THE LEGAL FRAMEWORK
FOR
BIOENERGY

Study Prepared By

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TERMS OF REFERENCE

Governments and key stakeholders are increasingly called upon to operationalize bioenergy policy through regulatory and legislative tools. This paper is designed to assist in the elaboration of best strategies and recommendations for appropriate legislative frameworks for bioenergy, particularly for developing countries. Under the supervision of the Chief, LEGN, and in close consultation with the FAO Interdepartmental Working Group on Bioenergy, the consultant will:

1. Identify the areas of law that are implicated in any analysis of bioenergy
2. Discuss the current state of the law – domestic and international – in these areas
3. In the analysis, consider at least the following areas:
   - legal implications of using alternative sources of fuel, and bioenergy in particular
   - legal/environmental/and trade exemptions and incentives to which biofuel producers may be/should be/are entitled to
   - land law implications for bioenergy
   - legislative options for regulating the shift from crop production to industrial production of biofuels
   - UNCED, Agenda 21, Kyoto Protocol, COAG (FAO committee on Agriculture), CFS FAO Committee on Food Security) and FAO Council
   - relevant trade issues, such as WTO or regional trade rules/disciplines that may influence biofuel trade flows
4. Conduct an extensive and in-depth review of existing bioenergy legislation in select countries by region: (i) Latin America; (ii) Africa (particularly East/Southern); (iii) and Southeast Asia
5. Prepare a study based on the above analysis and review. The paper will be in two parts. The first will give a methodology and snapshot of the many legal areas implicated in any discussion of bioenergy. The second will discuss and analyse country experiences with bioenergy legislation per se. The paper should also point out further research questions and lines of intervention.
6. Brainstorm with ESC, SDR and LEG staff at various points in the development of the paper, with an understanding that technical staff may request a slight alteration in terms of countries selected for review as per point 4 above.
7. Revise and edit the paper in response to comments received.
8. Carry out any other research and writing on the subject area in the time allotted.

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1 In the context of this work bioenergy is defined as that originating from agricultural residues, including livestock, energy plantations and agro-industrial wastes.
2 The list of countries is based on the availability of national legal assistance
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EXECUTIVE SUMMARY

A significant global policy and legislative trend is encouraging a shift away from economies based on fossil fuels towards those based on renewable energies such as bioenergy. Many factors account for the increased focus on bioenergy policy and law. These include the recent political prominence of the long-term effects of climate change and their related impact on global energy consumption and the world economy. In addition, rising oil and gas prices and the desire for energy security have driven countries to start actively looking for alternatives to fossil fuels. Another factor has been the farm sector crisis especially in developed countries, characterised by large surpluses of agricultural produce and declining global market opportunities. It is therefore not surprising that biofuels have been proposed as having the potential to rescue the failed Doha Round of agricultural trade negotiations at the World Trade Organization. With these important political, economic economic environmental issues as a background, many countries are actively looking for innovative tools for regulating and promoting the bioenergy sector.

The growing international demand for bioenergy is of particular interest to developing countries seeking opportunities to benefit from increased bioenergy production. They may gain a comparative trade advantage from having more available land and a climate that is more favourable to agriculture. In addition, developing countries may be positioned to produce more suitable crops for bioenergy production and have significantly lower labour costs. By encouraging the production and use of bioenergy alternatives to fossil fuels, both developed and developing countries alike seek to reduce their reliance on imported oil, mitigate the effects of climate change and promote rural development. The focus on the trade benefits for developing countries may highlight the benefits of bioenergy sources such as biofuels produced from feedstocks that may be more effective at reducing greenhouse gases and provide a cost-effective alternative to fossil fuels.

3 ‘Bioenergy’ has been defined simply as “energy generated from biofuels” while ‘Biofuels’ have been defined as “fuels of renewable and biological origin, including woodfuel, charcoal, livestock manure, biogas, biohydrogen, bioalcohol, microbial biomass, agricultural wastes and by-products, and energy crops.” See FAO, 2000. The Energy and Agriculture Nexus. Rome: Environment and Natural Resources Working Paper No. 4.

4 See generally, Stern, N. 2007. The Economics of Climate Change Cambridge, Cambridge University Press. This 700-page report released on October 30, 2006 by economist Sir Nicholas Stern for the British government discusses the effects of climate change and global warming on the world economy. Although this report was not the first on the subject, it has been widely cited and hailed as a landmark in the politics of climate change and its effects on the global economy. It is also the most comprehensive and most widely known and discussed report of its kind.

5 See for instance, the famous “addicted to oil” 2006 State of the Union Speech by George Bush, President of the United States, in which he remarked: “Keeping America competitive requires affordable energy. And here we have a serious problem: America is addicted to oil, which is often imported from unstable parts of the world. The best way to break this addiction is through technology. Since 2001, we have spent nearly $10 billion to develop cleaner, cheaper, and more reliable alternative energy sources - and we are on the threshold of incredible advances.”

However, although increased production may encourage employment and reduce energy costs, there may be other environmental and socio-economic implications for developing countries involved in promoting bioenergy at the expense of other forms of energy. Bioenergy uses land, water, and labor resources that may compete with food and feed production. Higher food prices may result in many poorer countries, benefiting farmers but denying access to food to the poorest. Bioenergy production may also have harmful environmental effects such as deforestation and loss of biodiversity. Given the opportunities and risks, criteria for sustainable development of the industry must be clearly established in both international and domestic regulatory frameworks.

The regulation of bioenergy in the context of advancing sustainable development is complex and requires an interdisciplinary and cross-sectoral approach. Countries may adopt policies and legislation affecting bioenergy systems in a wide range of areas that is not limited to the energy sector. An approach that considers all areas of sustainable development requires an integrated analysis of a broad spectrum of legislation affecting agriculture, forestry, energy and trade sectors and incorporates goals of environmental protection as well as social and economic development.

The purpose of Part I of the study is to provide an outline of the legislative and policy environment for bioenergy in the international and national context. It will outline key areas of international regulation, including binding international agreements and soft law principles to promote the goals of sustainable development, environmental protection and economic development through trade as they apply to bioenergy. It will also provide an analytical method for countries to use in assessing their existing national legal frameworks for bioenergy, provide guidelines for the development of national bioenergy policies, and identify trends in bioenergy policy and regulation.

Part II of the paper will review the main features of national bioenergy policies, laws and regulations of selected developing countries. The conclusions drawn from this study and the comparative analytical charts are designed to assist countries in identifying the constituent elements of their national legal framework for bioenergy, and in assessing its strengths, weaknesses and gaps.
PART I

1. INTRODUCTION

1.1. Definition of Bioenergy

Bioenergy is one of the oldest and most common forms of energy, as a fuel derived from biomass. The combustion of biomass from wood and charcoal remains the principal method for heating, cooking and providing hot water in most developing countries. Biomass is the only renewable energy resource that can easily be converted to satisfy all energy sectors; heat, power and liquid fuels for transport. It is also the only way that solar energy can be stored in large quantities. Biomass production is part of the natural eco-cycle and almost all over the world there is long term experience of large scale biomass production, as well as its use for energy purposes.7

There are two main sources of bioenergy: wood energy and agro-energy. Wood energy resources are fuelwood, charcoal, forestry residues, black liquor and any other energy derived from trees. Agro-energy resources are plants grown for energy purposes such as sugar cane, sugar beet, maize, palm oil, seed rape and other oilseeds. Other agro-energy resources are agricultural and livestock by-products including straw, leaves, stalks, husks shells, manure, droppings and other food and agricultural processing and slaughter livestock. The raw materials used to produce bioenergy are referred to as feedstock.8

Biofuels in liquid, gaseous or solid hydrocarbon form can obtained from a variety of biomass sources and a broad range of technologies including solid combustion, gasification and fermentation. Biofuels may also include compounds and elements such as methanol, methane, and hydrogen, although bioethanol and biodiesel from agricultural residues, including livestock, energy plantations and agro-industrial wastes are the most common liquid fuels in commercial production. These fuels are generally considered first generation biofuels as they are produced from traditional feedstocks and most of the regulatory attention in the bioenergy sector to date has focused on promoting their production and use at the domestic level.

Ethanol is a liquid fuel generated from converting the carbohydrate portion of biomass from sugar cane, sugar beet or maize into sugar that undergoes a fermentation process. Biodiesel is typically produced through the transesterfication of organically-derived oils or fats from Canola/rapeseed, Palm, Sunflower or Jatropha plant, but it can also be made from animal fats. Ethanol can be used as a fuel oxygenate as a substitute for gasoline in compatible engines. Biodiesel can replace petroleum diesel, but it is most often used in the transportation sector as a blend with petroleum diesel fuels.

Some of feedstocks and processes used in bioenergy production may be more cost-effective have fewer negative environmental impacts and be more suitable to large-scale production and trade. For example, the high capital costs of ethanol production suggest that given current oil prices, it may only be competitive with fossil fuels when used in large-scale production, while biodiesel

may be suitable for small scale production to serve energy needs at the local level. Bioenergy systems vary according to production chains, scale, business models, market access and integration and an adequate regulatory system must take all of these elements into account.

1.2 Global Outlook for Bioenergy

Global bioethanol production has increased significantly in recent years with production capacity increasing by over 10% per year. More than 30 countries have already introduced, or are actively pursuing, fuel ethanol programmes. The International Energy Agency predicts rapidly increasing global ethanol consumption of between 86 Bl (5% gasoline demand) and 286 Bl (13% demand) by 2015. Currently, Brazil dominates export trade in bioethanol, with over 36% of world trade in Ethanol, but other countries such as China, South Africa and Pakistan are also becoming active exporters.

The international market for biodiesels is at a much earlier stage than the market for ethanol. European countries currently lead the world in the production of biodiesel, with a combined production approaching 3 million tonnes a year. However, large investments in the biofuels industry in Australia, Brazil, India, Malaysia and the United States suggest that these countries are poised to become major producers as well. Indonesia already accounts for almost 35% of global production of palm oil and may also emerge as a major producer of biodiesel.

There are a number of countries in Africa and Asia investing in biodiesel production and trade originating from the jatropha plant. Jatropha is a large, fast-growing, drought-resistant perennial shrub capable of producing a very high yield of raw oil within a given surface area. Jatropha is also particularly suitable for growing on land too poor and arid to support food crops. It also has nitrogen-fixing properties. Projects to demonstrate the possibilities of producing biodiesel from jatropha have been started or are being planned in at least ten developing countries. These include Burkina Faso, China Ghana, India, Lesotho, Madagascar, Malawi, Nambia, South Africa, Swaziland and Zambia. Early experiments in India using simple technologies have already produced biodiesel that meets the EU norm for biodiesel quality.

Major investments are being made around the world in an emerging ‘second generation’ technology that can produce ethanol from lignocellulosic feedstock, such as wood fibre and grasses. The technology for these second generation fuels is expected to become commercially viable within the next five to ten years. To date, the impact of this technology on production costs, including its capacity to use widely available feedstock sources has not been fully evaluated. As emerging technology may provide opportunities for developing countries,
renewable energy programmes at the national and international level should continue to assess this potential.

However, to the degree that known emerging technology may have a significant effect on the global biofuels market, new policy and legislative interventions in both developed and developing countries to assist investment in production from current technology should be considered carefully. With rapidly changing technology, second generation biofuel production in developed countries may quickly overtake first generation production in developing countries, making it more difficult for the latter countries to compete.

1.3 The International Energy Policy Context

Energy policy is one of the most hotly debated international issues today. In the developed world, especially in the EU and the US, the rhetoric often refers to issues such as energy security and energy self-sufficiency, reduced reliance on foreign fossil fuel reserves, and the effects of high petroleum and natural gas prices. In addition, bioenergy policy-making may take account of the need to encourage the agricultural sector. Finally, bioenergy policy may refer to environmental protection goals as set out in various international instruments, especially those that seek to reduce greenhouse gas emissions. These are the key areas behind much of the drive for increased use of biofuels and other forms of renewable energy from biomass.

In general, national bioenergy policies have been developed and implemented within a broad political, economic and environmental framework over the past few decades. In the United States, the desire to promote the production and use of biofuels started in the early 1980s, largely in response to the need to revitalize the farming sector. Policy interventions were supported by the passing of the Clean Air Act, and the Reformulated Gasoline Programme in the early 1990s. As best captured in the Energy Policy Act of 2005, US policy now includes tax reductions for fuel-ethanol and biodiesel at state and federal levels, as well as a federal tax credit for fuel-ethanol which is valid until 2010. Through the Federal Bioenergy Programme, loans, loan guarantees and grants are given to farmers and biofuel producers. State governments have in many ways gone far beyond the federal government regarding the level of support given to biofuels. Support includes direct payments to fuel ethanol producers, direct grants or low interest loans to assist in ethanol production facilities, credits against ethanol producers’ tax liability, additional fuel tax exemptions and many others.

In the case of the EU, the Biofuels Strategy is spurred by the need to diversify fuel supply sources, by the need to address the implications of climate change, as well as the promise of new trade and other opportunities for European industry and farmers. In the EU context, the European Commission has taken a leading role through its various directives, guidelines and papers. In the European Union, the Biofuels Use Directive (2003/30/EC) set a 5.75% ethanol and biodiesel to be blended to gasoline and diesel, respectively. This Directive is being revised by the European Commission as this target is inconsistent with the Fuel Quality Directive of 2003 which set limits on biodiesel blending to no more than a 5% share by volume. However, these blendings are not mandatory and Country Members are free to establish higher standards.

