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BASES OF THE HEMISPHERIC PROGRAM ON AGRO-ENERGY AND BIO-FUELS

San José, Costa Rica

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Executive Summary

The proposal being developed at IICA takes into consideration the mandates received from the IABA and the Executive Committee and the requests from the General Assembly of the OAS. At this stage, it is based on primary data from international and regional entities such as the International Energy Agency (IEA), the Organization for Economic Co-operation and Development (OECD), the Economic Commission for Latin America and the Caribbean (ECLAC), the Worldwatch Institute, FAO, governmental agencies, and others at the national, regional and international levels. Hence, the information provided in this document is the result of a thorough review of the literature, interviews with experts and internal consultations.

On the basis of same, IICA undertook an in-house evaluation of agro-energy as a viable option for renewable energy and proposed as the next stage the formulation of a strategic platform for the development of an agro-energy program in the hemisphere.

This initiative will address the technical, economic and social aspects of agro-energy and will include recommendations for the development of agro-energy and bio-fuels in the hemisphere.

IICA's aim is to contribute to discussions on the subject and compile strategic information which will allow decision makers to address one fundamental question:

- Are there technical possibilities within reach that would enable us to meet expected demand for agro-energy and bio-fuels in more reliable, constant, secure and less polluting ways?

The proposed Hemispheric Program has the following objectives:

- a. to create a platform for the dissemination of knowledge, information and experiences in agro-energy and bio-fuel production;
- b. to create a specialized forum for discussions on agro-energy and bio-fuels where countries' concerns can be openly analyzed and discussed;
- c. to facilitate horizontal technical cooperation between and among the member countries, helping them to better understand the complexities of the production of agro-energy and bio-fuels.

The main priority of the proposed strategy is to guide IICA in its efforts to help its member countries establish agro-energy programs aimed at developing bio-fuel industries to meet national energy needs; at modernizing and diversifying the agricultural sector to promote rural development; and increasing global economic competitiveness.

The proposed strategy focuses on the identification and consolidation of a number of complementary activities that take advantage of IICA's current capacity and its experience in agriculture and rural development, while taking its limitations into consideration.

The strategy is intended to help countries to strengthen linkages between the agriculture and energy sectors, and to increase opportunities for agro-energy in the hemisphere in an economically, socially and environmentally sustainable manner.

The proposed strategy is also intended to assist countries in the planning and development of their agro-energy sector by providing knowledge and information on emerging technologies, industry best practices and business opportunities in the agro-energy industry.

To hold annual hemispheric and regional conferences would be an ideal way to exchange new ideas and analyze strategies. The conferences would also be the proper vehicle to disseminate to the civil society the strategic importance and potential of agro-energy and bio-fuels.

The core of the IICA strategy is to assist the member countries in developing the institutional capacity required to support agro-energy entrepreneurial activities that will lead to sustainable livelihoods and a healthy environment, particularly for rural populations. Development of small- and medium-size bio-fuel enterprises provides an excellent opportunity for generating employment and revitalizing rural economies, as well as for improving the dissemination of technologies.

However, in order to ensure that IICA accomplishes its mission of developing a platform for horizontal technical cooperation on agro-energy and bio-fuels, the Institute must undertake institutional strengthening, by entering into cooperation agreements with other technical institutions/organizations and developing partnerships with national and international organizations, with a view to improving the capability to provide the information that would be needed to plan and implement the proposed hemispheric platform.

The first phase in building the proposed Hemispheric Program will consist of an assessment of the technical, social and economic aspects of agro-energy and bio-fuels in each of the member countries. The assessment will be based on country experiences in, and lessons learned from, the development and implementation of bio-fuel programs; assessment of the potential for bio-energy and bio-fuel production in IICA's member countries; and, review of national and international reports, particularly on sustainable development, energy, environment, and agriculture.

This first phase is already being implemented with the full participation of all IICA Offices and Regional Directorates.

CHAPTER 1: Introduction

At the Inter-American Board of Agriculture (IABA) and the Executive Committee meetings held in Guayaquil, Ecuador, and in Ribeirão Preto, Brazil, respectively, in 2005, the ministers and delegates of the Member States decided to promote, with cooperation from IICA, horizontal cooperation actions aimed at the development of the agro-energy sector in the Member countries.

Executive Committee Resolution 429 entrusted the General Directorate of the Institute with presenting a draft resolution on horizontal cooperation in the area of bio-fuels for the consideration of the Thirteenth Regular Meeting of the IABA, in Guayaquil.

