⁶ establishing a tax for ethanol from 2008 may only be suspended in the event of ethanol supply scarcity.

The draft law refers to Decree No. 36 of 2003⁷⁷ which lists the facilities which are authorized to blend ethanol with conventional gasoline. The draft law also has enforcement provisions through the imposition of fines that vary according to the nature of the violation.

⁷⁶ *Código fiscal de Panama.*

⁷⁷ *Decreto de Gabinete* No. 36, 27 September 2003.

2.14. Paraguay

Law No. 2.748 on the Promotion of Biofuels (*Ley de fomento de los biocombustibles*)⁷⁸ was passed in October 2005, and was followed in 2006 by Decree No. 7.412⁷⁹ which provides for the implementation of regulations under the law. Law No. 2.748 declares the industrial production of biofuel and its feedstock as well as its use within the national territory to be matters "of national interest". It aims to contribute to the sustainable development of the country as well as to the implementation of projects under the Clean Development Mechanism (CDM) of the Kyoto Protocol. The law states that biofuel industry projects are eligible for CDM credits. Article 15 of also provides that any person or company eligible to pursue biofuel-related activities will benefit from biofuel production incentives provided under Law No. 60/90⁸⁰ and Law No. 2421/04.⁸¹

To contribute to the development of the domestic agricultural sector, article 12 of the law requires producers of biofuel to purchase feedstock from domestic farmers. Biofuels may only be imported under situations of scarce domestic supply as declared by the Ministry of Agriculture and Livestock. In addition, article 13 requires distributors to sell biofuels at petrol stations. The ministry is mandated to promote programmes to ensure domestic production of biofuel feedstocks. The ministry is also responsible for issuing certificates of origin of feedstocks purchased by biofuel producers.

Under Decree No. 7.412, the Ministry of Industry and Commerce is responsible for determining the technical specifications for biofuels as well as for approving projects related to the production of biofuels.⁸² The decree also outlines a set of administrative measures to be followed for new biofuel production sites and requires an environmental impact assessment of production areas. The ministry may set the specific blending percentage of

⁷⁸ *Ley N° 2.748/05 de fomento de los biocombustibles* (2005).

⁷⁹ *Decreto N° 7.412/06 por el que se reglamenta la Ley N° 2.748/05 de fomento de los biocombustibles* (2006).

⁸⁰ *Ley N° 60/90 de inversiones* (1990).

⁸¹ *Ley N° 2421/04 de reordenamiento administrativo y de adecuación fiscal* (2004).

⁸² The technical specifications are set out under Paraguayan Rule PNA 16 018 05 for biodiesel (approved by Decree No. 7.412) and Paraguayan Rule PNA 025 for ethanol (approved by Decree No. 20.842/80).

biofuels and is also responsible for establishing the administrative and economic sanctions applicable in the event of non-compliance.

2.15. Peru

Law No. 28054⁸³ was enacted in August 2003 to encourage the development of the biofuel market in Peru. It also mandates the creation of a Technical Committee (*Comisión Técnica*), which makes proposals and recommendations to achieve the goals of the law. Among its duties, this committee is responsible for:

- designing an implementation schedule and defining the percentages of ethanol and biodiesel to be blended with gasoline and diesel, respectively; and
- proposing a programme to raise awareness among consumers and public institutions of the advantages of biofuels.

The law mandates the formulation and implementation of general policies to promote biofuels, such as:

- developing and strengthening the technological and scientific framework for biofuel research;
- fostering the creation of a corps of highly qualified professionals specialized in biofuels;
- promoting technology transfer;
- promoting private stakeholder investments in the production of biofuels;
- encouraging biofuel marketing and consumption; and
- promoting the production of biofuels in rainforests.

The National Environment Board (*Consejo Nacional del Ambiente*) was established in 1994 under Law No. 26410 as the governing authority responsible for the national environment policy. Along with other national environment policy programmes, it has formulated a Biofuel Programme supported by the following legislative tools:

⁸³ Ley N° 28054/03 de Promoción del Mercado de los Biocombustibles (2003).

- Law No. 28054; and
- Decree No. 013-2005 EM⁸⁴ published in March 2005 regulating the provisions of that law.