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14 The US Energy Policy Act 42 U.S.C. 15801 was adopted in August 2005 after many years of debate. Its main provision is the renewable fuels standard (RFS), and it doubles the amount of renewable fuels for domestic use to 7.5 billion gallons by 2012. It also extends the federal tax credit on biodiesel to 2008.
There have been other driving forces behind national policy frameworks for bioenergy. For example, it is often remarked that the political context was at the heart of Brazil’s decision to start the world’s first major renewable energy programme in 1975. It was implemented under Decree No. 76953 establishing the government-backed Proalcool programme to produce ethanol from sugarcane. At the time, Brazil was under military rule and largely isolated from the rest of the world. There were major concerns regarding the reduction of the energy bill, increased hard currency revenues, and energy independence. Since then, Brazil has been promoting the use of ethanol and has become a major ethanol producer and exporter. In 2002, a biodiesel programme was launched and in December 2004, Law No. 11097 was passed to authorize a 2% biodiesel blending with conventional diesel. In Brazil’s current biofuels policy, state intervention is limited to three areas:

- ethanol-petrol blending provisions, with petrol companies being required to add between 20-25% of ethanol to fossil petrol;
- minor tax reductions for blended fuels, amounting to roughly half that which is applied to pure petrol; and
- lower motor vehicle taxes for ethanol-powered cars than for those that are petrol-fuelled.

In other developing countries such as Argentina and Paraguay, more recent policy interventions appear to be driven to a large extent by the increased economic importance of biofuel crops and the potentially large export market and revenues that go with it.

Regional commitments to promote the production and use of biofuels have also encouraged the development of national policy frameworks. For example, in Central America, the Action Plan for the Introduction of Ethanol requires countries to establish a series of measures, including the creation of an appropriate legal framework. In some occasions, the experience of developed countries has driven such initiatives in developing countries. For example, in March 2007, a memorandum was signed between Brazil and the United States to promote and transfer of technology to other countries interested in producing biofuels in Central America and the Caribbean. In addition, private initiatives may also spur governments to regulate bioenergy activities. In order to encourage investments in the biofuel sector a favourable economic climate is needed. At the same time, a regulatory framework is needed to establish the conditions for effective production and use, as well as to protect public interests and prevent the overexploitation of natural resources.

2. KEY INTERNATIONAL REGULATORY ISSUES

2.1 Background

Renewable energy first became an official priority for international development agencies at the UN Conference on New and Renewable Sources of Energy held in Nairobi in 1981. The conference called for action in research, planning, investment and dissemination of renewable energy technologies. During the following two or so decades, two kinds of initiatives emerged:

- legal or regulatory developments to encourage private investment in renewable energy sources and applications, and

financial assistance to public or private investors from national, bilateral or multilateral sources for capital intensive projects.

In addition to these processes at the national level, various international issues gained prominence and began to affect how the world understood bioenergy and its role. The debate over the promotion of biofuels as a viable renewable energy alternative to fossil fuels has centered around the following three issues:

- sustainable development and the environment;
- climate change and its mitigation;
- international trade.

Some of the most important legal developments in these areas are outlined below.

2.2 Sustainable Development and the Environment

Bioenergy is taking an increasingly important role under a broad international sustainable development law framework to address environmental as well as social and economic concerns. This framework encourages the production and use of renewable energies as an important means to reduce environmental impacts as well as to promote rural development and eradicate poverty. Three key international conferences with important implications for bioenergy regulation have furthered this agenda:

- World Summit on Sustainable Development (WSSD), Johannesburg 2002;

These conferences established an international consensus on the potential for renewable sources of energy such as bioenergy to contribute to Sustainable Development. They have also provided an impetus for international action on bioenergy, through the promotion of principles and other soft law measures, as well as the implementation of binding international agreements.

2.2.a Principles and Soft Law Measures

Under Agenda 21 adopted at the 1992 United Nations Conference on Environment and Development (UNCED), emphasis was given to the role of bioenergy in the chapters dealing with protection of the atmosphere, combating deforestation and promoting sustainable agriculture and rural development. Other relevant provisions of Agenda 21 for a sustainable development approach to the development of the bioenergy sector include:

- combating poverty;
- changing consumption patterns;
- promoting sustainable human settlement development;
- integrating environment and development in decision-making;
- integrated approach to the planning and management of land resources;
- transfer of environmentally sound technology;
• cooperation and capacity-building;
• promoting education, public awareness and training;
• national mechanisms and international cooperation for capacity-building in developing countries

Although it is a non-binding international instrument, Agenda 21 nonetheless provides authoritative guidance for the implementation of sustainable policies and legislation to promote the use of bioenergy and other renewable energies and the national or sub-national level.

In addition to Agenda 21, two other influential international instruments were adopted at UNCED: the Rio Declaration on Environment and Development and the Non-binding Forest Principles. Although they do not impose binding legal obligations on signatory countries, both of these instruments have important implications for the sustainable development of the bioenergy sector, as they establish an international consensus on appropriate measures for natural resource management.

The Rio Declaration is a soft law instrument consisting 27 principles intended to guide future sustainable development around the world. The adoption of the Forest Principles epitomized international consensus on the holistic nature of forest resource management and conservation including the need for management planning, environmental impact assessment, information disclosure, public participation, and protection of traditional knowledge. Both of these instruments are relevant to biofuel production from wood-derived sources. The Rio Declaration also has important applications for biofuels derived from agro-energy resources.

10 years after UNCED, at the World Summit on Sustainable Development, the Millennium Development Goals (MDGs) were adopted. Although they do not directly address energy, it has been widely recognized that the MDGs could not be achieved without adequate and affordable energy services. For example, there are important implications for national and international energy policies under the following MDG goals: 1 (Eradicate extreme poverty and hunger) and Goal 7 (Ensure environmental sustainability). The most prevalent energy-related topics emerging from recent country progress reports on the MDG are energy efficiency (or lack thereof), carbon dioxide emissions, and solid fuel use as well as the need for expansion of energy access and infrastructure for economic development.

The Johannesburg Declaration adopted at the World Summit on Sustainable Development in 2002 considers energy as a basic human need along with clean water, sanitation, shelter, health care, food security and biodiversity. In addition, several chapters of the adopted Johannesburg Plan of Implementation called for action on bioenergy and other renewable forms of energy. Among other things, the Plan strives to:

• Improve access to reliable, affordable, economically viable, socially acceptable and environmentally sound energy services - para. 9 (a)
• Recognize that energy services have positive impacts on poverty eradication and the improvement of standards of living - para. 9 (g)
• Develop and disseminate alternative energy technologies with the aim of giving a greater share of the energy mix to renewable energy and, with a sense of urgency, substantially increase the global share of renewable energy sources - para. 20(c)
• Diversify energy supply by developing advanced, cleaner, more efficient and cost-effective energy technologies - para 20(e)

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- Combine a range of energy technologies, including advanced and cleaner fossil fuel technologies, to meet the growing need for energy services - para. 20(d)
- Accelerate the development, dissemination and deployment of affordable and cleaner energy efficiency and energy conservation technologies - para. 20(i)
- Take action, where appropriate, to phase out subsidies in this area that inhibit sustainable development - para. 20(p)

At the International Conference for Renewable Energies held in Bonn in June 2004, bioenergy was highlighted as one of the most promising energy sources of the future. The Conference adopted a Political Declaration and an International Action Programme, which are considered important contributions to the work of the Commission for Sustainable Development (CSD). The CSD is focusing on energy during its 2006 and 2007 sessions, and the International Action Program has established specific targets and goals for countries to encourage the use and production of renewable energy, including bioenergy.

2.2.b. Binding Agreements

In addition to international policy and principles, several international environmental agreements impose binding commitments on signatory countries and must be taken into account for countries seeking to promote the bioenergy sector. Two of most relevant international agreements addressing international environmental concerns over the production of bioenergy feedstocks are the Convention on Biological Diversity and the UN Convention to Combat Desertification.

The Convention on Biological Diversity adopted at UNCED concerns agriculture and forestry for bioenergy feedstocks both as a component of biodiversity and as a habitat to terrestrial biodiversity. It commits parties to biodiversity conservation, the sustainable use of its components and fair and equitable sharing of the benefits arising from the use of genetic resources. Key obligations include:

- developing national strategies and plans for the conservation and sustainable use of biological resources (Art. 6);
- establishing protected areas, restoring or rehabilitating degraded ecosystems, and preventing the introduction of invasive alien species (Art. 8);
- introducing environmental impact assessment for projects likely to have adverse effects on biodiversity (Art. 14);
- involving local populations and the private sector in sustainable use (Art. 10).

The UN Convention to Combat Desertification (UNCCD) requires parties to develop national plans and strategies to combat land degradation and desertification, including agricultural and forestry related measures of relevance to the bioenergy sector. Implementing the UNCCD contributes to support an ecosystem approach to sustainable natural resource management as part of preventing drought and desertification. To this end, Article 5 of the Convention also calls upon parties to facilitate the participation of local populations.

Other international conventions may also be applicable to bioenergy in so far as they affect natural resource management at the national level. For example, The Ramsar Convention on Wetlands commits parties to the sustainable management of wetlands and its provisions apply to mangroves and trees included in the Wetlands of International Importance selected by each State party. The World Heritage Convention establishes a system of collective protection of cultural and natural heritage applicable to natural areas of outstanding natural or cultural value included in
World Heritage Sites selected by each State party. The Convention on International Trade in Endangered Species (CITES) offers international protection to endangered plant and animal species by banning international trade thereof, and ensures that commercially exploited species do not become endangered because of trade. The Convention on Access to Information, Public Participation and Access to Justice in Environmental Matters requires countries to adopt a participatory approach to national resource management. Finally, the International Plant Protection Convention is relevant to bioenergy crop protection from pests and also includes provisions for pest risk analysis, monitoring and export certification. All of these conventions may impose binding obligations on member states to comply with international environmental law applicable to the bioenergy sector.

2.3 Climate Change Mitigation

Although international agreements specifically addressing bioenergy have yet to be developed, pressing concern over the impact of human activities on climate change has been a key impetus for further international environmental regulation and the promotion of bioenergy alternatives to fossil fuels.

A recent report by the Inter-Governmental Panel on Climate Change confirming the high likelihood that emissions of greenhouse gases by humans, including the burning of fossil fuels, are warming the planet’s surface and contributing to global climate change.17 The implications of this report on developing countries are profound, as the world’s poor are likely to suffer most from the impact of global warming as they remain the most vulnerable to natural disasters, drought, and disease. Volatile weather patterns and unpredictable consequences of global warming exacerbate risks to small scale agricultural producers around the world, but will be particularly acute in developing countries. For example, recent studies suggest crop yields in sub-Saharan Africa are projected to fall by 20 percent in some scenarios and climate change-induced famine may displace more than 250 million people worldwide by 2050.18 Such findings are driving renewed international efforts to enforce laws designed to protect the atmosphere. They are also behind policy and legislative initiatives to shift away from fossil fuels and towards alternative sources such as bioenergy.

Several existing conventions and protocols imposing obligations on member states to undertake measures to address climate change have important implications for the promotion of bioenergy. These include:

(a)”…implementing measures to control, reduce and prevent activities that cause adverse effects … through modifications to the ozone layer …” (Vienna Convention for the Protection of the Ozone Layer19)

19 Vienna Convention for the Protection of the Ozone Layer 1985
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(b) “…controlling the annual consumption and production of substances . . . that deplete the ozone layer” (Montreal Protocol on Substances that Deplete the Ozone Layer\(^2\)), and

(c) “…regulating levels of greenhouse gases concentration in the atmosphere, so as to avoid the occurrence of climate change on a level that would impede sustainable economic development…” (United Nations Framework Convention on Climate Change\(^3\)).

Of all of these international agreements, the Kyoto Protocol\(^4\) provides the most detailed and modern framework for the promotion of renewable energy, including bioenergy. The Kyoto Protocol recognizes the importance of renewable energy as a contributor to the mitigation of climate change, providing in Article 10 that:

“all Parties, taking into account their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances…. shall… formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change…[including] the energy, transport and industry sectors…

Under this framework, industrialized country parties (Annex I Parties) agree to binding emission reduction targets during the first Kyoto Protocol commitment period which will run from 2008-2012. While the Kyoto Protocol does not require developing countries to make commitments to reduce emission targets, the Clean Development Mechanism (CDM) was designed to assist developing countries in reducing their emissions by encouraging investments in renewable energy projects. CDM emissions reduction projects in developing countries are used to create credits (Certified Emission Reductions or CERs) which can be purchased and used by Annex I Parties to meet their Kyoto Protocol emission reduction obligations. The CDM assists in encouraging sustainable development and technology transfer in developing countries as well as by allowing Annex I Parties to achieve their mitigation targets at least overall cost.

