

# INTER-AMERICAN DEVELOPMENT BANK

## Japan Special Fund (JSF) Project Profile

### I. Basic project data

<b>Beneficiary Country</b>	Guyana		
<b>Project name:</b>	Expanding Bioenergy Opportunities in Guyana		
<b>Project number:</b>	GY-T1041		
<b>Project team:</b>	Christiaan Gischler (INE/ENE) Team Leader; Margaret Walsh (INE/ENE); Peter Stevenson (SCF); Rosina De Souza (LEG/SGO), Chris Persaud (TCP/CGY) and Liliana Lopez (INE/ENE), under the supervision of Leandro Alves (INE/ENE).		
<b>Executing agency:</b>	Ministry of Agriculture of Guyana in coordination with the Energy Division (INE/ENE) of the Inter-American Development Bank		
<b>Beneficiaries:</b>	Institute of Applied Science and Technology (IAST), National Agricultural Research Institute (NARI) and Ministry of Agriculture		
<b>Financing plan:</b>	IDB –Japanese Special Fund (JSF):	US\$	675,500
	IDB – SECCI:	US\$	250,000
	Local Counterpart:	US\$	175,000
	Local Counterpart (Private Companies):	US\$	187,500
	Total:	US\$	1,288,000
<b>Execution period:</b>	36 Months		
<b>Disbursement period:</b>	42 Months		

### II. Background

- 2.1 The Sustainable Energy and Climate Change Initiative (SECCI) launched by the Bank in March 2007 and the initiative of the Government of Guyana (GoG) to prepare an Agroenergy policy for the country are clear examples of the commitment in the Latin American and Caribbean region to develop sustainable energy sources. These actions are aligned with the global commitment to reduce the levels of green house gases and local pollution.
- 2.2 The European Union (EU) will reduce its preferential price of sugar to the Asian Caribbean Pacific (ACP) countries by 36 percent over a three-year period starting in 2007. This decision will produce an economic impact in the Caribbean countries that are currently dependant on sugar production, especially in Guyana, where the sugar industry represents over 9 percent of its Gross Domestic Product (GDP). To confront

that situation, several Caribbean countries have prepared strategic action plans, under the auspices of the EU, on which the transformation and/or modernization of the sugar industry should provide more productive and alternative uses of the resources (labor, land and capital) that are currently employed on sugar industry.

- 2.3 Among those alternatives, bioethanol production from sugar cane appears to have good perspectives. Bioethanol is both a well-known alternative source to fossil fuel energy and a natural and environmentally friendly substitute for Methyl Tertiary Butyl Ether (MTBE), a gasoline enhancer. Many countries in the world, including Caribbean countries and the US, have already begun to encourage the replacement of MTBE with a blend of gasoline and ethanol. Furthermore, ethanol and sugar production can result in marketable byproducts. Examples of these byproducts include cogeneration with bagasse and molasses for the rum industry and, in the case of biodiesel, the replacement of diesel for power generation and the associated benefits of import substitution.
- 2.4 The recent announcement of a target of 20 percent reduction of gasoline usage over the next 20 years in the US and the advantages afforded Guyana through the Caribbean Basin Initiative (CBI), present Guyana with opportunities and challenges. Up to 7 percent of total US ethanol consumption can be imported under the CBI without import duties: this quota represents a potential export level for Caribbean countries of 340 million gallons per year. That allocation is expected to reach 525 million gallons by 2012, a threefold increase over the current level of Caribbean ethanol exports to the US.
- 2.5 Measures must be taken to lower the costs of sugar production as a condition for the development of a competitive, integrated agroenergy industry that produces biofuels and sells the surplus energy to the grid. Recent increases in ethanol and sugar prices in non-subsidized markets create possibilities for the sugar cane producing Caribbean countries, improvements in productivity still need to be made for long-run sustainability.
- 2.6 A competitive agroindustry sector gives rise to the possibility of increased financial returns on investments related to the sugar cane industry through the sale of carbon credits derived from the reductions on CO<sub>2</sub> emissions. These reductions can be obtained, directly or indirectly, through the use of bioethanol and biodiesel substituting for gasoline and diesel respectively, cogeneration with bagasse and methane abatement from biofuel wastewater treatment processes.
- 2.7 The main disadvantage of the Caribbean sugar cane industry is its low productivity and inefficiencies throughout the productive chain, resulting in relatively high overall production costs. From a cost perspective, the Caribbean as a region lags behind other more efficient regional competitors such as Brazil. Nevertheless, Guyana has a potential for biofuel production because of natural advantages such as its climate, level of precipitation, and availability of land without the need for deforestation or the substitution of other food crops. These competitive advantages of Guyana are recognized by the GoG and private sector biofuel developers, which have generated an unprecedented interest to invest in biofuel projects in Guyana. The capacity of the GoG to screen (technically, economically, socially, and environmentally) the large number of project proposals received is however inadequate. The GoG is therefore requesting the assistance of the Inter-American Development Bank, through the Japan Special Fund (JSF), to improve the capacity of the GoG to better respond to project proposals related to non-traditional energy sources.



