REQUEST FOR CEO ENDORSEMENT/APPROVAL

PROJECT TYPE: FULL-SIZED PROJECT
THE GEF TRUST FUND

Submission Date: 23 February 2009
Re-submission Date: 19 January 2010

PART I: PROJECT INFORMATION

GEFSEC PROJECT ID: 2778
GEF AGENCY PROJECT ID: 3515
COUNTRY (IES): Brazil
PROJECT TITLE: Sugarcane Renewable Electricity (SUCRE)
GEF AGENCY (IES):UNDP
OTHER EXECUTING PARTNER(S): Centro de Tecnologia Canavieira (CTC)
GEF FOCAL AREA(S): Climate Change
GEF-4 STRATEGIC PROGRAM(S): CC-SP3, CC-SP4

Expected Calendar	
Milestones	**Dates**
Work Program (for FSP)	June 08 ISWP
GEF Agency Approval	January 2010
Implementation Start	February 2010
Mid-term Review (if planned)	October 2012
Implementation Completion	February 2015

A. PROJECT FRAMEWORK

Project Objective: The objective of the project is to create the conditions for sugar mills to increase the export of electricity generated by sugar cane trash and bagasse to the grid. This will be achieved by promoting the use of trash (sugarcane tops and leaves) as additional fuel to bagasse in the sugar mills, increasing the capacity of sugar mills to export electricity to the grid by approximately 70% from the baseline scenario.

Project Components	Indicate whether Investment, TA, or STA**	Expected Outcomes	Expected Outputs	GEF Financing*		Co-financing*		Total ($)
				($)	%	($)	%	
1. Technical Aspects	TA	Technology for sugarcane trash collection and conversion to exported electricity at sugarcane mills is commercially launched in one mill.	▪ Trash collection and processing system ready for commercial implementation ▪ Methodology for trash collection in mills defined ▪ System installed and operation evaluated in mill #1 ▪ Trash collection and processing system optimized	1,578,850	6	23,378,395	94	24,957,245
2. Economic and finance aspects	TA	Financial viability of sugarcane trash collection and utilization for export of electricity from sugarcane mills is commercially demonstrated.	▪ Economic analysis of trash collection and processing system ▪ Economic evaluation of year round electricity generation for 4 mills ▪ Feasibility study for 4 mills ▪ Support power sales negotiation for mills with no experience with PPAs ▪ Supporting securing financing and the development of business plans for 4 mills	192,720	67	95,150	33	287,870
3. Environmental aspects	TA	Environmental integrity of the use of sugarcane biomass for energy is assured.	▪ Evaluation of ecological impacts of trash utilization, including soil impacts ▪ Support mills to obtain the environmental permits required to install and operate the trash system (with co-financing funds) ▪ Development of guidelines for environmentally acceptable implementation of trash utilization	799,080	48	854,060	52	1,653,140

			▪ Analysis of CDM and other carbon market potential for projects based on increased trash use ▪ Assessment of direct and indirect impacts of sugar cane expansion on land use.					
4. Project Replication	TA	Project replication occurs in two additional mills project replication strategy across the sugar cane sector is under implementation.	▪ Replication of trash utilization system in two mills ▪ Leveraging investment for trash utilization system in at least one additional mill ▪ Development of guidelines for general pre-feasibility assessments of trash utilization ▪ Preparation of specific feasibility studies in 6 additional mills ▪ Supporting future mill investors in development of trash collection and use systems for electricity generation.	4,403,350	11	37,245,900	89	41,649,250
5. Legal and regulatory aspects	TA	A legal, institutional, and regulatory framework is in place to promote the sustainable use of biomass for electricity generation and sales to the grid.	▪ Detailed study of regulatory barriers and opportunities related with the participation of sugar mills in the EE market ▪ Analytical support to stakeholders regarding institutional, regulatory, and legal aspects. ▪ Regulatory changes to facilitate trash-to-electricity discussed with relevant government entities.	246,000	61	155,395	39	401,395
Project Monitoring				276,000	82	60,000	18	336,000
Project Management				304,000	27	820,000	73	1,124,000
Total Project Costs				7,800,000		62,608,900		70,408,900

* List the $ by project components. The percentage is the share of GEF and Co-financing respectively to the total amount for the component.
** TA = Technical Assistance; STA = Scientific & technical analysis.