However, since the inception of the CDM in 2005, developing countries have encountered obstacles in the implementation of renewable energy projects, particularly in the bioenergy sector. Because emissions reductions from renewable energy projects are lower than those from projects reducing other greenhouse gases, the equipment cost of most renewable energy projects are higher per emission than other potential CDM projects, such as those for agricultural methane flaring. This discourages CDM investors from participating in renewable energy projects. In addition, the ability to obtain project finance depends on a large number of factors. These include host country regulation and perceived regulatory and political risks, the market price for electricity and CERs, as well as the impact the CERs has on the investment analysis of a project. In addition, project finance is more likely where there is familiarity and level of comfort within local and international banking institutions with the CDM as an additional revenue aspect of renewable energy projects. As a result of these challenges, developing countries are often at a disadvantage in attracting project finance.\(^5\)

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20 Montreal Protocol on Substances that Deplete the Ozone Layer 1987 Article 2
21 United Nations Framework Convention on Climate Change 1992 Article 4
22 Kyoto Protocol to the United Nations Framework Convention on Climate Change 1992
Given the current limitations of the CDM and the short term target requirements under the Kyoto Protocol, other incentives are needed to ensure long term investments in low carbon technologies that may stabilize global carbon dioxide levels and ensure that environmental concerns over bioenergy resource extraction are addressed. Broader strategies include research and development of clearer and safer technologies, enforceable standards to measure the carbon intensity of energy technologies and the imposition of a progressive carbon price to be applied to fuels and technologies. Initiatives in this sector are likely to continue to drive international environmental regulation in the coming years and have an important impact on the development of the international bioenergy industry.

2.4 International Trade

International trade is another recent but increasingly important and multidimensional reference for bioenergy proponents. The international market for fossil fuels and renewable energy sources is heavily influenced by price fluctuations and tariff barriers. As a result, poor countries may need to continue to weigh prospects for an emerging bioenergy industry against other opportunities for development, as they may be unable to subsidize the industry to the same extent as developed countries. In addition, potential trade may be stifled from developing countries from measures which focus on enhancing domestic production in industrialized countries. Finally, important sustainability concerns may restrict the opportunities emerging from trade and raise protectionist impulses to the disadvantage of developing countries.

2.4.a. Preferential Trade Agreements

Preferential trade arrangements at the regional and international level many provide important incentives to encourage international trade in biofuels from developing countries. They may also affect global production and use of bioenergy products. The European Union and the United States have developed regulatory systems under trade agreements that grant preferential market access conditions for certain countries and products, with important implications for developing countries seeking to gain competitive advantage from trade in biofuels.

In the European Union, preferential trade in biofuels is regulated by the Generalised System of Preferences (GSP), which includes, among others, the Everything But Arms (EBA) initiative and the Cotonou Agreement. Under the current GSP Regulation in effect until December 2008, duty-free access to the EU is provided to denatured and undenatured alcohol, with an incentive program for ethanol producers and exporters who demonstrate sustainable development initiatives and good governance. The EBA Initiative also provides duty free and quota free access to ethanol exports for Least Developed Countries. The Cotonou Agreement provides duty free access for imports for African, Caribbean and Pacific Countries signatories of the Lomé Convention. The Euro-Mediterranean Agreement also has provisions for preferential trade in biofuels. Ethanol-exporting countries that benefit from EU trade preferences include:

- Guatemala, Peru, Bolivia, Ecuador, Nicaragua, and Panama (unlimited duty-free access accorded under special drug diversion programs);
- Ukraine and South Africa (GSP);
- the Democratic Republic of Congo (EBA);
- Swaziland and Zimbabwe (Cotonou Agreement);
- Egypt (Euro-Mediterranean Agreement).
The EU is by far the world’s biggest producer of biodiesel, and EU imports of biodiesel are subject to an ad valorem duty of 6.5%. As production outside of the EU is still limited there has been no significant external trade in biodiesel. However, to reduce pressure on rapeseed oil production, biodiesel producers have begun sourcing feedstocks from foreign sources, such as palm oil from Malaysia and Indonesia. EU imports of palm oil have more than doubled from 1999 to 2005, and now represent 18% of palm oil imported on the world market.\(^{24}\)

In the US, ethanol may be imported duty free under the Caribbean Basin Initiative (CBI) although there are specific quantitative and qualitative restrictions based on the origin of the feedstocks from parties to the agreement. Provisions for duty free ethanol imports were also raised during US Central American Free Trade Negotiations (CAFTA), but changes have yet to be implemented that would increase the overall preferential access to the US ethanol market.

The remaining tariffs and duties on ethanol and biodiesel may cause trade distortions and jeopardize the potential for developing countries to benefit from the increasing global demand for alternatives to fossil fuels. There are concerns that the prevalent tariff escalation systems in many industrialised countries encourage developing countries to export feedstock, such as unprocessed molasses and crude oils while actual conversion into biofuels, with its associated value added benefits, conversion, often takes place in the importing country. As tariff barriers commonly insulate domestic producers from external competition, they may lead to further protectionist measures of greater benefit to developed countries.

### 2.4.b World Trade Organization Agreements

At the international level, the provisions of the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO) rules are designed to facilitate trade in biofuels, through the reduction of tariff and non-tariff barriers.

The primary WTO agreements regulating trade in biofuels are:

- General Agreement on Tariffs and Trade (GATT)
- Agreement on Subsidies and Countervailing Measures (SCM)
- Agreement on Technical Barriers to Trade (TBT agreement)
- Agreement on Sanitary and Phytosanitary Measures (SPS Agreement)

However, there is an increasing debate at the international level over the regulation of trade in these new products. The key regulatory issues for international trade in bioenergy under the GATT and WTO rules include the classification of biofuel products as agricultural, industrial or environmental goods, the role of subsidies to promote production, and the relationship between domestic regulations and standards with WTO rules on international regulations and the technical barriers to trade.

As a taste of the legal controversies over bioenergy that are likely to increase in the next few years, the European Union, Australia, Argentina and Brazil have joined Canada in a WTO complaint against the US, over allegedly illegal subsidies to American corn growers.\(^{25}\)

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March 26 draft for comment

corn is clearly an agricultural product, the Brazilian WTO ambassador was quoted as saying that the dispute was “not just about corn. Brazil is the world’s largest ethanol exporter, so this is an important issue for us.” If Brazil places the ethanol issue on the negotiating table in the course of the dispute, the panel will have to deal with entirely novel issues. This is because the biofuels industry did not exist when the current WTO rules were written. Hence, biofuels are not subject to the Harmonized Standard (HS) classification system which leaves much uncertainty about how they should be regulated.

HS classifications determine whether or not a product is an ‘agricultural product’ as defined by WTO rules. These classifications have particular implications for trade in bioenergy products such as bioethanol and biodiesel. For example, there is a separate HS classification for biodiesel, but ethanol is currently classified in the HS without regard to whether it is used for fuel or other purposes. The lack of HS classifications to narrow the definition of ethanol makes it difficult to quantify trade in biofuels. It may also obstruct efforts to liberalize tariffs to the detriment of developing countries seeking market access for this sector.

Classification also affects how products are characterised under specific WTO agreements. For example, ethanol is considered an agricultural good and is therefore subject to Annex 1 of the WTO Agreement on Agriculture. This agreement establishes separate rules affecting tariff rates and trading rules for the application of subsidies and other domestic policies. However, biodiesel is considered an industrial good and therefore is not subject to the Agreement on Agriculture. As a result, there are no clear rules for subsidies and other domestic policies that might encourage trade in this sector. Some countries suggest that renewable energy products, including ethanol and biodiesel, should be classified under the category of “environmental goods”. This could improve market access for these products through WTO negotiations to reduce trade barriers with respect to ‘Environmental Goods and Services”. However, there was little progress on establishing the criteria to define and identify “environmental goods” before the Doha round of negotiations were suspended in July 2006.

The WTO Agreement on Subsidies and Countervailing Measures (SCM) for non-agricultural products prohibits all export subsidies and also imposes a ban on specific subsidies that favour the use of domestic products over imported products. All other subsidies under the SCM are permissible as long as they do use adverse trade effects to another member, either through ‘injury’ or ‘serious’ prejudice. If biofuels were considered environmental goods, biofuel subsidies could be considered permissible under the WTO rules as an environmental protection measure. However, given the pervasive use of subsidies and the difficulty of determining whether a subsidy is a production subsidy, a consumption subsidy or designed to protect the environment, resolving the issue of subsidies at the WTO level will be a challenge. Regardless of how the classification issues are addressed, disputes may still arise over which subsidy rules should apply to biofuels.

The framework for domestic regulations and standards for biofuels within the WTO system is the third key issue at the WTO level. While internationally agreed-upon standards for biofuels have yet to be established, many private and public stakeholders are in the process of developing

different sets of criteria and indicators to “measure” compliance and implement into voluntary or mandatory systems such as product labeling and certification schemes for bioenergy production. Most of the criteria currently being developed are focused in industrialized countries such as those in the EU and are geared towards ensuring that biofuels are produced, distributed and used in ways that are environmentally sustainable before they traded in local or regional markets.\textsuperscript{29} However, these criteria or indicators may not be WTO-compliant when used in government support schemes such as subsidies or when designated for preferential treatment under international trade agreements.

The impact of international rules on domestic policies and legislation affecting biofuels trade with developing countries needs to be carefully assessed. Not only do international rules have the potential to undermine the potential competitive trade advantage of developing-countries in this sector, but they may also affect poverty reduction and environmental management goals. National legislation to promote bioenergy in developing countries must also be assessed for compliance with international commitments on sustainable development, the environment and trade.

3. NATIONAL POLICIES AND LEGISLATION

3.1 Developing An Analytical Tool To Assess National Legal Frameworks for Bioenergy

Legislative and institutional weaknesses can create barriers to the development of bioenergy, and act as a disincentive for private investors or entrepreneurs wishing to be involved in bioenergy markets. In an FAO study exploring the link between bioenergy and agriculture, it was pointed out that bioenergy projects can only be sustainable and therefore have long-term impact if governments are able to tackle the “social, cultural, institutional, legal and financial barriers.”\textsuperscript{30} Many governments consider law as an important tool for mediating otherwise intractable regulatory problems, including tensions between development of the fledgling sector and other issues such as food security and environmental management.

Before a country develops new legislation relating to bioenergy, the existing framework of legal provisions covering the subject area must be analyzed. There may be no law or regulations on the subject, requiring that entirely new legislation be drafted. In a few cases, there may be an existing legal framework but it may be outdated or insufficient, or it may be unclear, contain overlapping provisions or have gaps in the regulatory framework and therefore require a thorough update. In rare cases, only minor changes may be necessary, for example to add a few specific obligations or to enhance coordination. It is also important to carry out an initial analysis of the existing framework to determine whether the implementation and enforcement of existing laws should be prioritized over the adoption of an entirely new framework.

Some of the most common weaknesses of the policy and legal framework for bioenergy include regulator provisions that exceed the national capacity for implementation. For example, countries

\textsuperscript{29} Standards and other environmental assurance schemes that have been developed biofuels include the Assured Combinable Crops Scheme, EurepGAP LEAF Assurance Scheme, Rainforest Alliance / Sustainable Agricultural Network Standard farm assurance standard, The Roundtable on Responsible Palm Oil standard, The Basel Criteria (draft standards for soybean cultivation)

\textsuperscript{30} FAO, \textit{The Energy and Agriculture Nexus} (FAO, Rome 2000), at p. 81.
may have established emissions reduction targets within a given timeframe that they may not be able to comply with due unfavorable political, economic and social conditions. There may be other provisions requiring unnecessary permits, licensing or approval requirements for bioenergy production, use, and trade. Bioenergy regulation may suffer from a lack of coordination and knowledge of the law between implementing and enforcement authorities. Legislative and policy initiatives may also be ineffective due to weak institutional capacities, poor enforcement mechanisms, corruption and a lack of transparency. Finally, there may be a lack of public participation in the decision-making and legislative process for the sustainable management of natural resources, including the agriculture and forestry sector.

Before turning to the existing and desirable elements of a national legal framework for bioenergy, it is important to define the scope of “bioenergy law”. The term is not always immediately understood in the national context, as it does not appear in international instruments. It may be used to apply more narrowly to legislation which regulates the production, trade, distribution and use of biofuels such as bioethanol and biodiesel at national level. It may also focus on laws and regulations that refer to the promotion of renewable energy in general.

A broader approach is to consider the wide variety of fields that must actually be regulated in order to ensure the sustainable production, trade, distribution and use of bioenergy alternatives to fossil fuels, taking all of these elements into account. In other words, everything having to do with bioenergy at national level, whether directly or indirectly, could be considered under the ambit of the legal framework for bioenergy. This would accordingly require a definition of bioenergy law that recognizes the many legislative provisions, wherever they may be found, which are relevant to the production and use of energy derived from biomass. Falling into this category would be specific environmental regulations, waste management regulations and laws on the use of pesticides and fertilizers, labour, health and safety laws, tax laws, credit financing provisions, customs regulations, import and export rules, among many others.

A possible division of the main subject areas is the following:

- natural resource management;
- social issues;
- trade and investment.

Although the scope of bioenergy-related legislation is vast, a universally accepted definition of bioenergy law may not be possible or even desirable. Countries should identify all of the elements required to define the scope of regulation, taking into account international norms and local circumstances. A review of some of the main elements to be included and some of the important legal issues affecting bioenergy within these three subject areas are outlined below, along with one of the predominant cross-cutting issues affecting all three subject areas: food security.

### 3.2 Natural Resource Management

The relationship between the production and use of bioenergy is central to the debate over environmental sustainability, especially as it has long-term implications, opportunities and risks. The harvesting, conversion and end uses of biomass derived from agricultural residues and waste has the potential to address many of the environmental hazards involved in fossil fuel extraction, production, distribution and use. Yet bioenergy production without due regard to sustainable agricultural practices can also lead to land degradation, including soil erosion, depletion of
vegetation cover, loss of ecosystems and biodiversity. In addition to the potential conflicts on the amount of land and water available for cultivation and irrigation, fertilizers and pesticides and chemicals used to produce and convert feedstocks may increase the risk of water ground, surface and air pollution. New conversion plants for feedstocks may offer options for controlling pollution, but processing facilities may cause discharges of organically contaminated effluent and other harmful wastes. Developing countries are particularly vulnerable to these negative impacts, as they may not have the means to ensure that cleaner technologies and the most environmentally sustainable processes are used.