Consequently, IABA Resolution 410, resolves:

1. To ask IICA to serve as a platform for hemispheric cooperation, with a view to drawing on the successful experiences in the area of agro-energy of countries in the region that produce alcohol from sugar cane and other bio-fuels;
2. To instruct the Director General, in consultation with the Member States:
 - a. to convene meetings to discuss the importance of agro-energy and bio-fuels and their potentially favorable impact on agricultural development and the economies of the Member States; and
 - b. to set up a task force comprising experts from the Member States appointed by the Ministers of Agriculture, IICA personnel and strategic partners, and task them with drawing up a proposed hemispheric program on bio-energy and bio-fuels, to be presented to the Executive Committee at its Twenty-sixth Regular Meeting.
3. To instruct the Director General to submit a proposal to the Executive Committee, at its Twenty-six Regular Meeting, on the resources required to support activities to be carried out under the aforementioned Program.

At the General Assembly of the Organization of American States, held in the Dominican Republic on June 6, 2006, the delegates of the Member States, recognizing IICA's previous efforts in the field of agro-energy, resolved to enhance cooperation between the OAS, IDB, IICA, and other international and regional agencies in support for the use of new and renewable energy resources.

OAS Resolution 2253, requested IICA and the other partners to:

- a. Implement renewable energy measures and energy efficiency projects that lower dependence on fossil fuels, while promoting the development and efficient use of local natural resources to produce fuels for electricity generation and transportation; and
- b. Promote increased provision of novel energy services to neglected communities, particularly rural and indigenous communities, as a means of promoting economic development, sustainable management of natural resources, and capacity to deliver community services, including education, health, and agricultural extension services.

Based on the mandates received from the IABA, the Executive Committee and the requests from the General Assembly of the OAS, IICA undertook an in-house evaluation of agro-energy as a viable option for renewable energy and developed a platform for horizontal cooperation on

agro-energy and bio-fuels in the hemisphere. This initiative addresses the technical, economic and social aspects of agro-energy and includes recommendations for the development of agro-energy and bio-fuels in the hemisphere.

Finally, during the 26th Ordinary Meeting of the Executive Committee, held on September 26, 2006, the Committee, through the Resolution 446, decided to approve the bases of the Hemispheric Program on Agro-energy and Bio-fuels.

Additionally, Resolution 446 resolves:

- a. To instruct the Director general to form a working group, to include representatives from Member States, and to charge it with presenting recommendations for implementing the Hemispheric Program on Agro-energy and Bio-fuels;
- b. To instruct the Director General to present to the Executive Committee at its next Regular Meeting, based on the recommendations of the working group, a proposal for funding the program from 2008-2010 with resources from the Program-Budget and from the collection of quota arrearages, as well as a plan for implementing the Program;
- c. To urge the member States to make voluntary contributions of financial resources and qualified human resources as support for implementation of the Program.

CHAPTER 2: The Rationale

1. A platform for horizontal technical cooperation

Agro-energy is based on the conversion of biomass produced by the interactions of vegetation, solar radiation, water and nutrients, into energy. The high price of oil in the late 1970s (first global crisis) and the 1980s (second global crisis) spurred interest in the production of energy from the dedicated cultivation of crops such as sugarcane, for transportation, and fast-growing forestry species, for heat.

IICA, with a mandate to promote rural development, recognizes that rising energy prices pose a threat to rural development by limiting access to services needed to improve household incomes. Secondly, such prices take increasing amounts of capital out of rural areas. Agro-energy has the potential to minimize and, at times, reverse this situation, and, in the process, address a number of social and environmental issues. As a first step in addressing this situation, the Institute has developed this initial strategy document on building a platform for horizontal technical cooperation in agro-energy and bio-fuels for the hemisphere.

The rationale for advocating that greater attention be attached to agro-energy is that this activity builds the economic resilience of countries at a time when the forecast is for continued high and rising oil prices. In addition, it represents a potentially sustainable source of employment for workers with limited skills. The main objective of this proposal is to guide IICA in its efforts to help the Member States to establish agro-energy initiatives aimed at the development of bio-fuels with which to meet national energy needs, while at the same time helping to modernize and diversify the agricultural and rural sectors in the hemisphere.

The Hemispheric Program on Agro-energy and Bio-fuels falls within one of IICA's thematic areas, and is aimed at helping to reposition agriculture and rural life by developing sustainable and viable rural initiatives.