B. FINANCING PLAN SUMMARY FOR THE PROJECT ($)

	*Project Preparation**	*Project*	*Agency Fee*	*Total at CEO Endorsement*	*For the record: Total at PIF*
GEF	200,000	7,800,000	800,000	8,800,000	8,800,000
Co-financing	600,000	62,608,900		63,208,900	63,400,000
Total	**800,000**	**70,408,900**	**800,000**	**72,008,900**	**72,200,000**

***** Please include the previously approved PDFs and PPG, if any. Indicate the amount already approved as footnote here and if the GEF funding is from GEF-3. Provide the status of implementation and use of fund for the project preparation grant in Annex D.

C. SOURCES OF CONFIRMED CO-FINANCING, including co-financing for project preparation for both the PDFs and PPG.

Name of co-financier (source)	*Classification*	*Type*	*Amount ($)*	*%**
MCT/CENA	Nat'l Gov't	Grant	2,958,900	5
Mills 1, 2 & 3	Private Sector	Investment	55,800,000	88
Private Sector (PPG)	Private Sector	Grant	330,000	1
CTC (includes 270 from PPG)	NGO	In Kind	3,270,000	5
CTC	NGO	Grant	750,000	1
UNICA	NGO	In kind	100,000	>1
Total Co-financing			**63,208,900**	**100**

* Percentage of each co-financier's contribution at CEO endorsement to total co-financing.

D. PROJECT MANAGEMENT BUDGET/COST

Cost Items	*Total Estimated person weeks*	*GEF ($)*	*Other sources ($)*	*Project total ($)*
Local consultants*	734	280,000	820,000	1,100,000
International consultants*				
Office facilities, equipment, vehicles and communications**		18,000		18,000
Travel**		6,000		6,000
Total	**734**	**304,000**	**820,000**	**1,124,000**

* Provide detailed information regarding the consultants in Annex C.
** Provide detailed information and justification for these line items.

E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	*Estimated person weeks*	*GEF ($)*	*Other sources ($)*	*Project total ($)*
*Local consultants**	2,514 p/w	2,309,590	2,696,335	5,005,925
*International consultants**	66 p/w	270,000		270,000
Total	**2,580 p/w**	**2,579,590**	**2,696,335**	**5,275,925**

* Provide detailed information regarding the consultants in Annex C.

F. DESCRIBE THE BUDGETED M&E PLAN:

Project M&E will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office with support from UNDP/GEF. The Logical Framework Matrix in Annex A provides performance and impact indicators for project implementation along with their corresponding means of verification. These will form the basis on which the project's Monitoring and Evaluation system will be built.

Type of M&E activity	**Responsible Parties**	**Budget US$** *Excluding project team staff time*	**Time frame**
Inception Workshop	▪ Project Coordinator ▪ UNDP CO ▪ UNDP GEF	20,000	Within first two months of project start up
Inception Report	▪ Project Team ▪ UNDP CO		Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	▪ Project Coordinator will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members	To be finalized in Inception Phase and Workshop. Indicative cost: $75,000	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	▪ Oversight by Project GEF Technical Advisor and Project Coordinator ▪ Measurements by regional field officers and local IAs	To be determined as part of the Annual Work Plan's preparation. $70 ,000	Annually prior to APR/PIR and to the definition of annual work plans
Conduct METT	▪ PCT and consultant	None	Mid-term and end
APR and PIR	▪ Project Team ▪ UNDP-CO ▪ UNDP-GEF	$5,000	Annually
TPR and TPR report	▪ Government Counterparts ▪ UNDP CO ▪ Project team ▪ UNDP-GEF Reg. Coordinating Unit	$5,000	Every year, upon receipt of APR
Project Steering Committee Meetings	▪ Project Coordinator ▪ UNDP CO	$5,000	Following Project IW and subsequently at least once a year
Periodic status reports	▪ Project team	None	To be determined by Project team and UNDP CO
Technical reports	▪ Project team ▪ Hired consultants as needed	30,000	To be determined by Project Team and UNDP-CO
Mid-term External Evaluation	▪ Project team ▪ UNDP- CO ▪ UNDP-GEF Reg. Coordinating Unit ▪ External Consultants (i.e. evaluation team)	$35,000	At the mid-point of project implementation.
Final External Evaluation	▪ Project team, ▪ UNDP-CO ▪ UNDP-GEF Reg. Coordinating Unit ▪ External Consultants (i.e. eval.team)	$40,000	At the end of project implementation
Terminal Report	▪ Project team ▪ UNDP-CO ▪ External Consultant	5,000	At least one month before the end of the project
Lessons learned	▪ Project team ▪ UNDP-GEF Reg. Coordinating Unit	10,000	Yearly
Audit	▪ UNDP-CO ▪ Project team	US$25,000	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	▪ UNDP Country Office ▪ UNDP-GEF Reg. Coordinating Unit (as appropriate) ▪ Government representatives	US$11,000	Yearly
TOTAL INDICATIVE COST *Excluding project team staff time and UNDP staff and travel expenses*		US$336,000[1]	