To promote sustainable bioenergy industries, legal issues surrounding land, forest and water resource management must be carefully assessed to determine how bioenergy production may contribute to the development of rural communities and environmental sustainability.31 To avoid harmful environmental impacts, governments must consider, develop and enforce regulations governing agricultural and forestry use, habitat and biodiversity protection, water, soil and air quality management, and waste disposal. Legislation, practices and enforcement mechanisms for environmental impact assessments are essential components of an effective natural resource management legal framework and sustainable development strategy for bioenergy.

A framework to promote environmental protection and conservation should include provisions for agricultural and forestry harvesting plans and permits as well as seed, plant, and tree breeding and cropping regulations under basic land and forest laws. For example, regulation could encourage the planting of perennial bioenergy crops which may have a lower impact on biodiversity than an intensively managed annual farming system. The extent of deforestation from bioenergy harvesting could be minimized by regulating the use of different cultivation methods. This may include combining crop types and rotation schemes, and small-scale cultivation structures, the creation of ecological “steppingstones” and migration corridors in farming and forest areas to alleviate negative impacts. In addition, given high potential environmental risks involved with the use of Genetically Modified Organisms (GMOs) for feedstocks and enzymes used in bioenergy production, there should be regulatory provisions to address the potential for using GMOs in the feedstock production process.

In addition to land and forest laws, water and waste management laws should also establish effective planning mechanisms, provisions for use and enforcement instruments. Water laws should regulate water resource allocation and sharing, by establish minimum flow requirements and reserve volumes and flows where needed. For example, under South Africa’s 1998 National Water Act, there is a statutory duty to reserve water resources for ecological purposes or for the purposes of supplying water to satisfy human needs. There should also be provisions for prior authorization for all bioenergy crop siting areas and subsequent licensing requirements for water and land resource abstraction. Waste disposal regulation should include licensing for the transport or disposal of hazardous or other wastes, packaging, requirements for packaging and labeling, waste movement tracking, reporting and consignment authorizations, registration and licensing of waste management facilities, and prohibitions on facility sitings near environmentally sensitive areas.

3.3 Social Issues

A potential benefit associated with bioenergy production is the positive impact on agricultural employment and livelihoods. Biofuels may contribute to job creation and higher wages in

31 “Adjusting to recent changes in the energy sector: challenges and opportunities”. Background note by the UNCTAD secretariat, 2006
agricultural communities by providing opportunities for rural economic diversification and development. However, most cultivation of bioenergy feedstocks has been associated with large-scale production methods, with very little positive impact on rural labour. If the land required for industrialized bioenergy crop cultivation is controlled by large land owners or companies, small landowners, cooperatives and rural communities may face obstacles to increasing their food supply and income at the local level. The likely expansion of private agricultural land for bioenergy production may marginalize disadvantaged groups, especially women and the poor who may depend on shared access to land, water and forest resources.

To address some of these issues, land ownership and property use rights must be clearly defined and customary land, forest and water access and use rights to avoid the exclusion of local populations from areas devoted to bioenergy crops. For example, in Bolivia, a legal reform implemented in 1996 recognizes that ancestral rights of community groups have precedence over forest concessions holders where these rights overlap. Indonesia also established a new regulatory process in 2000 by which customary ownership of land can be recognized. Such laws may improve local livelihoods by recognizing legitimate local claims to rights of land and resources. In addition, employment strategies should encourage participation of underprivileged groups in the bioenergy sector.

There is also concern that large-scale biofuel production may result in, or encourage, poor labour practices. In some developing countries, certain feedstocks, such as sugarcane and palm oil are produced under poor working conditions with health and safety risks. In some cases, child labour and/or forced labour may be involved. Bioenergy regulation must ensure adequate protection of basic workers rights, such as those related to minimum wage, job stability and the prohibition of child labour. Working conditions must also be enforced through compliance with workers health and safety legislation, as well as those involving health conditions and safety of operations. Finally, regulation must maximize opportunities for community participation in the bioenergy sector, by enforcing legislation to protect local communities and other marginalized groups, including indigenous peoples, women and the poor.

### 3.4 Trade and Investment

Farmers in developing countries may face difficulties in diversifying their traditional crops without experience in the latest technological and energy cropping practices. The poorest farmers may not be able to afford the start up risks of planting new crops that may be difficult to sell. However, they may benefit from increased global demand for biofuels by diversifying their agricultural output with energy crops, especially if they can grow feedstocks that may be used for both food and fuel markets.

Policies may be used to encourage cooperatives of small producers and contract farming arrangements for bioenergy feedstocks. This might involve the provision of incentives to small producers of biodiesel crops to supply local markets and generate employment while allowing larger bioethanol producing operations with greater potential to generate income rather than employment to provide for the international market. Incentives to encourage domestic biofuel production may include direct payments, energy crop premiums, or payments per hectare to increase production of eligible feedstocks. Regulation can provide for tax exemptions,

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32 UNCTAD. 2006. *The emerging biofuels market: regulatory, trade and development implications* p.33
agricultural credit financing and a set farmgate price, or guaranteed minimum payment to farmers for feedstocks. Favorable import and export laws, product marketing and certification regulations, processing, operating and sales regulations may also encourage domestic bioenergy production and use. In addition, regulation may encourage investments in the distribution infrastructure to reduce the transactions costs between farmers and the end market.

To develop successful economies of scale for bioenergy production, governments may need to encourage greater coordination in the sector by implementing policies that foster strategic alliances among industries. For example, strategic alliances may be encouraged between agro-industrial companies and oil companies to guarantee biofuel supplies and ensure distribution within existing networks. Alliances have also been set up between oil companies and car manufacturers to develop appropriate technologies and engines adapted for biofuels.

All of these measures may be used to encourage the investment in bioenergy industries, domestic production and foreign trade in biofuels. However, to avoid conflict with regional and international trade agreements, it is important to ensure that the most effective and least trade distorting means of providing subsidies and incentives are applied to the domestic bioenergy sector.

3.5 Food Security

One of the key overarching issues for developing countries is the interrelationship between land uses and the competing needs of energy and food security. Competition between land and irrigation required for energy feedstocks and for agricultural crops may lead to food scarcity in the local market. This may be particularly true for energy crops or bioenergy processing facilities requiring large amounts of land and water.  

In addition, the effects that large-scale biofuel production may have on global commodity prices are an important trade concern. Competition between land uses may lead to an increase in food commodity prices for certain feedstocks. While this may be a benefit to food exporters, it may affect the capacity of net food-importing countries to buy food. At the same time, expanding biofuel crops may put pressure on prices of other goods and services. This could destabilize trading markets and have a serious impact on the economies of developing and developed countries alike.

In order to ensure adequate food supplies in countries where agricultural land and water scarcity is an issue, it may be necessary to ensure the effective regulation of planting biofuel crops in marginal areas of agricultural land where there is less need to compete between land used to grow food crops and land used to grow energy crops. Food security and competitiveness issues may also be alleviated by ensuring that the most appropriate feedstocks are chosen according to prevailing climate and soil conditions. For example, drought-resistant jatropha may be

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34 Fresco, L. 2006 “Biomass for food or fuel: is there a dilemma?”, University of Amsterdam, The Duiisenberg Lecture, Singapore Further information on land competition between food and biofuels may be found, among others in the following studies:

UNCTAD, 2006 “Challenges and opportunities for developing countries in producing biofuels”.

“UNCTAD, 2006, The emerging biofuels market: regulatory, trade and development implications”.

35 See OECD. 2005 “Agricultural Market Impacts of Future Growth in the Production of Biofuels”.

encouraged through regulatory incentives as a more suitable crop for developing countries facing land, water and food scarcity.

Bioenergy policies and legislation may also encourage the production of dual use feedstocks to provide for both food and energy needs simultaneously and do not require the conversion of new lands or forests into energy crop-growing areas. Sugar cane, for example, can be used as a raw material for human consumption as well as to produce ethanol. Molasses may be used as feedstock to produce biofuels and at the same time its residues may be burnt to produce electricity, in many cases used to power the conversion plant where it is transformed into biofuels. Such measures need to be targeted towards local conditions while taking into account the broader regulatory framework at the domestic and international level.

Natural resource management, including a careful assessment environmental and social impact assessments, and the market effects of trade in biofuels can contribute to reducing the potential impact of food security in developing countries seeking to opportunities in the bioenergy sector. Effective regulation to encourage research and development in new bioenergy technologies that promote sustainable development may provide the best opportunity of minimizing the risks of food security.
Key Areas of Bioenergy Regulation:

Natural Resource management

- land and water ownership, tenure and use rights: clearly established property or use rights approved by relevant authorities, clear property boundaries, land registries and approved uses of land and water;
- land, forest and water management plans: including harvesting plans and permits, including plant breeding and cropping regulations;
- social impact assessments, zoning, urban and rural planning considerations.
- air pollution: greenhouse gas mitigation measures;
- ground and water pollution: compliance with pesticide and fertilizer use restrictions, waste management and disposal provisions;
- environmental conservation: conformity with protected area and deforestation legislation;
- protected species: Compliance with laws and regulations regarding protected species of flora and fauna and their habitat including provisions for the use of genetically modified organisms;
- environmental impact assessment laws and regulations, including mitigation procedures.

Social Issues

- community participation: protection of indigenous peoples, local communities and women’s rights legislation;
- labour: protection of workers rights, such as those related to minimum wage, job stability and the prohibition of child labour;
- health and safety: compliance with workers health and safety legislation.

Trade and Investment

- import and export laws; compliance with regional and international trade agreements;
- price regulation of feedstock;
- credit financing laws;
- tax laws and other industry fee regulations;
- product marketing and certification regulations;
- processing, sales and shipping laws such as operating licenses;
- transportation regulations.
3.6 Implementing Bioenergy Policy and Legislation at the National Level

Once a bioenergy policy has been developed, it may be implemented through a variety of measures, both legal and policy related. Although these may be considered in isolation, they are generally inter-related, and implementation is most effective when a range of tools are used. These may include:

- legal instruments (including international agreements and national legislation);
- economic measures;
- guidelines and other nonbinding instruments;
- awareness raising and public participation.

At the national level, bioenergy policy is most often set out in the preamble or in the “Objectives and Scope” section. The policy might state that it is intended to foster economic development and trade or to further emissions reduction commitments under the Kyoto Protocol for example. Other elements of a national bioenergy policy might not be articulated outright in the law but could instead be discerned from its overall design. For example, it may follow the “command and control” model, such as by establishing norms of conduct, monitoring compliance and imposing penalties for breach. In addition to legislation, a range of economic instruments, such as subsidies, taxes or charges, can be used to implement bioenergy policy goals.

Supportive and penalizing measures can be used to encourage or discourage certain activities, such as the cultivation of certain crops, the use of pesticides or the export of particular products. Supportive measures can take the form of direct subsidies or tax reductions; penalties might involve charges for carrying out certain activities that the government seeks to discourage. Generally, such economic incentives and disincentives will be contained in legislation, although they may also appear in nonbinding polices, agreements or codes of practice.

Among the nonbinding tools for policy implementation are guidelines and recommendations, which are developed by international organizations, governments at national level or industry groups, and which outline the methods of compliance with desired policies. Nonbinding agreements such as industry codes are similar to guidelines and recommendations, except that they may be more formal. Although not binding, codes may still have a high compliance rate, especially if representatives from industry are involved in their formulation. Such involvement is desirable as industry members may have clear understanding of the capacity and limitations of compliance. Moreover, once they have signed on to a code, other members may feel more compelled to comply. While there might be reluctance to follow codes developed only by third parties such as consumer and advocacy groups, these concerns may be addressed if codes are developed after wide consultation with industry as well as other affected groups.

Industry-developed assurance and certification measures may also be effective at ensuring bioenergy products are sourced from landholdings where responsible agricultural or forest management practices are employed, thereby reducing the risk of harm to ecosystems and natural resources. While environmental assurance schemes developed by industry stakeholders may not substitute government regulation, they can complement these systems, given the degree of participation and consultation in standard development, testing and promotion. Several environmental assurance schemes have already been developed in agricultural and forestry sectors relevant to bioenergy. However, most agricultural assurance schemes to date have been focus on promoting food safety rather than reducing environmental impacts. Although they may s may work to the advantage of larger landowners and agri-businesses, they may also be used to
facilitate entry of small producers and should not offer protection to producers from the deflationary trends of global commodity markets.

Awareness raising and public participation constitute another kind of tool which can assist in the implementation of bioenergy policy. Professional groups as well as the general public can benefit from activities designed to promote awareness and increase knowledge of bioenergy regulatory issues in the country. For the former group, conferences, workshops and publications are useful avenues to explore; for the latter, the media, fact sheets, posters, videos, rural radio and educational programmes in schools can enhance awareness of bioenergy issues among the public. In both cases, the wider the reach, the more likely it is that such programmes will be able to assist in the effective implementation of national bioenergy policy.

4. TRENDS IN BIOENERGY POLICY AND LEGISLATION

Not all countries have developed specific national laws on bioenergy. However, for those have, including some developed countries and a few developing countries mostly in Latin America, the legislation is heavily focused on the promotion of biofuel use through mandatory blending requirements and various types of incentives. Interventions that could typically be contained in a law, such as agencies responsible for regulatory oversight and their specific responsibilities are usually outlined in policy and other strategy documents. In addition, typical bioenergy legislation includes detailed specifications on blending and other technical quality standards.