In December 2006, the State of Florida, the Sao Paulo Federation of Industries and the Inter-American Development Bank created the Inter-American Ethanol Commission aimed at coordinating efforts in the production and consumption of ethanol in the hemisphere. The agreement also aimed at exploring opportunities for joint activities that would promote increased production and consumption of ethanol in order to provide economic, environmental, developmental and security benefits to the Americas as a whole. In this opportunity, IICA was formally invited to be one of the co-founders and partner of this initiative. This decision was basically based on the approved Program on Agroenergy and Bio-fuels of the Institute, recently approved by the Executive Committee.

2. IICA as a strategic organization in the area of horizontal technical cooperation on agro-energy and bio-fuels in the hemisphere

IICA intends to assist the member countries in drafting integrated agro-energy policies, as a framework for meeting growing energy needs in an economically, socially and environmentally sustainable manner. This will lead to the identification of capacities needed for planning and implementing agro-energy and bio-fuel policies.

IICA will also foster joint initiatives with the member countries aimed at facilitating dialogue with private-sector representatives, other stakeholders and civil society on the potential of agro-energy, with a view to providing scientifically sound and politically unbiased analyses and conclusions, which are needed for strategic decisions related to policy issues.

IICA's aim is to provide the countries with comprehensive information for the development and installation of bio-fuel industries, including information on the development of emerging technologies, industry best practices and business opportunities in the agro-energy industry.

To successfully implement agro-energy initiatives in the hemisphere, IICA must be proactive and increase its capacity in the area of agro-energy management. Given the limited institutional capacity that exists in the agro-energy sector in the majority of the countries across the region, the development of such capacity will require the provision of systematic long-term technical assistance. This support function is critical and one that IICA is uniquely positioned to carry out.

The role proposed for IICA would focus on capacity building and support – providing information, facilitating exchanges of experience and expertise, and fostering technology transfer. In countries where there are no activities focused on the production of energy by the agricultural sector, IICA's role would be to increase awareness of and foster public education campaigns on the importance of agro-energy and bio-fuels for their societies.

Initiatives aimed at educating consumers about the benefits of agro-energy and bio-fuel industries are intended to help them make wise energy choices. The public education and awareness-raising initiatives proposed will educate key public officials and the general public about bio-fuels, and will also build national coalitions that will form the nuclei of support groups that will promote bio-fuel production and use nationally. Additionally, an annual hemispheric conference will serve as a forum for the exchange of new ideas and the analysis of strategies, and for agricultural, environmental and energy specialists and other stakeholders within the hemisphere to meet one another.

In addition, IICA will be more effective in achieving its goals by forming partnerships with other national, regional and international organizations. By joining forces with other rural development organizations and stakeholders, IICA can provide standardized, high-quality data for decision making related to rural development resources management.

In conclusion, the present document contains background information on the proposed IICA agro-energy platform, how it fits into the Institute's established programs and how it will enable the Institute to become one of the leading strategic Institution on agro-energy in the region. It provides background on the IICA initiative and the rationale that:

- a. helps explain why agro-energy is considered to be a sustainable option for contributing to rural development and energy security;
- b. provides up-to-date information on the current status of agro-energy development in the hemisphere, for stakeholders in the countries that are interested in exploring the potential;
- c. identifies challenges and opportunities for agro-energy development in the hemisphere, especially in those countries that have sugarcane and oilseeds as their major agricultural commodities, or countries with sufficient arable land; and
- d. recommends some actions for the development of agro-energy industries in the hemisphere.

CHAPTER 3: IICA's strategy to serve as a platform for horizontal technical cooperation on agro-energy and bio-fuel

At the meeting of the Executive Committee, held in Brazil, in 2005, the government of that country took the initiative of presenting the Brazilian experience in this field, and offered to cooperate with other countries in the region interested in developing their agro-energy sector, which was well-received by the IICA member countries present at the meeting.

Agriculture has been an important economic alternative in helping countries to overcome the burden of increased oil prices. However, the advantages of using agriculture to generate alternative sources of energy go beyond the economic benefits. The production of agro-energy also contributes to creating jobs and reducing rural poverty, as well as protecting the environment from pollution caused by the use of gasoline and diesel.

At IICA, in response to the request from the Member States and taking into account the projections made by several international and national entities, we are focusing our future agro-energy and bio-fuels initiative on addressing, among other issues, the following:

- a. agro-energy as a feasible alternative for reducing the hemisphere's dependence on fossil fuels;
- b. the technical potential of agro-energy and bio-fuels;
- c. the new technologies under development;
- d. the time likely to transpire before they will be available in sufficient volume to enter the market on a commercial scale; and,
- e. environmental concerns.