[1] Of which $276,000 are GEF and $60,000 are from Co-Financing sources.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE THE PROJECT RATIONALE AND THE EXPECTED MEASURABLE GLOBAL ENVIRONMENTAL BENEFITS:

With an annual harvest of approximately 500 million tones and operation of over 300 mills, Brazil is the largest sugarcane producer in the world. Mills produce both ethanol and sugar, and sugarcane bagasse is utilized as an energy source. Today, all sugarcane mills and distilleries in Brazil are self sufficient in energy, however, most mills generate power sufficient only for their own needs during the harvesting season (6 to 7 months), operating at 22 bar boiler pressure and 300^{o}C steam temperature. Lately, privatization of the energy sector, changes in regulations and an increase in energy selling prices have induced several sugarcane mills to invest in high pressure boilers and high steam temperature (usually 65 bar/480^{o}C), making it possible for them to export considerable amount of energy to the grid. However, the electricity generation potential is much higher than current levels of exploitation, mainly due to the sub-optimal use of the available biomass resource for energy generation.

The objective of the project is to create the conditions for sugarcane mills to increase the export of electricity generated by sugar cane bagasse and trash (sugarcane tops and leaves) to the grid. The project will implement trash recovery and use systems to generate electricity in 3 sugarcane mills, leverage investment for the system in at least one more mill, and create conditions for investment in an additional 6 mills. Electric power will be generated in conventional boiler/steam-turbine systems of high pressure boilers (65 bar or above) with the use of sugarcane trash as a supplementary fuel to bagasse, making possible with this extra fuel to generate more electricity. The extra electricity can be generated during the harvesting season (6 to 7 months) or can be year round generation (season and off-season). The project specifically focuses on demonstrating that incorporating sugarcane trash as a source of fuel for electricity generation is technically and economically viable enterprise.

In addition to the technical aspects, the project will also promote the implementation of a market environment conducive to generation of electricity with bagasse and trash. This will include in-depth analysis and barrier removal with regards to the energy regulatory framework, energy pricing policies, and project financing conditions. Ultimately, the project will address all the components in the energy supply chain to promote the technical and economic viability of using sugar cane trash as an energy source. Particular emphasis will be placed on assessing the direct and indirect environmental impacts of the use of sugarcane trash.

The direct CO_2 emissions reduced by this project as a result of using trash recovery systems in 3 mills amount to 2.3 million tons of CO_2 equivalent over 15 years. The indirect benefits associated with replication in 7 mills amount to an additional 5.5 million tons of CO_2 equivalent. Given the size of the sugar cane sector in Brazil, the potential CO_2 reduction potential of this project over the medium term is estimated at approximately 30 million tons of CO_2 equivalent per year, making this project a highly strategic intervention for the GEF.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL PRIORITIES/PLANS:

The main factor motivating the implementation of the SUCRE project is the increasing demand for electricity in Brazil in the coming years. It is estimated that an additional installation of 39,057 MW will be needed by 2015 to meet growing demand. Given the diminishing capacity of hydropower to meet this demand and Brazil's lack of domestic fossil fuel sources, exploiting alternative domestic energy sources is a national priority.

Furthermore, the project intervenes in the sugarcane sector, which is a priority for the Brazilian economy. The use of sugarcane based ethanol as a substitute for gasoline has been promoted by the Government of Brazil over the past 30 years, from the Pro-Alcohol program initiated in 1975 to the present day. As a result, the price of Brazilian ethanol is competitive with gasoline, leading to massive domestic and international demand. This has been a main driver for the sector's growth, which has doubled its cane harvest in a 15 year period and will continue to grow.