This is why it is important for policy-makers to understand what regulatory tools state machineries may have to promote, guide and to use in order to intervene in the sector, and the relative efficiency of each of them. Such tools could be policies, legislation or, as is usually the case, a mix of both. The choice of the instruments used to regulate the bioenergy sector is usually informed by the sector’s relative importance to overall energy security of the country, the level of technological advancement and the level of organization or influence of the players in the sector. The key elements of existing national laws are outlined below.

4.1. Institutional Structure

In the bioenergy legislation, there is usually a state agency responsible for promoting the necessary investments in biofuels and steering national bioenergy programmes. In some jurisdictions this includes technical committees that are responsible for setting standards. For example, in Peru, there is a ‘statutory technical committee’ whose mandate is formulate the technical specifications for biofuels and environmental safeguards, and to promote use of such fuels by the public. In Argentina, the ‘implementing authority’ has a wider mandate, which includes setting prices of biofuels, managing the grant of subsidies and other incentive schemes for biofuels promotion, and auditing and inspecting production standards. Coordination with other relevant state agencies is usually also outlined. In Philippines for instance, the Department of Energy retains primary responsibility for the implementation of the law but is required to work with the Sugar Authority Administration to ensure that the supply of sugar is sufficient to meet domestic demand for ethanol production, even if this means importing. In China, the primary responsibility for the sector lies with the energy authorities of the State Council.
4.2 Biofuels Market Regulation and Standards

Bioenergy laws also contain provisions on market regulation and marketing standards. For instance, virtually all of them have blending requirements, meaning the percentages of biofuels that should be mixed with conventional fuels. For instance, the percentages of ethanol to be blended with gasoline are 7.8% in Peru, 5% in Argentina and 5% in Philippines. For the case of Philippines, the law also requires the percentage to increase to 10 within 4 years from the date of enactment (2007). In Chile’s proposed law on biofuels, the percentages vary from 5.0% and 10.0%. In addition to marketing standards, the laws may also contain provisions on which regions in the country can grow which biofuel crops and when, as in the case of the 2005 Decree passed in Peru, and also set national goals of use and production. In this regard, for example, the EU Biofuels Directive established the goal of deriving at least 2% of EU transportation fuel from biofuels by the end of 2005, and increasing the use of biofuels by 0.75% annually until December 31, 2010, when it would reach 5.75%. However, this goal is not mandatory and individual Member States are free to establish higher standards, and in fact, the degree of compliance varies substantially across EU Member States.

4.3 Incentives

Incentive schemes have been essential to encourage the production, use and trade of biofuels in domestic energy frameworks. In Argentina, legislation grants exemptions “to promote investments”, including exemptions from paying VAT, corporate tax for three years and excise tax. In the Philippines, water effluents from the production of biofuels are exempt from wastewater charges and government financial institutions are required to provide financial services and benefits to local companies engaged in the bioenergy sector. Bioenergy laws also usually require governments to actively promote small and medium-size enterprises especially through preferential procurement policies – for example by prioritizing projects by small enterprises and not necessarily subjecting them to compliance with stringent environmental impact assessments as a precondition to registration. In the Paraguay and Argentina laws, biofuels projects are specifically eligible for benefits deriving from the Kyoto Protocol Clean Development Mechanism.

4.4 Trade Regulation

In Paraguay, the 2006 law provides a trade incentive to farmers, by making it mandatory for biofuel producers to purchase feedstock from local farmers, thereby protecting them against competition from foreign competition. Looked at broadly, such provisions are sensitive because they could distort trade – and a fortiori for the well acknowledged fact that only very few countries have enough raw materials available at present to produce biofuels that can, without government subsidies, compete on price with fossil fuels. Some laws also require that any feedstock purchased by biofuel producers be accompanied by a certificate of origin as a way of further tracking compliance with the local purchase requirement. In Philippines, the recently

37 See OECD-FAO. 2006 Agricultural Outlook 2006-2015 Paris and Rome at p.28: “Indeed, in only very few countries is the required feedstock available at prices that would presently allow ethanol and biodiesel production to be competitive with transport fuels from crude oil without government support. But such support can also create market distortions, the nature and level of which need to be well understood before policies are put in place.”
enacted law of 2007 also makes it mandatory to use locally sourced bioethanol and biodiesel, and requires the Department of Trade to create and classify a tariff scheme for biofuels in consideration of WTO and other trade commitments.

4.5. Bioenergy Research and Development

Invariably, biofuels laws also contain provisions on the promotion of research and development, especially in production methods and use. In some countries such as Argentina, the government, through the Implementation Authority, has an explicit obligation to assign resources for bioenergy R&D activities. In China, the government is required to promote scientific research in the development and utilization of renewable energy, and to allocate funding for this purpose.

5. CONCLUSIONS

Given the fact that most countries have only recently enacted or are about to enact legislation or policy on bioenergy it is clearly still too early to draw out any meaningful trends from the substantive content of bioenergy law and policy. However, the primary message emerging from this paper is that countries are increasingly realizing that in order to properly regulate and support the development of bioenergy, a firm policy and legal basis is fundamental. This is borne out by the realization that countries that are at the forefront of realizing the economic and environmental benefits of bioenergy have sound policies to promote the production and use of bioenergy. Further research on bioenergy law and policy would be invaluable.

A more comprehensive perspective reviewing all of the possible areas of regulation affecting bioenergy takes into account that legislation on the commercial production and trade of bioenergy on the international market cannot be examined in isolation. Only through the identification and assessment of each and every activity, institution, policy and legislative provision related directly or indirectly to bioenergy at national level can governments identify strengths, weaknesses, overlaps and gaps. Thereafter, after taking into account the wide range of policies, institutions and resources operative and existing at national level, governments can choose a legislative strategy that best meets their present national needs and international obligations.

The relationships between bioenergy and sustainable development are complex, and depend on several factors, including the energy crop, method of cultivation, conversion technology and the conditions and alternatives facing the specific country. The impacts of policy and legislation in related sectors, such as agriculture, forestry, environment and trade can have a profound effect on the development of effective bioenergy programs. A better understanding of the linkages between different sectors and a coherent approach to bioenergy would reduce legal uncertainties, and encourage sustainable development. Coordination in this area may be intersectoral, intrasectoral, or cross-sectoral, lining international and national efforts, however, strong political will and commitment is required among all levels of governments. In order to streamline bioenergy policies and laws, the underlying social, economic, cultural and political causes of non-compliance must be reviewed, as well as the impact of the energy policy and legal framework on the environment, rural development and the poor.
PART 2 CASE STUDIES

1. INTRODUCTION

Part 2 of the study provides a brief overview on various existing or drafted legislation and policies on biofuels in selected developing countries in Latin America, Africa and Asia, to illustrate the legislative measures and initiatives that have been adopted to regulate biofuel production and use. This survey is not meant to be exhaustive, but seeks to identify a broad range of countries and initiatives for further study.

It is important to note that most of the countries reviewed have passed legislation that refers specifically to biofuels rather than to the broader context of bioenergy. It should also be highlighted that policies and legislative provisions on biofuels examined in this study refer to first generation biofuels that are currently in commercial use and do not have provisions for second generation technologies.

Although there is worldwide interest in developing bioenergy industries, not all countries and regions have developed this sector to the same extent. The long standing experience of Brazil in ethanol production has provided a model for many other Latin American countries which have been particularly active in promoting the production and use of biofuels such as ethanol derived from sugar cane through legislative initiatives. In Southeast Asian countries, several initiatives and pilot projects are also being developed to encourage ethanol and biodiesel production from palm oil. However, with the exception of a few countries, such as Philippines or Indonesia, there appears to be fewer regulatory frameworks in place for bioenergy in Asia. Africa appears to have the least experience with regulation and policies for bioenergy, and this may provide further obstacles to its development.

In this study, legislation and policies have been studied separately and divided in two sections. This methodological approach distinguishes the applicable legal instruments for bioenergy and biofuels in particular from the commitments or goals expressed that have yet to be incorporated into binding legal obligations and have only been formulated at a policy level. In some countries, the line between policies and legislation is blurred, and in these cases, they have been reviewed under the first section. Annex I contains a chart which seeks to provide a comparative summary on all legislative initiatives adopted in the countries object of study. It has been divided conceptually according to the common areas of regulation for biofuels.

2. NATIONAL LEGISLATION

2.1 Argentina

In Argentina, there have been two major legislative initiatives related to biofuels in recent years. Resolution 1076/2001 established the National Programme on Biofuels by the Secretary of Sustainable Development and Environment. The Programme was developed in response to concerns over climate change and was designed to further the goals of the UNFCCC and the Kyoto Protocol. In 2004, Resolution 1156/2004 of the Secretary of Agriculture, Livestock, Fisheries and Food was designed to further the National Programme on Biofuels.
The main objectives of the National Programme on Biofuels are to:

a) 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 sugarcane, maize and sorghum;

b) support and advise rural sectors in the development of plants used in the elaboration of biofuels as an opportunity to local and regional development;

c) cooperate with public institutions devoted to the research and expansion of the use of biofuels;

d) promote public and private investments.

To complement the National Programme, Law No. 26093 of April 2006 was enacted to regulate the production and use of biofuels in Argentina. This Law creates a promotional framework for the production and sustainable use of biofuels over a 15 year period. It mandates minimum 5% blending requirement both for ethanol and biodiesel with gasoline and diesel respectively, from the 1st of January of 2010. It also sets mandatory use of biofuels by State agencies and fleets. To achieve these blending targets the Law sets some incentives as a means to promote investments:

- VAT exemption
- Corporate tax exemption for three years
- Excise tax exemption on biofuels

Law No 26093 provides for an Implementing Authority to be established by the Government to set technical specifications for biofuels, promote research and development activities, qualify plants for biofuel production, and oversee the provision of government subsidies for the production and use of biofuels. In granting subsidies and incentives, the Law provides for the Government to prioritize projects in favour of national small companies, farmers and regional economies. It also specifically establishes that qualified companies and projects will be eligible for the benefits deriving from the Kyoto Protocol CDM, which Argentina ratified in 2001 under Law No. 25.438). Finally, the Law includes a regime of offences and sanctions (in the form of fines and disqualification to carry out any production activities related to biofuels).

Law No. 26093 has been recently implemented by Decree No. 109/2007 on Biofuels which was passed by the Argentinean Government in February 2007. Under this Decree, activities related to the production, blending, distribution, commercialization, consumption and sustainable use of biofuels are to be regulated according to articles 2, 3 and 6 of Law No. 17.319 of 1967 which establishes a framework for the hydrocarbon industry in Argentina, with the exception of the provisions set by Law No. 26093 and its implementing Decree.

The Ministry of Federal Planning, Public Investment and Services, through the Secretary of Energy, is designated as the implementing authority of Law No. 26093, although the Ministry of Economy and Production is the implementing authority for tax issues related to biofuels. The shall Ministry of Federal Planning, Public Investment and Services is responsible for the following functions, among others to:

- determine technical specifications of biofuels;
- monitor biofuel activities within the country;
- qualify biofuel projects and production plants;
- apply sanctions in case of infringement of the provisions established by the Law N. 26093;
• create and update a registry of biofuel producers;
• periodically publish reference prices for each of the biofuels to be sold in the country;
• make an annual estimation of the total volume of biofuels required to meet domestic market needs.

In regards to this last point, the Decree establishes that tax benefits will only apply up to a certain amount of biofuel production under Law 26.093. If the total number of projects exceeds the annual estimated volume of biofuels needed for the domestic market, an arbitration process shall be applied to select projects according to the criteria established in Art. 14 of Law No. 26093. According to these criteria, the Government must prioritize biofuel projects in favour of national small companies, farmers and regional economies. Thus, projects exceeding the set annual volume are permitted to commercialize their biofuels both in the domestic and international markets but they will not be subject to the same tax benefits.

The Decree provides for the Secretary of Environment and Sustainable Development to adopt necessary measures in support of Art. 17 of Law 26.093, whereby qualified companies and projects are eligible for the benefits deriving from the Kyoto Protocol Clean Development Mechanism.

The Decree creates the National Advisory Board for the Promotion of Production and Sustainable Use of Biofuels within the Secretary of Energy of the Ministry of Federal Planning, Public Investment and Service. The Board comprises a representative from each of the following bodies:

- Secretary of Energy
- Secretary of Agriculture
- Secretary of Livestock, Fisheries and Food
- Secretary of Environment and Sustainable Development
- Secretary of Treasury
- Secretary of Economic Policy
- Secretary of Commerce and Industry
- Secretary of Science and Technology
- Any other public or private institution which may assist the implanting authority

The Board serves an advisory purpose and will be summoned when necessary to provide assistance to the implementing authority in legal, technical and administrative aspects related to the promotion of the biofuel industry.

2.2 Colombia

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

In 2001, Colombia passed Law No. 697 on Rational and Efficient Use of Energy. It promotes the use of alternative energy sources by creating the programme PROURE (Programme for the Rational and Efficient Use of Energy) and designating the Ministry of Mines and Energy as the implementing authority for formulating policies and instruments needed to promote the use of fossil fuels alternatives.
The same year, the country passed Law No. 693 of 2001 on the Use of Ethanol Fuel. It requires the addition of 10.0% ethanol to gasoline beginning in 2006 in Columbian cities with populations exceeding 500,000 while in cities not exceeding 500,000 inhabitants, the government may authorize a percentage of ethanol blending. Law No. 693 of 2001 is regulated by the Decree N. 3862 of 2005, creating an additional incentive mechanism to promote the production of biofuels in Colombia. It establishes that blending ethanol with gasoline is not considered industrial or productive process and is therefore exempt from the taxes that apply to industrial and productive processes.