### III. Program objective and description

- 3.1 This Technical Cooperation (TC) seeks to provide assistance that will permit the GoG to define a critical path in order to promote the development of this budding sector. The specific objectives are: (i) to improve its capacity to identify and evaluate viable investment opportunities in the bioenergy production chain; (ii) develop a financial vehicle to promote investment opportunities and develop a strategy to harness Guyana's potential for bioenergy production; (iii) increase capacity building and the transfer of technology so as to build a critical mass of bioenergy technicians, operators, and demonstration projects; and (iv) institutional strengthening to support an Agroenergy Policy for Guyana, support for small scale bioenergy demonstration projects and dissemination of results.
- 3.2 The conceptual linkages associated with this TC are high and include potential lending opportunities for the Bank in both the Structured Corporate Finance (SCF) Department as well as in the Infrastructure Department. From the SCF perspective, the improved capacity to identify and evaluate viable investment opportunities in the bioenergy production chain through a standardized methodology should result in the origination of investment opportunities for SCF and/or the Inter-American Investment Corporation. From the vantage point of the Infrastructure Department, the transfer of knowledge and technology may result in public sector infrastructure investment loans oriented towards improvements in the efficiency of the sugar production chain, including the associated logistics. The TC serves to engage the GoG in the definition of an investment strategy for the sector.
- 3.3 Achievement of these goals will provide the GoG with a platform from which to launch the industry and to support the development and financing of viable investment opportunities.
- 3.4 The activities to be financed are the following:
- 3.5 ***Component 1 – Development of methodology for identification of viable investment opportunities, knowledge transfer and preliminary identification of potential bioenergy projects.*** As previously noted, Guyana possesses comparative advantages within the Caribbean Region as related to the production of biofuels. These advantages have resulted in a surge of interest in the development of projects and the presentation to the GoG of numerous project proposals. These proposals must be analyzed from a technical, environmental, socio-economic, and financial perspective. This type of analysis requires a team of experienced individuals with diverse skill sets and areas of expertise as well as the implementation of a formal review process. It is proposed that funds from the technical assistance be used to: (i) support a standard methodology for project screening and evaluation, to train public sector individuals in the referenced methodology and technical areas, and to define the demand for public sector participation in the implementation of such projects. This subcomponent will also prepare Terms of Reference (TORs) and design basic structure to develop a bioenergy project-evaluating unit within in coordination with the Agroenergy Board of Guyana. (ii) Determine the requirements to upgrade technical, operative, and managerial skills in relation to bioenergy production (biofuels and cogeneration) in Guyana, and (iii) prepare a preliminary assessment of the identified project developers that would be eventually interested in investing in bioenergy projects in Guyana. This general objective of this component is to transfer technical expertise to public sector officials



thereby strengthening the institutional capacity and to develop a standard evaluation methodology for projects to facilitate the identification of feasible investment proposals.