Hence, the project addresses the national priority of meeting electricity demand with domestic resources by making efficient use of the biomass generated in a key segment of the Brazilian economy. This, in addition to the country's firm commitment to promote renewable energy resources and to reduce GHG emissions, ensures that the project is firmly embedded within the country's national priorities.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH GEF STRATEGIES AND STRATEGIC PROGRAMS:

The project is designed to promote increased sales of renewable energy to the grid by the sugarcane sector in Brazil, thus contributing to GEF Strategic Objective 4 (To Promote On-Grid Renewable Energy).
The project will create the appropriate market conditions to promote investment in generation of electricity with bagasse and trash and therefore complies with Strategic Program 3 (Promoting Market Approaches for Renewable Energy). Given that the project will promote the use of biomass as a renewable energy resource, measures have been taken to ensure that the appropriate safeguards are in place for sustainable biomass use. Therefore, the project also complies with Strategic Program 4 (Promoting Sustainable Energy Production from Biomass).

D. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

The current project builds upon the "Biomass Power Generation" UNDP/GEF project implemented between 1997 and 2003. That project focused on initial assessment and field testing of sugarcane trash collection and use for electricity generation, and resulted in the definition of the most appropriate harvesting techniques and cleaning methods to use trash as a fuel. The SUCRE project will focus on market insertion and development for generation of electricity using bagasse and trash, thus ensuring that the positive results obtained in the initial project is applied at a commercial level.

The WB/GEF portfolio includes the "EFCC Advanced Technology Cogeneration Project for the Costa Pinto Sugar Refinery" project, which will demonstrate the technical and commercial viability of an Externally Fired Combined Cycle cogeneration facility in Brazil. This project is not yet under implementation, and is designed in two phases, (Phase 1 - feasibility analysis; Phase 2 -development of EFCC Facility). Hence, it is probable that both projects will be implemented in parallel. This would be mutually beneficial, since the SUCRE project will work on market development for a technically and economically viable technology. The WB/GEF project can use this framework if the EFCC plant is demonstrated to be viable. Likewise (and although the technologies to be applied in each project are of a different nature) the WB/GEF project may produce technological developments that benefit the SUCRE project. Therefore, close coordination between both initiatives will be sought upon project initiation.

E. DESCRIBE THE INCREMENTAL REASONING OF THE PROJECT:

The Baseline (business-as-usual, BAU) scenario, i.e., in the absence of implementation of this project, is a situation in which most of the Brazilian sugarcane mill operations (for sugar and for ethanol production) phase in over time new 67bar pressure boilers and steam turbine systems utilizing bagasse available from crushing of green-harvested sugarcane stalks.

Green cane harvesting generates large quantities of sugarcane trash (tops and leaves), 80% of which are left on the field to decompose in the BAU scenario. About 20% of the trash is unavoidably entrained with the sugarcane stalks and ends up in the mill as part of the "bagasse" burned in the boilers. The 67bar boiler pressure leads to more efficient steam generation than in the traditional 22bar boiler systems that are still found in many of Brazil's sugarcane mills. The more efficient steam generation enables a larger amount of electricity to be generated for export to the grid, after the mill's onsite steam and electricity needs are met. Therefore, in the baseline scenario, it is likely that electricity exports to the grid from the sugar mills increase gradually. However, exporting electricity will be a minor operation within the mills, and will be perceived mainly as a profitable way of utilizing surplus energy.

In this scenario, mills will not employ the most productive means of converting biomass to electricity. In particular, the large amount of sugarcane trash left on the field after harvest represents a lost opportunity for using this biomass to generate additional electricity for export to the grid, where it could displace electricity that would otherwise have come from fossil fuel power plants (natural gas combined cycle or pulverized coal steam plants) and thereby reduce electric-sector GHG emissions. Moreover, leaving heavy blankets of trash on the field may lead to the generation of methane, a powerful greenhouse gas, in the lower layers (where oxygen is not available to oxidize the carbon in the biomass to CO_2).

There are four primary reasons that trash would not be collected under BAU: 1) absence of a commercially accepted technology to collect, transport, and use the trash for energy in mills, 2) a lack of reliable information

about how to make profitable use of the available trash, which increases mill owners' perceived risk of investing in such systems, 3) a perception that electricity generation is a "minor" activity for the mills, thus receiving less attention and investment than sugar or ethanol, and 4) the difficulty of accessing financing for a "risky" technology. (Unlike the case in many sugarcane-growing countries, the sale of privately-generated electricity to the grid is a barrier that has largely already been overcome in Brazil.)