In 2004, Law N. 939 of 2004 on Provisions Concerning Biofuels was enacted. The purpose of the law is to stimulate the production of biofuels by increasing the incentives for the production of biofuels. It establishes an additional exemption from taxes for the production of new biofuels crops, including palm, from 2005-2015, and allows for a certain percentage of biodiesel to be blended with conventional diesel, to be determined by the Ministry of Mines and Energy and the Ministry of Environment, Housing and Land Use and Planning. Under the Law, biodiesel blends are tax exempt. The 2004 Law provides that the Ministry of Agriculture and Rural Development shall stimulate domestic production of oleaginous plants used as feedstock to produce biofuels. In 2005, the Law was partially regulated by Decree No. 1970 of 2005, setting a number of requirements that biofuels producers must meet to obtain tax exemption established under the Law.

In addition to these binding legal instruments, the Ministry of Mines and Energy issued Resolution 180687 in 2003, establishing technical specifications on ethanol fuel as mandated by the Law 939 of 2004 on Provisions Concerning Biofuels. The Resolution provides that technical specifications should be in accordance with the quality and environmental specifications of the Resolution 447 issued by the Ministry of Mines and Energy and the Ministry of Environment, Housing and Land Use and Planning. This Resolution set the quality and environmental technical specifications for fuel alcohol for sale in Colombia. Resolution 180687 of 2003 also requires producers to obtain a quality certificate so as to be able to sell ethanol in the country and allows them to export ethanol only if national supply is ensured. Specific legislation to promote the production and use of biodiesel is also currently under preparation.

2.3 Costa Rica

In September 2006, the Ministry of Agriculture and the Ministry of Environment and Energy passed Decree 33357 establishing the National Commission of Biofuels. This 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.

The National Commission of Biofuels, composed of representatives from different Ministries, and other public and private institutions involved in the production of biofuels, is responsible for:

- Proposing an action plan containing strategies in the short and long run to implement the use of biofuels in Costa Rica, which shall be addressed at the Ministry of Environment and Energy and the Ministry of Agriculture and Livestock
- Formulating monitoring activities, deadlines and responsible bodies
- Proposing any legal reform and formulation of the legal instruments needed to create an appropriate legal framework to promote biofuels in the country.
2.4 Ecuador

In December 2004, the Ecuadorian Government passed Decree No. 2332, declaring of national interest the production and use of biofuels and the agricultural production of energy crops. This Decree created the Advisory Council on Biofuels as the implementing authority responsible for the formulation of the general policy lines related to biofuels in the country and the design of a pilot project to be carried out by the Ministry of Energy and Mines in coordination with the Ministry of Agriculture, Livestock and the Ministry of Environment. The Decree provides that Advisory Council on Biofuels will formulate appropriate mechanisms so as to support agricultural and industrial sectors involved in biofuel production and shall regulate the price of the biofuels, which shall not exceed that of conventional fuels.

In addition to Decree No. 2332, Ecuador formulated a National Programme on Biofuels of 2005 to be implemented by the Ministry of Energy and Mines. However this Programme is currently under revision by the new Government of the country (from January 15th 2007). Under this National Programme, two Plans were formulated so as to introduce the use of ethanol and biodiesel respectively in the country, each of them to be implemented in two phases, first at a local level as a pilot project and later at national level. The pilot project planned a 5% ethanol blend with gasoline in the city of Guayaquil, a percentage that would be increased up to a 10% at national level in a second phase. It also established a 5% biodiesel blend within the Metropolitan District of Quito and a 5% blend at the national level to be implemented in a second phase.

2.5 Guatemala

In 1985, due to the increase in the prices of oil and the crisis caused by the fall of sugar prices, Guatemala passed the Decree 17-85 which contained the Law of Fuel Alcohol of 1985. The purpose of these measures was to establish a percentage of ethanol blended to gasoline that would not exceed 20% to secure a 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 the ethanol sold in the country. The Law established a few incentives, such as tax exemptions on import tariffs for imported machinery and equipment used to produce ethanol. In addition, ethanol producers were obliged to pay an anticipated 2.5% tax on the production.

In the 1990’s a proposed law on gasoline Oxygenation in the nineties decade sought to require certain percentage of ethanol to the gasoline sold in the country. However, this proposal of law was never passed because it established a prohibition on importing ethanol without ensuring a supply domestic ethanol.

In August 2006, Guatemala joined the Action Plan for the Introduction of Ethanol in Central America. This Plan incorporates a two year Project for the Use of Ethanol to promote the sustainable development in Central America, which is being driven by the Economic Commission for Latin America and the Caribbean, with the support of the Italian Government.
ACTION PLAN FOR THE INTRODUCTION OF ETHANOL IN CENTRAL AMERICA

OBJECTIVE:

To promote the use of ethanol with the aim of having an alternative fuel which may reduce the dependence on imported fossil fuels, promoting the activation of the agricultural and industrial sector and improve the environment.

INSTITUTIONAL FRAMEWORK

Local level:
   a) Inter-institutional Commission formed by the principal stakeholders
   b) The competent institution in each country

Regional level:
   a) Biofuels Group

ACTIONS

- Policy formulation with a view to launch a national programme on ethanol
- Elaboration of an implementation strategy
- Dialogue with the sugar sector
- Formulation of an integral Plan between Government and industry
- Presentation of this Plan to the oil industry
- Presentation of this Plan to other sectors (i.e. automotive, academic, transport sector and others)
- Approval of the Action Plan by Governments
- Implementation

STRATEGY

- Establish mandatory blending percentage per country
- Create an appropriate legal framework
- Implementation phases
- Technical specifications for the ethanol
- Quality control along the production and commercialization chains
- Ensure supply
- Define a price policy for ethanol
- Formulate a campaign to inform the society about ethanol use
- Design a Plan to receive and manage users complaints
- Design a parallel plan to monitor the first phase of implementation
- Revise and control storage and transport infrastructure
- Design logistics of ethanol
- Discuss the role of ethanol commerce within the Regional Free Trade Agreement

In March 2006, following a proposal from the Inter-American Development Bank, the Ministers of Energy and Mines of Central America created a Biofuel Group per country under the umbrella of the Regional Biofuel Group. It is composed of the Biofuel Groups from the SICA countries (Belice, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama), as well as Dominican Republic, Mexico and Colombia.
Apart from these initiatives directly addressed at biofuels, in 2003, Guatemala passed Decree 52-03, creating a Law of Incentives to Promote the Development of Renewable Energy Projects. This Law revoked Decree 20-86 which created the Law for the Promotion of Development of Renewable Energy Projects in 1986. The new Law declares of national interest the rational use and development of renewable energies, including biomass and establishes a set of economic incentives to promote their use (applicable for a period of ten years from the date the project starts being commercially operative).

The Law provides for the following main incentives:

- VAT exemption and excise tax exemption on imports of equipment and machinery used in renewable energy projects
- Personal income tax exemption
- Corporate tax exemption

The Ministry of Energy and Mines regulated this Law with the Regulation 211 of 2005 which contains a set of definitions, administrative requirements and procedures for projects to be qualified and conditions for producers to get the Emission Reduction Certificate.

### 2.6 Honduras

The Government of Honduras has declared of national interest the research, production and use of biofuels in the country to increase employment, energy self-sufficiency and contribute to reducing pollution levels at the global and local level.

In September 2006, a proposed law on the Production and Use of Biofuels was submitted to the National Congress to create an appropriate legal framework that would encourage biofuels production and use in Honduras. This proposed law would establish the Technical Unit of Biofuels (UTB) under the Secretary of Industry and Commerce (SIC) as the authority responsible for the implementation of the Law. Among its main tasks, the proposed law provides for the UTB to establish the percentage of biofuel to be blended with conventional fuel as well as the technical specifications of biofuels. At the same time, the UTB is mandated to formulate appropriate policies to produce biofuels by using domestic feedstock. In this sense, biofuel producers are committed to purchase at least 51% of the feedstock to domestic farmers so as to enjoy the tax exemptions created by the Law.

These incentives consist of:

- Exemption to the purchase of any equipment related to the production of biofuels (for a period of 15 years)
- Tax corporate exemption (for a period of 10 years)
- Other excise tax exemptions (i.e. import of machinery and equipment)

The proposed law also provides that the Secretary of Agriculture and Livestock (SAG) is competent in regards with the research and sustainable production of biofuel feedstock and shall establish incentive mechanisms so as to promote the agricultural sector related to biofuels. In addition, it sets out legal enforcement mechanisms including criminal and civil sanctions if biofuels are produced without meeting the technical and administrative requirements. Once this
Law is passed and comes into force, it will repeal Decree N. 79-88 establishing the 1988 Law on Alcohol Fuel.

2.7 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 was forced to reduce and then lift fuel price subsidies in 2005, allowing the biofuel industry to become economically viable. Since then, the Government as enacted several laws to encourage the use of biofuels, including Presidential Regulation No. 5/2006 on the National Energy Policy and Presidential Instruction No. 1/2006, which came into effect on 25 January 2006.

Presidential Regulation No. 5/2006 states that the purpose of the National Energy Policy is to ensure a secure domestic energy supply and to encourage sustainable development. Article 2 of the Regulation establishes a target for biofuels to contribute to at least 5% of the total national energy consumption in 2025. The Minister of Energy and Mineral Resources issued the National Energy Management Blueprint (DESDM, 2005) in support of the National Energy Policy. Under Article 4, a blueprint establishes national strategies for the management and use of energy resources including the roadmap of each alternative energy sector. It provides a target for biodiesel use of 1.5 million kilo litres in 2010 (10% of national transportation diesel oil consumption) and targets an increase of up to 6.4 kilo liter in 2025 (20% of national transportation diesel oil consumption or 5% of total national diesel oil).

Presidential Instruction No. 1/2006 on the Provision and Use of Biofuels as Alternative Energy establishes the framework for coordination between the Ministries to promote the supply and use biofuels. Under Article 1, The Coordinating Ministry for Economic Affairs oversees preparation efforts for the implementation and utilization of bio-fuel as alternative energy. Article 2 provides for the Ministry of Energy and Mineral Resources to formulate and implement policies on the use of bio-fuels, including incentives, tariffs and trading systems as well as standards and procedures for quality testing. Article 3 and 4 establish that the Ministry of Agriculture shall encourage the provision and development of bio-fuel plants including the seeds and seedling, whereas the Ministry of Forestry shall provide licenses regulating the use of unproductive lands for biofuel plantations.

The Ministry of Industry regulates the manufacture biofuel processing equipment and encourages domestic biofuel production. The Ministry of Trade regulates the supply and distribution of biofuels and biofuel processing equipment. The Ministry of Communication encourages the increased use of as alternative energy in the transportation sector. The Ministry of Research and Technology develops technologies, provides recommendations on cultivation methods, raw material distribution and biofuel use. The Ministry of Cooperatives and Small to Medium Enterprises provides assistance and encourage the cooperatives and small to medium enterprises to take active participation in the development of bio-fuel and production and trading of the bio-fuel as alternative energy. The Ministry of State-Owned Enterprises encourages state-owned enterprises to develop biofuels as alternative energy. The Ministry of Home Affairs coordinates with regional and local authorities for the provision of lands for biofuel production. The Finance Ministry reviews the finance rules and regulations in order to provide the incentive and fiscal incentives for the provision of raw materials and utilization of bio-fuel as alternative energy. The
Ministry of Environmental Affairs regulates the use of biofuels as the environmentally friendly alternative energy.

To protect biodiesel consumers and producers as well as to support the development of biodiesel industries, Indonesia established a biodiesel standard SNI 04-7182-2006 which was approved by the National Standardization Agency (BSN) under decree No. 73/KEP/BSN/2006 on 22 February 2006. The biodiesel standard was formulated by technical committee of new and renewable energy upon recommendations from a Consensus Forum XXIV on 6-7 December 2005 held in Jakarta with private and public sector stakeholders. SNI 04-7182-2006 partially adopted the existing European and US standard (ASTM D6751 and EN 14214:2002).

Adjustments to the biodiesel standard have been made on the basis on several local considerations. For example, the plant oil resources in Indonesia have wider range of carbon components compared to the plant oils from Europe and the United States. In addition, some Indonesian plant oil resources have unique fatty acids that when coverted into biodiesel fuel may have negative effects on diesel engines. As biodiesel plants may be located dispersedly and operated by medium and large enterprises, the regulation is based on the assumption that all enterprises should be able to afford the testing methods, which are designed for local conditions while maintaining quality assurances.

On 17 March 2006, the Oil and Gas Directorate General of Department on Energy and Mineral Resources issued decree No. 3675K/24/DJM/2006 regarding the quality and specification of diesel oil type Solar 48 and Solar 51. This decree regulates the use of FAME (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. This SNI Bio-diesel was formulated by taking into account the similar standard already applied in overseas countries such as ASTM D6751 in United States of America and EN 14214:2002 for European Union.