- 3.6 ***Component 2 – Design of a financial vehicle or instrument to develop viable investment opportunities and pilot implement of a strategy to promote Guyana’s potential for bioenergy production.*** The GoG has expressed its interest in developing a formal mechanism to better screen and evaluate the bioenergy proposals that it receives and in providing financial incentives both to promote project preparation and the subsequent project implementation. Potential structures could include a matching fund facility, project development assistance, seed capital, amongst others. This component will finance the following activities: (i) a comparative analysis of proven financial structures to promote budding industries, the design of an instrument tailored to the profile of Guyana, the development of a management/organizational structure to accommodate this financial vehicle, and a quantification of the demand for such investment incentives; (ii) The design of a strategy to promote Guyana’s potential to produce bioenergy by private sector companies. The main goal will be to design a strategy that will be economically sustainable for the GoG. Therefore, the design will include the financial structure, eligible activities, project selection criteria, demand for financing, and assessment of development and commercial outcomes; (iii) Coordination and logistics to bring delegations of bioenergy investor and project developers to Guyana from countries such as Brazil, Colombia, Caribbean USA, Europe and Japan; (iv) This component using SECCI funds, following the procedure of SECCI grant financing to private sector entities, will finance at least 5 pre-investment studies such as pre-feasibility studies, feasibility studies and/or environmental impact assessments (EIA) from projects previously identified in Component 1. This activity will serve a pilot implementation strategy to harness the potential of Guyana’s private sector companies to produce bioenergy . The local counterparts for this component will be the benefiting private firms which will have to have a co-financing scheme of at least 75 percent of the grant obtained.
- 3.7 ***Component 3 – Capacity building and the transfer of technology: This component will finance capacity building and transfer of technology to upgrade technical, operative and managerial skills in relation to bioenergy production.*** Activity (ii) of Component 1 will assess the requirements for technical and managerial skills upgrade in relation to bioenergy production in Guyana. Based on those requirements, this component will fund the hiring of consultants to design and implement a bioenergy teaching program for technical, operative and managerial levels. The component would finance lectures, field visits, seminars, and theoretical and practical courses related to bioenergy production in Guyana. The beneficiaries of this initiative would include management and staff of the Ministry of Agriculture, University of Guyana, Institute of Applied Science and Technology (IAST), and National Agricultural Research Institution (NARI). The training envisioned through this component includes management, an introduction to appropriate technology and standards from both an academic and pragmatic perspective (“hands-on” training), logistics related to the production chain, and financial training related to assessment of investment opportunities.
- 3.8 ***Component 4 – Institutional strengthening to support the Agroenergy Policy of Guyana, support for small-scale bioenergy demonstration projects and dissemination of results.*** This component will provide institutional strengthening and support for the



preparation and execution of the Agroenergy Policy of Guyana (APG). The APG is a document that is being prepared by several entities of the GoG, however, there are several issues concerning the production chain of biofuels, such as alternatives for land use without promoting deforestation or competition with other crops suitable for human or animal food; efficient use of by-products; transportation and logistics; carbon finance, use of low carbon technologies and quantification of carbon emissions; control quality standards and labs; and social and environmental impacts among others. This component will finance: (i) consulting services in the areas mentioned before to prepare TORs, land use studies, legal studies, social and environmental assessments, economical and political assessments. The Project Manager of this TC will be hired as consultant to assist in the execution of this TC. The IDB will therefore provide an important added value in terms of identifying these critical issues that should be included in the APG; (ii) The GoG has sponsored some small-scale demonstration projects for biodiesel production, which have been useful to attract the attention of investors. However there are no demonstration projects for ethanol. Thirty percent of the GoG's counterpart (in cash) will be used to finance a small-scale ethanol demonstration facility. This component will hire consultant services to design and give technical assistance in the design, construction and start up of the demonstration plant. Additionally, the TC will support this activity by purchasing goods required by the facility such as fermentation tanks, distillation columns, and/or molecular sieves for ethanol dehydration; (iii) This component will also finance two works shops to disseminate the findings of this TC and/or organize events where projects developers and private investors can participate.

#### IV. Cost and financing

4.1 The following table shows the estimated costs of the technical cooperation:

Component		IDB-JSF	IDB-SECCI	Government of Guyana Local Counterpart	Private Companies Local Counterpart	Total
1	Development of methodology for identification of viable investment opportunities, knowledge transfer and preliminary identification of potential bioenergy Projects	60,000		2,500		62,500
2	Design of a financial vehicle or instrument to develop viable investment opportunities and pilot implement a strategy to promote Guyana's potential for bioenergy production	135,000	250,000	50,000	187,500	622,500
3	Capacity building and the transfer of technology	150,000		50,000		200,000
4	Institutional strengthening for the support agroenergy policy of Guyana, support for small scale bioenergy demonstration projects and dissemination of results	275,000	0	72,500		347,500
6	Other Costs	55,500				55,500
	Auditing	15,000	0		0	15,000
	Monitoring (National Consultant)	20,000	0		0	20,000
	Contingencies	20,000	0		0	20,000
		675,500	250,000	175,000	187,500	1,288,000
Grand Total		52.45%	19.41%	13.59%	14.55%	100%

In each activity honoraries, travel and perdiem costs are included.