The project seeks to demonstrate that electricity production at mills can increase substantially by collecting additional amounts of trash from the field for use in sugarcane processing facilities. This increase in biomass supply can have an important financial impact on the mills, mainstreaming electricity into the sugar mill business as a product that is equally important to sugar and ethanol. The electricity will be exported to the grid, where it will displace fossil-fuel electricity generation, substantially reducing GHG emissions. Furthermore, removal of additional trash from the fields may reduce methane generation levels, which would further reduce GHG emissions.

The project is designed to overcome all of the barriers preventing the more efficient use of biomass resources, focusing primarily on the increased use of sugarcane trash. By the end of a successful project, there will be commercial implementations of trash collection, transport, and use systems at a minimum of three private-sector mills, with an additional mill already committed to investing and six more mills having carried out implementation feasibility studies. By co-financing some pre-investments costs that the private sector is unwilling to assume on its own, as well as providing a full technical support package offered by CTC, the project is promoting an environment that reduces the risk perception of private entities and encourages lead adopters of technology to make the required investments.

Implementation of trash use at the three-to-ten mills directly participating in the project will lead to quantifiable GHG emissions reductions. The project as a whole, which includes outreach efforts to all relevant actors (in sugarcane sector, in electricity sector, in financing sector, etc.) is designed to catalyze the industry-wide pursuit of trash utilization for energy such that the successes in reducing GHG emissions at the initial few mills will leverage much larger GHG emission reductions in the long run.

F. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED AND OUTLINE RISK MANAGEMENT MEASURES:

Risk Type	Likelihood	Remedial Actions
Technical risk-The technology for trash recovery and use is not viable.	Low	The project executing agency (CTC), has conducted extensive testing in the field under normal mill operations in a previous UNDP/GEF project and during project preparation.
Economic risk-Trash recovery and use is not economically viable.	Low	The economic conducted by CTC demonstrates that at current electricity prices, generation with bagasse and trash is highly competitive with fossil fuel based generation.
Market risk- Increased sugar and or ethanol demand makes other (non trash-electricity) investments a higher priority.	Moderate	The returns on investments in trash to electricity are likely to be quite favorable, and the project includes efforts to optimize technology in order to maximize the return on electricity generation. Furthermore, the project promotes diversification of the sector to three core products (ethanol, sugar, electricity), which is attractive to mill owners.
Regulatory Risk - Delays due to slow environmental permitting pace.	Moderate	Due to the innovative nature of the project, environmental licenses may be issued slowly. The project is designed with a specific environmental component to address this issue and ensure the environmental sustainability of biomass use. Likewise, the involvement of federal and state level government authorities in the project will mitigate this risk.
Market Risk - Fall of electricity prices.	Low	Electricity demand has been increasing at higher pace than production for the past 10 years, and the trend in fossil fuel prices is upwards. A price decrease will only occur with massive investment in new power plants, and a substantial decrease in natural gas) prices. The best assessments to date of the cost of

		electricity from sugarcane trash suggest that electricity prices would need to fall quite far before the competitiveness of sugarcane electricity is threatened.
Financial Risk- Financial collapse of the sugarcane sector	Low	Sugarcane is considered today to be far and away the best feedstock for the production of sugar and ethanol, and new technologies are making the Brazilian sugarcane sector increasingly competitive. With an increase in demand for ethanol as a gasoline substitute, a strong market for Brazilian sugarcane ethanol is virtually ensured.
Climate Risk:- Climate change has a negative effect on sugarcane sector	Low	No climate change impacts are expected in the timeframe of this project. In the medium and long term, CTC is working to ensure crop resilience and develop varieties that can withstand potential climate variations. Thus, mitigation of this risk will be addressed by CTC and supported by the project, since the amount of bagasse and trash available for electricity is directly related to crop yield.
Environmental risk – soil fertility is affect ted by removal of sugarcane trash from the field	Low	Historical records indicate that additional trash removal from the fields will not have a negative impact on soil quality. Nevertheless, a project activity is included to analyze the optimal levels of trash to be left in the field and trash to be harvested for energy generation.