2.8 Mexico

In 2006, Mexico passed the Law on the Promotion and Development of Bioenergy. The purpose of the Law is to encourage the use and production of bioenergy as a key element to achieve national energy self-sufficiency and sustainable development, provide support for the agricultural sector and contribute to pollution reduction. The Preamble refers to the goal of improving the air quality of metropolitan areas in Mexico. It also refers to Art. 2 of the Law of Sustainable Rural Development of 2001.

The Law on the Promotion and Development of Bioenergy mandates a minimum 10% ethanol blended with gasoline requirement for use in the major urban areas of the country, with maize and sugarcane as the primary domestic feedstocks used for biofuel production. However, it does not specify the criteria for determining which urban areas are subject to the biofuels blend requirement. The Law provides that the in cooperation with the competent regional governments, the Secretary of Agriculture, Livestock, Sustainable Development, Fisheries and Food is responsible for:

- promoting R&D activities related to bioenergy;
- advising farmers on any issues related to the production of bioenergy feedstocks;
• determining the date of entry into force of mandatory use of biofuel blendings in the main urban areas of the country;
•formulating and implementing economic incentive programmes to build biofuel plants.

The Intersecretarial Commission for Sustainable Rural Development, created by the Art. 10 of the Law of Sustainable Rural Development of 2001, is responsible for programs at the national, regional and local level to manage maize and sugarcane plantations for ethanol production as well as oilseeds for biodiesel production. This Commission serves as an advisory body for the development of national strategies to encourage the promotion of bioenergy and as the central coordinating body for policies, programmes, projects and instruments that support, regulate and monitor the bioenergy industry.

The Law on the Promotion and Development of Bioenergy provides for the Government to prioritize projects in particularly depressed areas and respect indigenous community rights. The Secretary of Treasury shall include a budget item to finance the implementation of programme deriving from the National Policy of Renewable Energy, which shall be monitored by the Intersecretarial Commission for Sustainable Rural Development.

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 set by the General Law of Ecologic Balance and Environment Protection, as well as to other environmental laws of the country. Article ____ states that all activities related to the production, distribution and use of bioenergy must comply with the regulations from the Secretary of Environment and Natural Resources in coordination with the Secretary of Health. Art. 4 of the Law establishes that other related laws are also applicable to areas not specifically regulated by this Law, including the International Treaties ratified by Mexico.

Article ___ of the Law provides a list of offenses and establishes that in addition to criminal and civil sanctions, actions violating the terms of the Law may lead to the removal of any public financial support for qualified projects.

2.9 Nicaragua

In July 2006, Nicaragua passed Decree N. 42-2006 which declares the production of biofuels and bioenergy to be of national interest. The Decree is aimed at reducing dependence on imported oil, to encourage reforestation efforts and improve the environment. 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.

The Decree mandates the Ministry of Agriculture and Forest to formulate a National Programme on Biofuels and Bioenergy to promote investments and support of private initiatives in the sector. The Programme must be designed to incorporate small, medium and large producers through a model of strategic alliances. At the same time, it promotes a model that encourages small family farms with the aim of reducing poverty in rural areas.

The Decree expressly establishes a mandate to plant 200,000 hectares of African palm in specific areas on the Atlantic coast of the country as well as maize and other ethanol feedstock on the Pacific coast. The National Programme on Biofuels and Bioenergy is mandated to establish favourable conditions for this purpose.
The Decree also mandates the development of an appropriate legal framework under a draft Proposal of Law on Biofuels to be sent to the National Parliament. A special committee coordinated by the Ministry of Agriculture and Forest will be constituted for this purpose. However, this Proposal of Law has not been formulated yet.

In January 2007, the Government established 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.

2.10 Paraguay

Paraguay drafted a Proposal for a National Programme on Biodiesel and in October 2005 passed Law N. 2748 on the Promotion of Biofuels, followed by the Decree N. 7.412 of 2006 which regulates the Law N. 2.748 of 2005 on the Promotion of Biofuels. With this Law, Paraguay declares of national interest the industrial production of biofuels and its feedstock as well as its use within the national territory.

Law N.2748 aims at contributing 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.

To contribute to the development of the domestic agricultural sector, Art. 12 of the Law N.2748 establishes a mandate for producers of purchasing feedstock to produce biofuel from national farmers. Only under situations of scarce domestic supply declared by the Ministry of Agriculture and Livestock, may biofuels be imported. In addition, Article 13 requires distributors to sell biofuels at petrol stations.

Under Law no. 2748, the Ministry of Agriculture (MAG) will implement biofuel initiatives by promoting programs to ensure domestic production of biofuel feedstocks. The MAG is also responsible for issuing certificates of origin of feedstocks purchased by biofuel producers. The Ministry of Industry and Commerce (MIC) is responsible for determining the technical specifications for biofuels as well as for qualifying projects related to the production of biofuels. In this sense, the Law describes a set of administrative measures to be followed by any person or company interested in starting producing biofuels in the country. The MIC may determine the specific blending percentage of biofuels and is also responsible for establishing the administrative and economic sanctions as indicated by the Law in the event of non-compliance.

Article 15 of Law no. 2748 provides that any person or company eligible to carry out biofuel related activities will benefit from biofuel production incentives provided under Law no. 60/90 and Law no. 2421/04.

In April 2006, the Government passed the Decree N. 7.412 of 2006 which regulated the Law no 2748 of 2005 on the Promotion of Biofuels. The Decree declares the MIC as the Implementing Authority regarding biofuels in the country and mentions the technical specifications for biofuels by referring to the Paraguayan Rule PNA 16 018 05 for biodiesel specifications (approved by this same Decree 7.412 of 2006) and the Paraguayan Rule PNA 025 on ethanol specifications (approved by the Decree 20.842/80 in its last edition). Among the set of detailed administrative steps for the development of biofuels production areas, the Decree requires an Environmental Impact Assessment contrary to the provisions of Law 2748.
2.11 Peru

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. It aims to establish the necessary institutions and measures to promote public and private partnerships so as to ensure biodiversity, sustainable use of natural resources, environmental protection and promote sustainable growth in urban and rural communities. This will contribute to improve the standard of life, particularly for the most vulnerable segment of the population.

The National Environment Agenda for 2005-2007, launched in 2004, is now a compulsory instrument that establishes national priorities and informs citizens of 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. CONAM (National Environment Board) and MINEM (Ministry of Energy and Mines) are the institutions responsible for the development and implementation of these incentives.

CONAM was established in 1994 under Law No. 26410 as the governing authority responsible for the national environment policy. Among the several national environment policy programmes, it has formulated a Biofuel Programme supported by the following legislative tools:

- Law No. 28054 published on August 2003 establishing a framework to promote the biofuel market;
- Regulation No. 013-2005 EM published in March 2005 regulating the provisions included in Law No. 28054.

Law No. 28054 on the Promotion of the Biofuel Market aims to encourage the development of the biofuel market in Peru on the basis of free market rules and access to economic activities. It also mandates the creation of a Technical Committee on biofuels, which makes proposals and recommendations to achieve the goals pursued by the Law No. 28054. Among its duties, this Technical Committee is responsible for:

- designing a chronology and defining the percentages of ethanol and biodiesel to be blended with gasoline and diesel, respectively;
- proposing a programme to make consumers and public institutions aware of the advantages of biofuels.

The Law mandated the Government to formulate and implement general policies for the promotion of the biofuel market. Among these general policies:

- Develop and strengthen a technological and scientific framework for biofuels research
- Foster the creation of highly qualified professionals specialized in biofuels
- Promote the transfer of technology
- Promote the private stakeholders investments in the production of biofuels
- Stimulate biofuel marketing and consumption
- Promote the production of biofuels in rainforests according to the Programme of Alternative Sustainable Development
Several Programmes in Peru aim at stimulating biofuels within the country, such as the Programme of Alternative Crops (DEVIDA), as the governing authority on the Fight Against Drugs in Perú who, together with the Regional Governments and PROINVERSION, will design Projects within the framework of the Programme on Alternative Development which is aimed at promoting private investments and International Cooperation funds to obtain biofuels. The authorities will ensure the purchase of biofuels produced within programmes linked to the Fight Against Drugs.

However, the main instrument is the PROBIOCOM (Programme for the Promotion of the Use of Biofuels), whose objectives are the stimulation of investments in biofuel production and marketing and the expansion of the economic, social and environmental advantages of its use.

2.13 Philippines

Philippines has passed in January 2007 the Republic Act N. 9360, known as the “Biofuels Act of 2006”. This law promotes the use of alternative transport fuels consistent with the East Asian Energy Security Declaration ratified by the 16 Heads of State of the Association of Southeast Asian Nations (ASEAN) and its dialogue partners during the 12 ASEAN Summit recently celebrated in the Philippine city of Cebu.

The Cebu Declaration on East Asian Energy Security recognized that while fossil fuels will continue to be largely used for a considerable period of time, greater energy security could be attained by among others, promoting energy efficiency, conservation and cleaner technologies, increasing capacity and reducing costs of alternative energy resources, encouraging use of biofuels and promoting free trade and harmonizing standards on biofuels.

The Biofuels Act of 2006 seeks to reduce the dependence on imported fuels with due regard to the protection of public health and environment, consistent with the country’s sustainable development and mandates the use of biofuels as a measure to develop indigenous renewable and sustainably-sourced clean energy sources without any detriment to the natural ecosystem, biodiversity and food reserves of the country.

The Act requires the use of fuels with diluted biofuels to reduce the country’s dependence on fossil imported fuels and promote cleaner air. It mandates at least 5% of locally sourced bioethanol be blended with gasoline within two years from the effectivity of the Act. The National Biofuel Board may recommend a minimum 10% blend (within four years from the effectivity of the Law). Regarding biodiesel use, the Act mandates at least 1% biodiesel be blended with conventional diesel within three months of the Act entering into force.

In both cases, the National Biofuel Board created by under the Act may recommend the Department of Energy to mandate a minimum 10% bioethanol blend within four years from the effectivity of the Law and a minimum 2% biodiesel blend within two years from the effectivity of this Law.

The National Biofuel Board is responsible for reviewing and monitoring the implementation of the Act as well as for the evaluation of the Philippine Biofuel Programme to prepared by the Department of Energy (DOE). This Board shall also monitor the supply and use of biofuels and recommend appropriate measures in case of shortage of feedstock supply.
The Act explicitly states that only in the event of supply shortage of locally produced bioethanol, will oil companies be allowed to import bioethanol from foreign countries. The law also aims at ensuring that domestic supply of raw material used to produce biofuels in Philippines will be enough to meet demand. The Sugar Regulatory Administration (SRA) will be tasked to monitor and regulate imports and exports of this goods as well as the stability in the prices of sugar.

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

- zero-rated specific tax on the biofuel component of blended gasoline and diesel;
- VAT exemption;
- water effluents from the production of biofuels are exempt from wastewater charges;
- government financial institutions are committed to provide financial services and benefits to local companies engaged in any activities related to the manufacture of biofuels (i.e. production, storage, handling, blending).

In addition to these provisions and in conjunction with the preparation of implementing rules and regulations, the Act mandates that the Department of Energy (DOE) will ensure that the preparation of a National Biofuels Programme is consistent with the Philippine Energy Plan and takes into consideration the existing DOE’s existing Biofuels Programme. Among other areas, the National Biofuels Programme will include the establishment of support facilities to ensure security of feedstock supply and investments in supply infrastructure, directions 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.

### 2.14 Uruguay

In October 2002 Uruguay passed Law 17.567 which declared of national interest the production of alternative renewable fuels obtained from domestic feedstock of animal or vegetal origin. In July 2006 the Government submitted a Proposal of Law on Biofuels 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 Proposal of Law is currently under supervision by the Uruguayan Congress. It provides for the following elements:

- promoting the production of biofuels from domestic feedstock;
- establishing a 5% mandatory blending of ethanol for 2015 while authorizing a 2% biodiesel blending between 2006 and 2008, which shall become mandatory between 2009 and 2011 and will increase up to a 5% from 2012 (these provisions shall be modified by the Government in case of quantitative or qualitative restrictions);
- defining criteria and means to promote biofuel production as well as economic incentives.

According to this Proposal of Law, the activities of production and export of biofuels are not subject to Law No. 8764 of 1931 which created the ANCAP (National Management of Fuels, Alcohol and Portland) and established a national monopoly on fuels. However, the ANCAP is designated as the implementing authority of the Proposal of Law. Biofuel producers are required to obtain, among others an environmental authorization from the Ministry of Housing, Planning and Environment as well as an authorization from the Ministry of Industry, Energy and Mines. Exports of biofuels are restricted and only allowed upon special permission to be issued by
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a Government Decree. A registry of biofuel producers is created under the Ministry of Industry, Energy and Mines. Registered Biofuel producers will benefit from the following incentives:

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

According to the Proposal of Law, the Government shall declare totally or partially tax exempt the production and use of biofuels and explicitly declares that domestic biodiesel shall be exempt of the tax levy on fuels for a period of five years starting on the date of entry into force of the Law.

The Proposal of Law also incorporates in its Art. 22 and 23 amendments to the Law No. 17598 of 2002, which created the URSEA (Regulatory Unit for Energy and Water Services). With these amendments, biofuel-related activities fall under the scope of the Law 17598 of 2002. Technical specifications for biodiesel was approved in December 2005 under the denomination UNIT 1100.

3. NATIONAL POLICIES

3.1 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 (CNE), the National Environment Commission (CONAMA), the Electricity and Fuels Agency (SEC) 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 including under the heading No.V.2.