## **V. Executing agency and execution structure**

- 5.1 The Ministry of Agriculture in Guyana is in charge of the developing the APG. The nature of the activities to be financed by this TC is within the realm of the Ministry of Agriculture, and therefore, this ministry will be the executing agency for the studies under this TC. The IAST will be the primary vehicle for implementation of the Project, the NARI, the University of Guyana and the Ministry of Agriculture itself will be the beneficiaries of this TC. The Energy Division (INE/ENE) and IDB Country Office in Guyana (CCB/CGY) will share the responsibility of preparing TORs, selecting consulting firms and approving have, respectively, the technical responsibility in the execution of the TC.
- 5.2 For the preparation and execution of the APG, the GoG has appointed a technical committee, the Guyana Agro-energy Board (GAB) conformed by representatives of MAG, Go Invest, Commission of Land and Survey, Head Presidential Secretariat, R&D Director of the Guyana Sugar Corporation (GUYSUCO), Head of Guyana Energy Agency (GEA), Head of IAST and the Ministry of Public Works. The GAB will be chaired by an Executive Director (ED) who will report to the Minister of Agriculture and the President of Guyana.
- 5.3 To be eligible to use the SECCI funds, project proposals from the private companies will have to be approved by the AEB or the evaluating unit created by Component 1, and will need the non-objection of the IDB. Additionally the private companies will have to provide a co-financing of at least 75 percent of the grant received. If there are no eligible project proposals during the executing of this TC, the funds will be returned to SECCI.

## **VI. Major issues**

- 6.1 This TC will identify projects that are environmentally sound, (i.e., project that do not foment deforestation or competition with land that is currently used for cultivation of food crops).
- 6.2 A critical component of this TC is capacity building of the Ministry of Agriculture with potential benefits to accrue to IAST and NARI. The need for capacity building implies a potential risk related to project execution. To mitigate this risk an important part of this TC will contribute to strengthen the GoG, and additionally a Project Manager will be hired to assist the ED and the GAB with the execution of this TC

## **VII. Action Plan**

- 7.1 The proposed chronogram of activities is presented in figure 1 (Execution Timetable).



**Figure 1: Execution Timetable**

Component		2008				2009				2010				Progress Report
#	Activity	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
1	Support a standard methodology for project screening and evaluation and desing of project-evaluating unit	X	X	X										Yes
1	Determine the requirements to upgrade technical, operative and managerial skills in relation to bioenergy production	X	X	X	X									Yes
1	Prepare a preliminary assessment of the identified project developers		X	X	X									Yes
2	Comparative analysis of proven financial structures to promote nascent industries	X	X	X										
2	Design of a strategy to promote Guyana's potential to produce bioenergy by private sector companies	X	X	X	X									Yes
2	Coordination and logistics to bring delegations of bioenergy investor and project developers to Guyana		X	X	X	X	X	X						Yes
2	5 pre-investment studies such as pre-feasibility studies, feasibility studies and/or environmental impact assessments		X	X	X	X	X							Yes
3	Capacity building and the transfer of technology		X	X	X	X	X	X	X					Yes
4	Consulting services to prepare TORs, land use studies, legal studies, social and environmental assessments, economical and political assessments		X	X	X	X								Yes
4	Consulting services to design and give technical assistance in the design, construction and start up of the demonstration plant and purchasing goods required by the facility such as fermentation tanks, distillation columns and/or molecular sieves for ethanol dehydration.		X	X	X	X	X	X	X	X	X	X		Yes
4	Two works shops to disseminate the findings of this TC and/or organize events where projects developers and private investors can participate.					X				X			X	

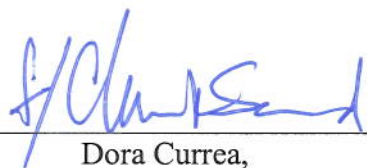
- 7.2 Upon approval of this profile, the Plan of Operation will be prepared, and could be submitted to the Board of Directors for approval during the first quarter of 2008.

### **VIII. Environmental and Social strategy**

- 8.1 This project has been qualified as a type "C" kind of project according to the Safeguard Screening Form toolkit.

- 8.2 There are no foreseeable issues or impacts (environmental or social) to the preparation of the Plan of Operation or the execution of this technical cooperation. In the contrary, this TC will help to identify the possible impacts from an environmental, social and economical perspective.
- 8.3 Each of the financed components will comply with the environmental and safeguards compliance (OP-703) of the Bank.
- 8.4 Considering its nature, this project is not expected to generate negative environmental or social impacts. Moreover, this initiative will help to detect the land that would be available for biofuel production without incurring into deforestation or affecting food security aspects.

Vo. Bo.



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