G. EXPLAIN HOW COST-EFFECTIVENESS IS REFLECTED IN THE PROJECT DESIGN:

The project is a strategic, cost effective intervention because it allows the GEF to assist a technological shift from the pre-commercial to commercial phase for an increased use of bagasse and trash for electricity generation. Much research and development work has already been conducted to develop the proposed technology, and the GEF project is designed specifically to support market testing and launching. Therefore, in addition to the direct and indirect CO2 emission reductions, the success of this project will result in a substantial technological shift that will allow for a much more efficient conversion of sugar cane bagasse and trash into energy. This is expected to result in the addition of energy generation as a third core product for sugar mills (in addition to sugar and ethanol), thus greatly increasing the potential for renewable energy generation. It is important to emphasize that, as Brazil is the worldwide leader in sugarcane production and technology development, the advances achieved in this project will become cutting edge technology, and will most likely be replicated at a global scale. Given the willingness of CTC, the Government of Brazil, and participating sugar mills to co-finance this project in a ratio of approximately 8:1, the resulting GEF intervention is highly cost effective when compared to the potential global benefits.

During the project design phase, GEF and co-financing resources have been allocated strategically to best address the barriers preventing the commercial utilization of sugarcane trash for electricity. The main four funding sources for this project are Centro de Tecnologia Canavieira (CTC), Ministry of Science and Technology (MCT), the three participating sugar mills, and the GEF. The activities to be carried out can be summarized in three main types of expenditures. The first group consists of technical support activities to the mills that will be provided by CTC. These are largely financed by CTC, with the provision of specialized staff, and are complemented with GEF funds when additional consultancy services are required. The second group consists of specialized services for which CTC does not have sufficient in-house expertise, and will therefore be provided by external companies and/or consultancies. These will be co-financed by the GEF, MCT, and the participating mills. Finally, the bulk of the project will consist of investment funds. The large majority of these funds will be provided by the participating mills, with minor co-financing for incremental investment to be provided by MCT and the GEF. MCT will contribute most of its funds to the first investment in mill #1. Upon successful demonstration of the system in the first mill, GEF funds will support the replication of the project in an additional three mills, two of which are already committed to the project and a third one which will be engaged during the project lifetime. This distribution allows for a cost efficient expenditure of resources since each participating stakeholder is allocating their funds where they can have most impact to achieve the project outcomes.

Furthermore, the GEF involvement is essential in bringing together the key stakeholders to the project. CTC is widely recognized as a leading technical institute and has been essential in developing the technologies that make Brazil's sugar sector one of the most advanced in the world. The involvement of MCT, which has already committed $3 million in cash, demonstrates the government's engagement in developing the technology and promoting its dissemination. Finally, the sugar mills commitment to participate in the project is a clear signal that there is a willingness in the private sector to invest in a technology that, while not yet proven commercially, is highly promising. It is important to note that during the project design phase, the participation of the GEF has been a key factor in engaging these stakeholders, demonstrating the powerful role that GEF funding can have in catalyzing financing and bringing stakeholders together.

Specifically regarding the CO_2 emission reduction potential of increased electricity generation with sugarcane biomass, the cost of emission reductions per ton of CO_2 equivalent is estimated at $ 3.47 for direct impact (3 sugar mills) and $1.48 for indirect impacts (7 additional sugar mills). More importantly, the project is expected to result in a substantial increase in electricity generation by the entire sugar sector (over 300 mills), streamlining the efficient use of bagasse and trash for electricity generation in the harvesting and milling sector. In this case, the impact in terms of emission reduction exceeds 30 million tons of CO_2 equivalent per year, making this a high impact GEF intervention in a sector with enormous potential for renewable energy generation.

PART III: INSTITUTIONAL COORDINATION AND SUPPORT

A. PROJECT IMPLEMENTATION ARRANGEMENT:

The Project will be carried out by CTC (Centro de Tecnologia Canavieira, or Sugarcane Technology Center), with UNDP as the GEF implementing agency. CTC will coordinate the project and designate a Technical Coordination Team (TCT) composed by a National Project Director, the Assistant National Project Director, a Technical Manager, a Financial Manager, an Environmental Manager, a Legal Manager and a Dissemination Manager. With the exception of the Assistant National Project Director, all of these positions will be financed with CTC funds. The TCT will be responsible for overseeing the day-to-day implementation of Project activities. This includes the direct supervision of project activities sub-contracted to specialists and institutions, whenever applicable. The TCT is responsible for the project's operational planning, supervision, administrative and financial management and the adaptive management of the Project based on inputs from the Project M&E plan.