The working group submitted a Proposal of Law on Biofuels at the end of 2006 which is to be passed in the following months. With this Law, the Government seeks to promote domestic production of biofuels with a double purpose, on one side reducing imported oil dependency and on the other hand, contributing to the activation of the agricultural sector in Chile. In order to achieve these goals, the Government has planned to incorporate a 5% biofuel blending in the gasoline and diesel sold and provides for incentives that include tax exemptions on biofuels.

Regarding technical specifications, an ad hoc group has been created with the purpose of defining national quality standards for ethanol and biodiesel to be sold in Chile. Together with these initiatives, the country has also expressed its commitment to promote biofuels under its National Agricultural and Forest Policy, which is structured in Five Strategic Points. Strategic Point No. 3 aims at contributing to the search of energy solutions from renewable sources and defines as one of its Priority Actions for 2007 the proposal of a National Bioenergy Policy from the perspective of an Agricultural Policy.

3.2 El Salvador

El Salvador has a National Policy for the Promotion of Renewable Energies and Alternative Fuels. Under this Policy, there is a programme to promote the use of alternative fuels in the
transport sector which aims at reducing in a 10% the use of gasoline and a 15% in the use of diesel by incorporating ethanol and biodiesel respectively. This measure seeks to improve vehicles emissions, while creating a potential export source and reducing oil imports.

To implement the Policy, the Government is currently working on developing the legal framework and several studies and pilot projects are being carried out in the biofuel field, specially focused in biodiesel domestic production. A Draft Proposal of Law on Incentives and Promotion of Biodiesel and the biodiesel technical specification is under review.

3.3 Panama

In Panama, a National Policy to Promote the Production and Use of Biofuels is contained within a draft Proposal of Law. This Policy aims at contributing to improve environment and human health as well as increasing energy self-sufficiency and dynamizing agriculture sector and employment. Under Policy, Panama declares of national interest the domestic production of alternative renewable fuels produced from domestic feedstock of vegetal or animal origin as substitute to conventional fuels.

Under this draft Proposal The Ministry of Commerce and Industry is designated as implementing authority of the Policy through the National Administration of Hydrocarbons and Alternative Fuels. To achieve these goals, the Implementing Authority is mandated among others, to:

- determine the percentage of biofuels to be blended with conventional fuels;
- recommend and promote the enactment of appropriate legal instruments which serve to facilitate the incorporation of biofuels in the country;
- recommend, in coordination with the Ministry of Agriculture and Farming and the Ministry of Economy and Treasure, the necessary tax legislation and economic incentives to stimulate the production of biofuels within the country;
- in coordination with the General Administration of Standards and Technology, the implementing authority shall determine the technical specifications for biofuels;
- establish reference prices for biofuels;
- promote local and foreign investments aimed at the production, commercialization 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 divulgate the use of biofuels among users and public institutions;
- issue licences to the production, blending, transport, commercialization and import of biofuels.

The Ministry of Agriculture and Farming shall develop supporting mechanisms to stimulate the production of any kind of feedstock of vegetal or animal origin which may be used as raw material for biofuels. The Ministry of Commerce and Industry, in coordination with the National Agency of Fire Brigade among other institutions, shall establish the safety conditions for an adequate handling of biofuels.

Regarding incentive measures, the Proposal of Law establishes that companies investing in the production, commercialization 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 and in this sense the Proposal of Law adds a paragraph to the art. 1057-G of the Tax Code establishing a tax for ethanol from 2008 which shall be suspended only in case of scarcity in the supplying of ethanol.

The Proposal of Law refers to the Decree No. 36 of 2003 in regards to designated areas for the commercial use of biofuels blended with conventional fuels. This Proposal of Law explicitly excludes from its application scope the production, distribution and commercialization of alcohol used in liquor beverages, medicinal products and any other industrial products as well as aviation fuels. The Proposal of Law also has enforcement provisions through the imposition of fines that may vary according to the nature of the violation.

3.4 Thailand

The Thai Government is pursuing the production and use of biofuels to meet the country’s growing demand energy and reducing the reliance on imported oil. To achieve this goal, several ethanol and biodiesel programmes are being formulated through the National Biofuels Committee (NBC) 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 Clean Development Mechanism (CDM) of the Kyoto Protocol.

In 2004, Thailand initiated a Programme on Gasohol which has set a target of increase production and use to obtain a 10% 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 government plans both as a source to satisfy domestic demand as well as to encourage Thailand to become a major exporter of ethanol to other Asian markets. The government is also promoting its production and use within the country through a strategic plan which seeks to incorporate a 10% biodiesel blending requirement by 2012.

3.5 Namibia

Although Namibia has yet to enact official legislation on biofuels in Namibia, the country’s government has shown its interest in the production of biodiesel obtained from domestic planted Jatropha trees, mainly in Kavango and Caprivi. Policy measures to promote this industry are currently in development.

In March 2006, the Government appointed the Interim Bio-Energy Committee (IBEC) to monitor the development of a Namibian Bio-Oil Energy Roadmap whose intention was to “draw up a Roadmap for all decisions, institutional arrangements, international agreements, legislation, etc. to create a conducive environment in Namibia to grow and process bio-oil”.

In August 2006, the Government issued a National Bio-Oil Energy Roadmap drafted with the participation of public and private stakeholders. This Roadmap constitutes a policy document which seeks to ‘integrate development imperatives, existing policy, government, NGO’s, aid-agency and private sector resources to mobilize technology and take advantage of market

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opportunities” may be considered as a “strategy to achieve the desired contribution of bio-oil energy industry to Namibia’s Vision 2030”.

Under the Roadmap, the country encourages the planting of Jatropha crops in certain areas of the country with the goal of promoting economic development. Jatropha crops are being planted for the following purposes:

- blending into commercial diesel, probably up to a 5%;
- decentralized on-farm/village-level blending into agricultural diesel;
- exports to specialised niche markets;
- running some small power stations in Namibia, which would attract carbon credits under the CDM for developing countries under the Kyoto Protocol;
- substitution for paraffin;
- soap making.

The Roadmap also outlines four intermediate objectives:

- establish bilateral and multilateral agreements and arrangements required to promote exchange of scientific know-how, germplasm and technology as well as facilitate trade in relevant goods and services, including carbon credits and other environmental goods and services;
- establish a policy environment and 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;
- ensure proper and effective management of process, product and market risks;
- ensure achievement of optimum primary production of bio-oil energy raw materials supplying technology pathways, through appropriate choice of production systems, supported by best and scientific know-how.

In regards to the institutional framework, a National Bio-Oil Energy Committee (NABEC), chaired by the Namibian Agronomic Board, and comprising the six main concerned Ministries, among them the Ministry of Agriculture, Water and Forestry, the Ministry of Environment and Tourism and the Ministry of Mines and Energy, and a wide variety of stakeholders from private sector organizations and entrepreneurs have been established.

The Roadmap also mandates Jatropha curcas and any other plant used as energy crop to be published in the official gazette under Section 2(a) of the Agronomic Industry Act of 1992. This provision establishes the in-principle agreement for the industry to pay levies (both producers and processors) to cover its administration costs, once sizable crops are harvested after 3 years of growth. It also establishes that appropriate regulations of liquid-fuel standards under the Petroleum Products Act 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, the Environmental Management Bill has to be passed by the Parliament. This Act will require the Minister of Environment and Tourism to publish Regulations in support of activities related to the implementation of the United Nations Convention on Climate Change and the Kyoto Protocol.
NAMIBIA’S KAVANGO BIOFUEL PROJECT

Nambia is currently providing incentives for investments in extensive outgrowing to encourage biodiesel production among farmers on communal land in Kavango by a Namibian registered company. The purpose of the project is to involve local communities in growing plantations of the tree Jatropha curcas, and establishing factories to produce bio-diesel and seed cake.

The project is scheduled to start in 2006 with the establishing five nurseries to grow over 200 million Jatropha seedlings from seed. Starting in 2008, a factory will be built to extract the oil from the seed, and another to process it into bio-diesel. It shall take 3 years to be fully operational. Uses for seed cake include animal feed, fertiliser, and potential exports to Germany for use as a growing medium. The bio-diesel can be consumed in Namibia and possibly neighbouring countries.

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. This requirement will be strictly audited and enforced to ensure compliance. 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 tracks of Jatropha plantations are not envisaged.

There are about 24,000 rural families in the Kavango Region. The project is expected to provide considerable economic benefits for local communities and the investors. Families who choose to become Jatropha farmers will be contracted to grow trees (Jatropha?) on land that was cleared prior to 1990. For the first six years the Company will subsidise the participating farmers with food and payments as compensation for the maize and mahangu that was previously grown. The farmers will contribute their land and labour, while all the capital costs will be met by the Company.

Most of the 24,000 rural families in Kavango are concentrated near the river. If participating families use an average of 10 hectares for Jatropha, then an estimated 8,000 to 13,000 families could participate in growing the trees. As not of the inhabitants have access to land that was cleared prior to 1990, 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.

The farmers are expected to benefit through:

- the initial monthly compensation for 6 six years while the trees are maturing;
- the sale of the seed they produce;
- tradable shareholding in the two 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;
- trees with a certain asset value;
- skills in farming and business.

The Kavango Jatropha Farmers Association was established to represent the interests of the farmers in each district for this industry.

3.6 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, the South African Government issued its "White Paper on Renewable Energy" which states the purpose of developing the infrastructure and institutional capacity needed to promote domestic biofuel market.

Under the White paper, the government declared its purpose of satisfying a 4% of the total national energy needs with renewable resources by 2013 and is working on the formulation of technical specifications for biofuels.

In order to successfully achieve this commitment, the government will focus on four strategic areas:

- Financial instruments
- Legal instruments
- Technology deployment
- 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.

In 1977, the government enacted a law which created a fuel tax deposit fund administered by the Central Energy Fund, whose funds are partially being used now to financially support ethanol projects.

4. SUMMARY OF LEGISLATIVE INITIATIVES IN SELECTED COUNTRIES

Many developing countries surveyed have been actively involved in legislating measures to promote biofuels based on legislative models from the three leading biofuels producers: Brazil, the European Union and the United States. In Latin America, Argentina, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Nicaragua, Paraguay, Peru and Uruguay have recently enacted legislation on biofuels while Chile and El Salvador are planning to do so an have drafted proposals of law which are expected to be passed in a near future. In Southeast Asia, Indonesia and Philippines have also recently enacted laws to regulate the production and use of biofuels.

In addition to legislation, most of the countries surveyed have national programmes to promote biofuels. The programmes may have been designed prior to the development of a specific law promoting biofuels, such as in Argentina or Peru. Other countries, such as Chile, El Salvador and Panama have established a national policy on biofuels but have not yet enacted accompanying legislation. In some others, such as in Nicaragua and Ecuador, the legislative initiative preceded the formulation of a national programme on biofuels and in many cases the law mandates the development of a programme and establishes the guidelines and its main points.

One of the key aspects of any legislation on biofuels is the creation of an institutional framework and designation of an authority responsible for implementation. As biofuels are regarded as substitutes to conventional transport fuels and part of the national energy matrix, biofuels usually
fall into 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 degree of integration of agricultural ministries as implementing authorities under biofuels legislation varies from one country to another. For example, in the Mexican and Nicaraguan legislation the ministries of agriculture are designed as implementing authority. In other countries, such as Colombia and Paraguay, the law determines that the ministry of agriculture shall participate in biofuel activities mainly by determining and promoting domestic crops to be used as biofuel feedstock. In some instances, the laws refer to national ministries of commerce and finance as implementing authorities for tax incentive provisions and any other economic matters related to biofuel production, use and trade. There are also references to the ministries of environment in a minority of the laws examined.

The degree of regulation and implementation under these laws also varies from one country to another. Some of them, like Ecuador, Uruguay or Nicaragua have passed laws or government decrees which essentially declare of national interest the production and use of biofuels in the country but do not enter into detail over the regulation of these activities. However, they generally provide for the designation of an implementing authority, the development and implementation of a legal framework and occasionally mandate the formulation of a national policy or programme on biofuels. Other countries, such as Argentina, Philippines, Paraguay or Peru have opted to enact laws which regulate in detail many aspects of biofuel production and use.

As a summary, most of the laws surveyed contain the following provisions:

- purpose of the law explaining the reasons why the country has decided to enact the law
- definitions on bioenergy and biofuels
- mandatory blending targets
- implementing authority
- tax incentives to the production of biofuels
- national programmes on bioenergy or biofuels
- administrative requirements for biofuel producers
- requirements for technical specifications of biofuels
- regime of sanctions in case of infringement of the provisions of the law

As a general conclusion, it may be noted that very few of the laws make reference to actions to address broader environmental or social goals. However, it appears as if at the project implementation level, these goals may be outlined further. For example, Namibia’s Kavango Biofuel Project provides clear reference to the international environmental requirements established under the Kyoto Protocol to qualify for carbon credits and provides for employment and other economic benefits to farmers the local level. Further study is needed on the broader national legal framework and implantation strategies in each country to determine the extent of implementation of a sustainable development approach to bioenergy.
REFERENCES


Deshpande, R.S. 2006. ‘Biofuels and the WTO: An emerging context’ *Asian Biotechnology and Development review* Vol. 8 no.2 Bangalore: Research and Information System for Developing Countries http://www.ris.org.in/article5_v8n2.pdf


ESMAP. 2005 *Potential for Biofuels for Transport in Developing Countries.* Report 312/05. Washington: World Bank


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APPENDIX I COUNTRY-SPECIFIC LEGISLATIVE CHARTS