IICA's aim is to contribute to discussions on the subject and compile strategic information which will allow decision makers to address one fundamental question:

- Are there technical possibilities within reach that would enable us to meet expected demand for agro-energy and bio-fuels in more reliable, constant, secure and less polluting ways?

In assessing the prospects for new technologies, it is important to have a clear understanding of the strong competitive edge traditional fossil fuels still have in the marketplace. Their current abundance and affordability, and most importantly, the sheer scale of the investments made in them over several generations, make an easy move away from them hard to envisage and, to some extent, unrealistic.

Therefore, there are some expectations regarding the use of agro-energy and bio-fuels as a full replacement to the fossil fuels which may not be realistic.

1. Objectives

The proposed Program has the following objectives:

- a. to create a platform for the dissemination of knowledge, information and experiences in agro-energy and bio-fuel production;
- b. to create a specialized forum for discussions on agro-energy and bio-fuels where countries' concerns can be openly analyzed and discussed;
- c. to facilitate horizontal technical cooperation between and among the member countries, helping them to better understand the complexities of the production of agro-energy and bio-fuels.

The main priority of the proposed strategy is to guide IICA in its efforts to help its member countries establish agro-energy programs aimed at developing bio-fuel industries to meet national energy needs; at modernizing and diversifying the agricultural sector to promote rural development; and increasing global economic competitiveness.

The proposed strategy focuses on the identification and consolidation of a number of complementary activities that take advantage of IICA's current capacity and its experience in agriculture and rural development, while taking its limitations into consideration. The strategy includes a number of actions aimed at supporting the development of bio-fuel industries throughout the hemisphere, particularly in the countries that produce sugarcane and oilseed crops.

Core elements of the strategy that would lead to the establishment of a successful and sustainable platform on agro-energy and bio-fuels include:

- a. To promote agro-energy as an economically viable source of energy for producing liquid fuels and power;
- b. To build up IICA's capability to support agro-energy entrepreneurial activities that will lead to sustainable livelihoods and a healthy environment; and,
- c. To build IICA's institutional capacity to accomplish its mission

The core of the IICA strategy is to assist the member countries in developing the institutional capacity required to support agro-energy entrepreneurial activities that will lead to sustainable livelihoods and a healthy environment, particularly for rural populations. Development of small-

and medium-size bio-fuel enterprises provides an excellent opportunity for generating employment and revitalizing rural economies, as well as for improving the dissemination of technologies.

However, in order to ensure that IICA accomplishes its mission of developing a platform for horizontal technical cooperation on agro-energy and bio-fuels, the Institute must undertake institutional strengthening, by entering into cooperation agreements with other technical institutions/organizations, hiring professionals in agro-energy planning and policy, and developing partnerships with national and international organizations, with a view to improving the capability to provide the information that would be needed to plan and implement the proposed hemispheric platform.

2. Priorities

Priority 1: Promote agro-energy as an economically viable source of energy

IICA believes that agro-energy and bio-fuels are alternatives that deserve serious consideration because of their many socioeconomic and environmental benefits. The development of a bio-fuel industry in countries in which feedstock production is comparable to energy demand will make a significant contribution to the developmental needs of the population. To replace imported fossil fuels with locally produced bio-fuels would channel cash back into the rural economy, benefiting agricultural workers. Increased income generation opportunities would be provided at all stages of bio-fuel production, from feedstock production and transportation to plant operation.

Priority 2: Build the sustainability of IICA to support governmental and entrepreneurial agro-energy activities that lead to sustainable livelihoods and a healthy environment

IICA will need to ensure that it has the institutional capacity to sustain and support governmental and entrepreneurial agro-energy and bio-fuels activities that lead to sustainable livelihoods and a healthy environment, particularly for rural populations. The approach to institutional capacity building would be through direct strengthening and through partnerships with regional and international organizations and institutions that would provide the range of professional expertise needed to support development of entrepreneurs in bio-fuels production and use. The development of small- and medium- size liquid and solid bio-fuel enterprises would provide an excellent opportunity for generating employment and revitalizing rural economies, and would improve the dissemination of technologies.

Joint initiatives (IICA – Member States) intended to increase the awareness of small- and medium-scale bio-fuel enterprises would involve training for existing and prospective entrepreneurs in how to start and manage business activities related to biomass-based energy conversion and supply services; and interfacing with research and development institutions engaged in biomass technology development, to provide ready access to relevant technological information.