The National Project Director (NPD) will be responsible for overall project coordination and management, including supervising and controlling the activities of five team leaders each handling activities under one of the five project outcomes. The NPD will also maintain the formal link with the funding institutions, investing mills or investors, cane growers, utilities, NGOs, UNICA, governmental institutions, and the external public in general. He will also be responsible for preparing meetings of the Project Steering Committee (PSC), as well as for all monitoring and evaluation efforts. The NPD will be supported in his activities by the Assistant NPD.

A Project Steering Committee (PSC) will be constituted to provide political and technical advice and guidance to the project through periodic meetings. Representation on the PSC will include CTC, UNDP, the investing mills, the Brazilian government (MCT), and the NPD. Government representation on the PSC (MCT) is designed to ensure that the project keeps abreast of and maintains consistency with current policies and evolving national strategies and priorities. The SC will meet annually to review Project activities and analyze the process and results of implementation to guide execution of the remaining Project actions. It would also identify and monitor the adaptive measures to correct problems identified during project implementation, and support the incorporation of experiences and lessons learned generated by the project into national public policy.

PART IV: EXPLAIN THE ALIGNMENT OF PROJECT DESIGN WITH THE ORIGINAL PIF:

The project is fully aligned with the PIF approved by the GEF in 2008. The initial GEF funding approved by the GEF Council in the PIF remains equal to the request at the time of CEO Endorsement.

PART V: AGENCY (IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO Endorsement.	
 John Hough UNDP/GEF Deputy Executive Coordinator	Oliver Page Regional Technical Advisor LAC UNDP-GEF Regional Coordinating Unit Project Contact Person
Date: 19 January 2010	Tel. and Email: 507-302-4548 oliver.page@undp.org

ANNEX A: PROJECT RESULTS FRAMEWORK

Project Strategy		Objectively Verifiable Indicators			
Goal: Increase the production of low greenhouse gas (GHG) electricity in the sugarcane industry, by using the trash, produced during the harvesting of green cane, as a renewable fuel to generate EE		The implementation of the SUCRE project will provide a practical experience of using trash from green harvesting, to increase the production of EE in sugar mills and distilleries, making available to all interested parties the technical and financial information required for spreading the demonstrated solution, making an important contribution to substantially increase the production of biomass EE in sugarcane mills and distilleries, and decreasing the emissions of GHG throughout the sugarcane industry.			
Strategy	**Indicators**	**Baseline**	**Target**	**Sources of Verification**	**Risks and Assumptions**
Objective of the Project: To create the conditions for sugar mills to increase the export of electricity generated by sugar cane trash and bagasse to the grid.	Trash system implemented and operating	No mills or distilleries are using the trash produced by the green harvesting	Trash system successfully demonstrated in one mill by end of year 3 Trash system successfully operating in 3 mills by end of project	PSC meetings held every 12 months - Progress reports issued every 6 months - Physical field inspection	***Risks***: - Difficulties in implementation of technical solutions ***Assumptions***: - Mills maintain interest in investment as expressed in commitment letters - Equipment and supplies are delivered on time
	Increase in exports of biomass based electricity to the grid	Electricity exports by mills limited to excess generation from sugarcane bagasse; no additional generation using sugarcane trash in place	70% increase in electricity exports from mills that implement the trash system 60,000 MWh/yr exported to the grid by mill 1 at end of yr 3 180,000 MWh/yr exported to the grid by mills 1, 2, and 3 at end of project	- Progress reports issued every 6 months - Sugar mill end electricity utility data	***Risks***: - Electricity output based on sugarcane trash generation is not as high as projected ***Assumptions***: - Electricity market conditions encourage mills to increase sales to the grid.
	Economic feasibility of increased generation with trash is demonstrated	Electricity sales are a limited operation in sugarcane mills	Increased revenues from additional electricity generation demonstrated in 3 mills The share of revenues from electricity generation increases in proportion to sugar and ethanol in 3 mills	- Progress reports issued every 6 months - Sugar mill financial data	***Risks***: - Costs of increased generation outweigh additional income stream - Fluctuations in electricity pricing affect the economic viability of increased generation ***Assumptions***: - Actual costs of increased generation are within the expected theoretical costs - PPAs are signed for electricity sales at an appropriate price - Electricity market conditions encourage mills to increase sales to the grid.
	Trash system replicated across the sugar sector	No mills or distilleries are using the trash produced by the green harvesting	Investment leveraged for installation of trash system in at least one additional mill by end of project Trash system	- Progress reports issued every 6 months - Written commitment of investment by additional mist - Feasibility studies	***Risks***: - Demonstration in 3 initial mills insufficient to trigger sectorwide replication ***Assumptions***: - Sugarcane sector remains healthy and is prepared to invest