The National Environment Agenda for 2005—2007,⁸⁵ launched in 2004, is now a compulsory instrument that establishes national priorities and informs citizens regarding public environmental management commitments at the national, regional and local levels. The 2007 priority is to design the necessary incentives to promote the use of ethanol as an additive to gasoline. The National Environment Board and the Ministry of Energy and Mines are the institutions responsible for the development and implementation of these incentives.

Several programmes in Peru aim at promoting biofuels at the national level. The main instrument for biofuel promotion is the Programme for the Promotion of the Use of Biofuels (*Programa de Promoción del Uso de Biocombustibles*), whose primary objective is to encourage investments in biofuel production and marketing and to expand the economic, social and environmental advantages of its use. Other programmes include those under the umbrella of the fight against illegal drugs. The Programme on Alternative Development (*Programa Nacional de Desarrollo Alternativo*) is aimed at promoting private investment and attracting international cooperation funds to promote biofuels. Government authorities will ensure the purchase of biofuels produced within programmes linked to the fight against drugs.

2.16. Philippines

In January 2007, the Philippines passed Republic Act No. 9367⁸⁶ which promotes the use of alternative transport fuels in accordance with the Cebu

⁸⁴ *Decreto Supremo N° 013-2005-EM Reglamento de la Ley de Promoción del Mercado de los Biocombustibles* (2005).

⁸⁵ The 19th heading of Peru's national policy is entitled "Sustainable Development and Environment Management." Peru is firmly committed to the national environment policy as an integral part of its economic, social and cultural national policies to overcome poverty and promote sustainable development for the country. The government aims to establish the necessary institutions and measures to promote public and private partnerships so as to ensure biodiversity, sustainable use of natural resources and environmental protection and to promote sustainable growth in urban and rural communities.

⁸⁶ Republic Act No. 9367 (2007).

Declaration on East Asian Energy Security.⁸⁷ The act seeks to reduce the dependence on imported fuels with due regard to the protection of public health and environment. This is consistent with sustainable development goals and mandates the use of biofuels as a measure to develop indigenous renewable and sustainably sourced clean energy sources without harm to the natural ecosystems, biodiversity and food reserves of the country.

The act creates a set of incentives to promote the production and use of biofuels in Philippines:

- a zero-rated specific tax on the biofuel component of blended gasoline and diesel;
- VAT exemption;
- exemptions from wastewater charges for water effluents from the production of biofuels; and
- state-provided financial services and benefits to local companies engaged in activities related to the manufacture of biofuels, such as production, storage, handling and blending.

In addition to these provisions and in conjunction with the preparation of implementing rules and regulations, the act requires the Department of Energy (DOE) to ensure that the preparation of a National Biofuels Programme (NBP) is consistent with the Philippines Energy Plan and takes into consideration DOE's existing biofuels programme. Among other things, the NBP must include the establishment of support facilities to ensure security of feedstock supply; investments in supply infrastructure; guidelines on the availability of alternative fuel technologies for vehicles, engines and parts; as well as identification of other viable feedstock for the production of biofuels.

The act creates the National Biofuel Board, which is responsible for monitoring the supply and use of biofuels and recommending appropriate measures in the area of feedstock shortages. To encourage biodiesel use, the

⁸⁷ This declaration, adopted by the 16 heads of state of the Association of Southeast Asian Nations (ASEAN) and its dialogue partners during the 12th ASEAN Summit held in the Philippine city of Cebu on 15 January 2007, recognized that while fossil fuels will continue to be used, greater energy security could be attained by promoting energy efficiency, conservation and cleaner technologies; increasing capacity and reducing costs of alternative energy resources; and encouraging the use of biofuels through trade and harmonized biofuel standards.

act requires that at least 5 percent of locally source ethanol be blended with gasoline within two years of the act entering into force and that at least 1 percent of biodiesel be blended with conventional diesel within three months of the act entering into force. The board may recommend an increase to a minimum 10 percent ethanol blend within four years of entry into force of the act and a minimum 2 percent biodiesel blend within two years of entry into force.

The act explicitly states that oil companies should be allowed to import bioethanol from foreign countries only in the event of a supply shortage of locally produced bioethanol. The act aims at ensuring that domestic supply of raw material used to produce biofuels in the Philippines will be enough to meet demand. The Sugar Regulatory Administration is required to monitor and regulate imports and exports of these goods as well as monitor stability in sugar prices.