Priority 3: Strengthen IICA's organizational capacity to accomplish its mission

IICA has recently undertaken some important institutional transformations focused on strengthening its capabilities for formulating strategies and policies for agriculture and rural life,

modernizing agricultural markets, promoting market access, developing institutional frameworks for technological innovation, implementing joint activities to eradicate pests and diseases, overhauling agricultural education, disseminating information and knowledge for agricultural and rural management, and addressing emerging issues.

There are four key categories of functional support that IICA can provide: support for the development of policy and legal frameworks; capacity building; promotion of investments; and promotion of research, development and demonstration programs in the countries and regions.

3. Goals

Goal 1: Conduct national and regional consultations on the potential of agro-energy and bio-fuels

In order to implement an agro-energy policy that is inclusive and encourages its adoption by stakeholders, there is an urgent need to consult with them and promote dialogue, with a view to fostering a greater understanding of the issues surrounding the production and use of bio-fuels, and its implications for the lives of the rural population. The purpose of the proposed national consultations is to stimulate discussion among the public and private sectors, representatives of civil society and decision makers on the potential benefits of the development of agro-energy and bio-fuel industries.

A Steering Committee (one in each of IICA's regions) consisting of representatives of the public sector or partner institutions, and stakeholders with vested interests such as the agribusiness sector, will be set up to oversee the organization of the consultations and the meeting and draft a technical report on the potential for bio-fuel production at the national level and the position of stakeholders on same.

Goal 2: Assist member countries in prioritizing initiatives for the development of emerging technologies, best industry practices and business opportunities in the agro-energy sector

International experiences with bio-fuels show that the financial return to farmers from bio-fuel feedstock depends on oil prices. However, when oil prices reach or exceed US\$50 per barrel, bio-fuel production is economically viable in a number of cases. By adopting certain policies, governments can create the enabling environment that provides the climate for development of bio-fuels, which generate a number of economic opportunities at the national and local levels.

According to Binger (2006), the conventional energy sector has developed the concept of energy service companies (ESCOS). These companies are usually small in nature and provide energy saving services. These ESCOS provide a business model for developing the small- and medium-size private companies that would be needed to provide the technical and management capabilities required for the sustainable production and use of bio-fuels. ESCOS in countries such as Jamaica, St. Lucia and Barbados now provide a range of energy services, including access to technology, energy planning, energy audits, and financing.

Success in promoting the establishment of national bio-fuel programs by national governments would be a prerequisite for development of the private sectors.

IICA's suggestions for the development of emerging technologies, best industry practices and business opportunities in the agro-energy sector are based on:

- a. Assisting member countries in establishing a favorable policy framework for the development of agro-energy. IICA will establish partnerships through its network of national offices with a number of key stakeholders in the agricultural and energy sectors, environmental groups and financial institutions. The enabling environment will be characterized by appropriate policies and a commitment to capacity building; and
- b. Assisting member countries in promoting national agro-energy and bio-fuel production as a viable economic activity with multiple benefits for those countries whose size and proven agricultural capacity are such that they can sustain production. As part of this effort, IICA will seek partners for annual media events to highlight research findings and successful activities and to recognize, through awards, exceptional achievements. Possibilities include annual agricultural shows and festivals.

Goal 3: Assist member countries in building their capacity to formulate, analyze and implement agro-energy policies

Based on past experience, the development of successful bio-fuel industries requires energy, agricultural, and environment policies in which each barrel of oil imported for land transportation or electricity generation is viewed as a loss of potential income for farmers.

IICA will work with the member countries to enhance their capabilities to formulate, analyze and implement agro-energy policies, by providing them with the basic analysis tools on the functional characteristics and performances of bio-fuels industries, the estimated level of demand for bio-fuel infrastructure and services, and information on how supply and demand influence each other. IICA will share with the countries experiences in the implementation of bio-fuel industries in the USA, Brazil, Colombia and other bio-fuel producing countries. These experiences should provide guidance, stimulate thinking, and generate new contacts from around the world on:

- a. **Formulation and Implementation of Bio-fuel Policies** – by providing tools for designing and implementing the processes necessary for bio-fuel policy formulation and implementation.
- b. **Guidance for Policy Makers** – by providing the rationale for investing in bio-fuel industries and presenting guiding principles for bio-fuel industry policies, various policy options, elements of the bio-fuel industry and gender-sensitive development policies.
- c. **Advocating for Bio-fuels Industries** – by helping countries advocate the development of a bio-fuel industry, including steps in organizing campaigns and information on developing, implementing, and evaluating a successful public education and advocacy strategy.