2.17. South Africa

In recent years, South Africa has been actively promoting the use of biofuels in the country and has taken several steps to introduce them into its energy matrix. In 2003, South Africa issued a White Paper on Renewable Energy, urging the government to develop the infrastructure and institutional capacity to promote the domestic biofuel market.

Under the White Paper, the government declared its intent to satisfy 4 percent of the total national energy needs with renewable resources by 2013. Technical specifications for biofuels are also being developed. Measures under the White Paper will focus on four strategic areas:

- financial instruments;
- legal instruments;
- deployment of technology; and
- education and awareness programmes.

In South Africa, the Department of Minerals and Energy is responsible for the renewable energy policy in the country. This authority has established a joint implementation committee of stakeholders for biodiesel and is currently preparing a similar one for ethanol.

2.18. Thailand

The Thai Government is pursuing the production and use of biofuels to meet the country's growing demand for energy and to reduce reliance on imported oil. To achieve these goals, several ethanol and biodiesel programmes are being developed by the National Biofuels Committee in coordination with the Ministries of Agriculture, Energy, Industry and Science. Thailand is also actively pursuing project investments that may qualify for credits under the CDM.

In 2004, Thailand initiated a Programme on Gasohol which set a target of increasing production and use to obtain a 10 percent ethanol blend with conventional gasoline by 2012. To assist in meeting this blending target, the programme requires that government vehicle fleets run on gasohol. In addition, ethanol from domestic feedstock is being prioritized by national plans both to ensure domestic supply as well as to encourage Thailand to become a major exporter of ethanol to other Asian markets.

2.19. Uruguay

In October 2002, Uruguay passed Law No. 17.567,⁸⁸ which declared the production of alternative renewable fuels obtained from domestic feedstock of animal or plant origin to be an issue of national interest. In July 2006, the government submitted a draft Law on the Regulation, Production, Marketing and Use of Biofuels (*Proyecto de Ley referente a la regulación de la producción, la comercialización y la utilización de agrocombustibles*). The purpose of the draft law is to develop a more comprehensive legal framework for biofuels by establishing the mechanisms to incorporate their use and production into the national energy matrix. This draft law, which is currently under review by the Congress, provides for the following elements:

- incentives to promote the production of biofuels from domestic feedstock;
- the establishment of a 5 percent mandatory blending of ethanol by 2015 while authorizing a 2 percent biodiesel blending between 2006 and 2008, which shall become mandatory between 2009 and 2011 and will increase to 5 percent in 2012; and
- methods and economic incentives to promote biofuel production.

⁸⁸ Ley N° 17.567 sobre combustibles alternativos, renovables y sustitutivos de los derivados del petróleo, elaborados con materia nacional de origen animal o vegetal (2002).

According to the draft law, the activities of production and export of biofuels are not subject to Law No. 8764 of 1931⁸⁹ which established a national monopoly on fuels. Biofuel producers are required to obtain an environmental authorization from the Ministry of Housing, Planning and Environment as well as an authorization from the Ministry of Industry, Energy and Mines (MIEM). Exports of biofuels are restricted and only allowed upon special permission granted by government decree. A registry of biofuel producers is created under the MIEM.

Under the law, registered biofuel producers will benefit from the following incentives:

- corporate tax exemption for a period of five years; and
- tax exemption on goods purchased to produce biofuels.

In addition, according to article 17, the government may declare partially or totally tax exempt domestic biofuels while article 18 explicitly declares that domestic biodiesel shall be exempt from the fuel tax levy for a period of five years starting on the date of the law's entry into force.

Articles 22 and 23 of the draft law also incorporate amendments to Law No. 17.598 of 2002,⁹⁰ which created the Regulatory Unit for Energy and Water Services (*Unidad reguladora de servicios de energía y agua*). With these amendments, biofuel-related activities now fall under the scope of Law No. 17.598. Technical specifications for biodiesel were approved in December 2005 under the denomination UNIT 1100.⁹¹

⁸⁹ *Ley de creación de ANCAP* (1931).

⁹⁰ *Ley N° 17.598 relativa a la Unidad Reguladora de Servicios de Energía y Agua* (2002).

⁹¹ *Instituto Uruguayo de Normas Técnicas, norma UNIT sobre biodiesel.*