Goal 4: Knowledge Sharing between and among the countries, through information systems and through annual hemispheric and regional agro-energy conferences

Most of the countries have the potential to substantially reduce fuel imports given their current production capacity and the availability of raw materials for the production of bio-fuels.

Annual conferences are an ideal forum for exchanging new ideas, analyzing strategies or simply meeting other agriculture and energy professionals and stakeholders in the hemisphere. As a result, these conferences will be an excellent opportunity to acquire specific and general agro-energy information and to learn more about available resources.

The Conferences are also intended to promote and explain IICA's agro-energy strategy, and offer an ideal opportunity for:

- a. Education - informative sessions on agro-energy programs, agro-energy resources and topics of general interest;
- b. Networking - participants can meet other stakeholders in the region to exchange experiences and ideas;
- c. Community involvement - participation from all levels of the agro-energy sector, especially grassroots stakeholders and farmers; and
- d. Dissemination of information - to ensure that dialogue and decisions are based on current knowledge.

Goal 5: To encourage public awareness and education initiatives, at country level

The proposed joint IICA-Member countries public awareness and education initiative will focus on the economic challenges facing the countries: increasingly more expensive liquid petroleum fuels, the problems arising from the decline of the agricultural sector, and the growing threat posed by global climate change, which requires the adoption of measures intended to reduce its vulnerability.

The public awareness and education initiative will focus on promoting agro-energy as a source of energy for the sustainable development of the hemisphere, and on the pros and cons of agro-energy vs. continued dependence on fossil fuels. Citizen participation is an important element in the establishment and development of a successful agro-energy strategy. To involve citizens in the development and implementation of such a strategy helps them understand how the strategy will benefit them as individuals and the communities they live in. It encourages citizens to provide input and increases public confidence in and support for the strategy.

4. Methodology

The first phase in building a hemispheric platform for horizontal technical cooperation will consist of an assessment of the technical, social and economic aspects of agro-energy and bio-fuels in each of the member countries.

The assessment will be based on the following information:

- a. country experiences in, and lessons learned from, the development and implementation of bio-fuel programs;
- b. assessment of the potential for bio-energy and bio-fuel production in IICA's member countries;
- c. review of national and international reports, particularly on sustainable development, energy, environment, and agriculture;
- d. discussions and consultations with experienced professionals in Brazil, the USA, Canada and other global players; and,
- e. to complete the information generated from desk reviews and country studies.

5. Lines of action

The strategy is based on the following main lines of action:

- a) **Technology and knowledge transfer**, encouraging member countries to share their knowledge and technologies and promoting horizontal technical cooperation and the sustainable use of bio-fuels. Brazil has accumulated a wealth of experience that will prove valuable for countries developing new bio-fuel programs. As other countries develop expertise in cultivating new crops and utilizing new technologies for converting these into fuels, they can expedite both the displacement of petroleum and general economic development by sharing their knowledge;
- b) **Training and capacity building**, promoting and implementing, together with the member countries, training and capacity building programs related to agro-energy and bio-fuel production;
- c) **Support for the member countries in the development of their agro-energy sector**, encouraging them to further develop their agricultural sector, making agro-energy production one priority in their national policies. These initiatives would be national and regional in scope and focus on increasing capacity building in the countries and the efficiency and productivity of traditional and non-traditional sources of bio-fuels; and,
- d) **Adherence to environmental policies**, ensuring that agro-energy programs will be compatible with local and regional environmental policies and in harmony with the Clean Development Mechanism of the Kyoto Protocol.

6. Funding of the strategy

Two fundamental aspects should be considered aimed at fully implementing this proposed Program.

- a. a basic budget that will allow IICA to initiate development of the proposed platform; and
- b. an extended budget that will allow countries and regions to develop their own programs, using external resources provided by the member countries and funding agencies.

Table 1 shows the basic budget required to develop the strategy, which is estimated at US\$ 230,000 per annum, over a four-year period.

As presented, IICA's role would focus more on capacity building and support, providing information, facilitating exchanges of experience and expertise, and fostering technology transfer. In countries where there are no activities focused on the production of energy by the agricultural sector, IICA's role would be to increase awareness of, demonstrate and foster public education campaigns on the importance of agro-energy and bio-fuels for their societies.

Table 1: Estimated Basic Budget

ITEM	2008	2009	2010	Total
Human resources in support of the Program	\$ 50.000	\$ 50.000	\$ 50.000	\$ 150.000
Institutional support to member countries (5): norms, regulatory frameworks (consultants)	\$ 50.000	\$ 50.000	\$ 50.000	\$ 150.000
Meetings of the hemispheric Task Force (2 per year)	\$ 15.000	\$ 15.000	\$ 15.000	\$ 45.000
Nacional workshops (5)	\$ 30.000	\$ 30.000	\$ 30.000	\$ 90.000
Regional workshops (3)	\$ 20.000	\$ 20.000	\$ 20.000	\$ 60.000
Seminario Internacional	\$ 20.000	\$ 20.000	\$ 20.000	\$ 60.000
Publicaciones: norms, manual for preparing regulatory frameworks	\$ 10.000	\$ 10.000	\$ 10.000	\$ 30.000
Travels	\$ 20.000	\$ 20.000	\$ 20.000	\$ 60.000
Other operacional costs	\$ 15.000	\$ 15.000	\$ 15.000	\$ 45.000
ESTIMATED TOTAL BUDGET	\$ 230.000	\$ 230.000	\$ 230.000	\$ 690.000

Table 2 shows the extended budget required to implement the full strategy at the national and regional levels, which is estimated at approximately US\$ 555,000 per annum.

Table 2: Estimated Extended Budget

ITEM	2008	2009	2010	Total
Regional Specialists (3)	\$ 270,000	\$ 270,000	\$ 270,000	\$ 810,000
Regional Agro-energy Seminars (3)	\$ 75,000	\$ 75,000	\$ 75,000	\$ 225,000
Consultancies and publications	\$ 50,000	\$ 50,000	\$ 50,000	\$ 150,000
Travel	\$ 60,000	\$ 60,000	\$ 60,000	\$ 180,000
Other operating expenses	\$ 100,000	\$ 100,000	\$ 100,000	\$ 300,000
ESTIMATED TOTAL	\$ 555,000	\$ 555,000	\$ 555,000	\$ 1,665,000

Table 3 shows the total budget required to implement the full strategy at the national, regional and hemispheric levels, which is estimated at approximately US\$ 785,000 per annum, over a three-year period. The total budget for the three-year period is estimated at US\$ 2,355,000.

Table 3: Estimated Total Budget

ITEM	2008	2009	2010	Total
Basic budget	\$ 230,000	\$ 230,000	\$ 230,000	\$ 690,000
Extended budget	\$ 555,000	\$ 555,000	\$ 555,000	\$ 1,665,000
ESTIMATED TOTAL	\$ 785,000	\$ 785,000	\$ 785,000	\$ 2,355,000

Member countries are invited to assess the importance of this initiative and help IICA to fully finance this platform for horizontal technical cooperation on agro-energy and bio-fuels.

CHAPTER 4: Actions proposed by IICA for 2007-2010

For 2007, IICA is implementing the following actions:

- a. A landscaping exercise at the country level to gather baseline information on the following:
 - ongoing national strategies to address the changes in the agricultural sector;
 - land resources previously allocated to the production of crops that could potentially be used as raw material in producing bio-fuels;
 - land resources being environmentally degraded as a result of current uses and which have the potential to produce raw material for bio-fuels;
 - land resources that are currently underutilized for agricultural purposes and which could be used to produce raw material for the production of bio-fuels;
 - availability of water, and future demand and supply options;
 - waste management practices;
 - strategies to address the increasing cost of oil imports, and its impact on economic growth;
 - existing energy policies, pricing regime for fuels, and energy tariff structures;
 - existing agricultural, industrial and financial market policies and incentives; and
 - priority environmental and social issues, and sustainable development strategies, at country level.

This exercise is already being implemented between IICA Headquarters and its national Offices and it is expected that it will provide valuable information which the Institute and member countries can use to identify agro-energy priority actions and activities, including agro-energy industries, which are best suited in the national context.

- b. to create hemispheric and regional working groups, comprising national experts selected by the member countries, to conceptualize, discuss, propose and approve regional policies in support of agro-energy development;

For 2008 and onwards, IICA is suggesting the following additional actions:

- a. to assess and categorize ongoing national and regional initiatives related to agricultural diversification, renewable energy development, energy efficiency improvements, mitigation of and adaptation to climate change, and development of energy resources. This exercise will help IICA map out activities and identify where there is potential for technical cooperation in developing agro-energy and bio-fuel initiatives.
- b. As a consequence of the proposed categorization of national and regional activities, to engage in dialogue with national and regional institutions working on aspects of sustainable development, in order to determine potential synergies between their goals and the proposed agro-energy and bio-fuels production. In addition, to establish strategic partnerships with national, regional and international organizations related to the subject of agro-energy and bio-fuels such as the Global Environmental Facility (GEF) focused on helping the region to overcome barriers and or threats to sustainable development.
- c. to engage in dialogue with the following potential stakeholders: producers, universities, research centres, technical service providers and funding sources, using the hemispheric working group proposed to be established. This will be critical to the establishment and growth of national and regional bio-fuel programs.
- d. to promote and hold hemispheric and regional fora, seminars and workshops to discuss, at the highest technical levels, alternatives for developing the agro-energy and bio-fuels sectors, at the regional and country levels;
- e. to develop a state-of-the art information sharing and knowledge management system comprising updated global and regional information on agro-energy and bio-fuels to facilitate the access to fundamental information and help countries to develop their agro-energy and bio-fuel sectors; and,
- f. to identify and provide access to hemispheric and regional investment sources and mechanisms that are currently supporting agricultural and energy-related projects.

CHAPTER 5: Challenges and requirements for building a platform for horizontal cooperation on agro-energy and bio-fuels in the hemisphere

There are several main challenges to the development of an agro-energy industry that can produce bio-fuels and thus replace imported fuel in the region. They are: the development of relationships among the public sector, the private sector and civil society; the promotion of a sense of ownership at the national and local levels; the production of raw material and its effective transportation; the formulation and implementation of supportive policies and legislation; and improvements in the decision making process.

Private-sector participation will be critical in all areas, but especially in transportation fuel production and distribution. Several government ministries and departments will have to work closely to address the multiple aspects of bio-fuel production and use, including those responsible for lands and agriculture, energy, finance, transportation, industries, power, petroleum, environment and water.

Intersectoral policies that create linkages between the energy sector and those that impact upon energy production are necessary and will prove quite challenging in light of prevailing vested interests. Effective working relationships will be required between these entities to ensure that the land resources be made available and their use monitored. Significant production of bio-fuels would probably impact upon government revenues if no corresponding tariffs are placed on locally produced bio-fuels.

The development of industries based on natural resources requires supportive policies and effective legal frameworks to drive the process. Bio-fuel industries need supportive energy, agricultural, and environmental policies that view each barrel of oil imported for land transportation or electricity generation as a loss of income to farmers. The energy policy should support, as a first priority, maximum energy from bio-fuels in the transportation, electricity generation and domestic sectors. Private-sector participation in electricity generation will require policies intended to promote power purchase agreements between the utilities and the producers of biomass-based power.

For some of our Member States that are just beginning to develop bio-fuel industries such as Jamaica, Nicaragua, Costa Rica and Argentina, many decisions will have to be made, including the type, scale, and destination (i.e. for domestic consumption, for export, or both) of production. Policies which take into account economic conditions and resource endowments will need to be designed, and given the rapid pace of bio-fuel development, sooner better than later.

As highlighted in the Worldwatch Institute report (2006), integrated planning is necessary at the national level so that short-term or sectoral interests do not take precedence over strategic national priorities. For instance, market incentives at the microeconomic level might encourage bio-fuel exports. However, when other factors such as domestic energy and security needs, trade balance, food security and land-use concerns are taken into consideration, exports might not make sense at that point in time. In some of our nations where displacing a modest amount of petroleum could make a significant difference, production for domestic use should take precedence over exportation.

Some of IICA's Member States, particularly some Caribbean countries, which depend on imports for both food and crude oil, must determine to what extent increased domestic bio-fuel production can replace imported oil – and to what degree this would drive land and other resources from food production. In the longer run, advanced bio-fuels may reduce the competition between bio-fuel and food production, but this may require substantial investments and know-how.

To what extent individual countries in LAC will eventually move forward in bio-fuel production remains largely unclear at this stage.

Clearly, the answers to these concerns will differ from country to country because conditions in each are unique. Resource constraints need to be considered, not only in terms of agricultural

land, but also in terms of government incentives and policies, availability of labor and capital, and environmental and climatic conditions, to mention only a few.

Strengthening the markets, speeding-up the transition to next generation technologies, protecting the resource base, facilitating sustainable international bio-fuel trade and providing equal distribution of benefits among farmers, agribusiness entrepreneurs, governments and the like, are essential for accelerating the sustainable development of the agro-energy and bio-fuel sectors.

Assuming that policies will not change, higher crude oil prices will further foster bio-fuel production. The extent to which bio-fuel volumes will increase depends heavily on still unknown parameters.

Lastly, we strongly suggest the further development of this IICA initiative, and urge all member countries interested in the agro-energy and bio-fuel sectors to collaborate in the continuation of this priority action.

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