			feasibility studies for 7 other mills		
	Environmental and legal framework in place for electricity generation with bagasse	Environmental and regulatory conditions for increased generation with sugarcane trash not fully defined	Clear, streamlined environmental guidelines and procedures for generation with sugarcane trash Well defined regulatory framework for generation with sugarcane trash	- Environmental regulations - Electricity sector regulations - Project progress report	***Risks***: - Delays in clarification of environmental and electricity policies - Discrepancies between regulator entities and sugarcane sector ***Assumptions***: - Government support for the project - Environmental and electric market adjustments required are suitable for the environment and electricity regulators
	Iinformation disseminated on project results and the benefits of additional generation with sugarcane trash	Limited information available on potential benefits of sugarcane trash use for electricity generation	Clear guidelines, procedures, and demonstrated benefits of generation with sugarcane trash are published and widely disseminated across the sugarcane sector in Brazil and internationally.	- Progress reports issued every 6 months - Published project documentation	***Assumptions***: - Project generates positive results that encourage sector wide adoption of technology.
Outcome 1: Technology for sugarcane trash collection and conversion to exported electricity at sugarcane mills is commercially launched.	Trash collection system design finalized and operational	- No methodology to define trash to be collected in place	- Methodology defined and being used	- Project progress reports - Practical test	***Risks***: - Not getting/agreeing on the proper methodology ***Assumptions***: - Team in place on schedule
		Conceptual design for trash collection system in place	Final design implemented and operational in mill #1	- Project progress reports - Physical inspection	***Risks***: - Timely availability of equipment
	Sale of additional 60,000 MWh/yr of electricity (from mill #1) after three years.	- No trash system installed	- Generation of electricity from trash at mill #1	- Project progress reports - Physical inspection	***Risks***: - Not having the trash system available for installation - Not getting the required permits - Not solving the legal and institutional issues ***Assumptions***: - Financial support available - Suppliers deliver on time - Team in place on schedule
Outcome 2: Economic and financial viability of sugarcane trash collection and utilization for export of electricity from sugarcane	Economic feasibility is fully assessed prior to investment	Limited information on economic and financial viability in place, based on existing R&D	Full feasibility studies and business plans finalized for mills 1, 2, and 3	- Feasibility studies for 3 mills - Business plans for 3 mills	***Assumptions***: - Feasibility studies and business plans result in favorable economic valuation of projects

mills is commercially demonstrated.	Economic/financial performance of mills #1, #2, and #3 evaluated based on actual operating data and costs.	- No trash-electricity system available	- Economic feasibility demonstrated for use of trash to make exportable electricity at mills #1, #2, and #3.	- Study/report on trash-electricity economic analysis using collected actual data. - Project progress reports	***Risks***: - Costs of increased generation outweigh additional income stream - Fluctuations in electricity pricing affect the economic viability of increased generation ***Assumptions***: - Actual costs of increased generation are within the expected theoretical costs - PPAs are signed for electricity sales at an appropriate price - Electricity market conditions encourage mills to increase sales to the grid.
		- Electricity exports from mills limited to excess energy generated with sugarcane bagasse without trash	- 70 % increase in sale of electricity at mills #1, #2, and #3 due to inclusion of additional sugarcane trash	- Electricity sales contract - Physical verification - Mill operating reports - Project progress reports.	
Outcome 3: Environmental integrity of the use of biomass for energy is assured.	Guidelines for environmentally acceptable trash utilization completed and distributed	- No guidelines required as no trash system is in use	- Guidelines completed and in use	- Guidelines for trash utilization - Project progress reports - Seminars and newsletter	***Risks***: - Delays in clarification of environmental policies - Discrepancies between regulator entities and sugarcane sector ***Assumptions***: - Government support for the project - Environmental market adjustments required are suitable for the environment regulators
	Reduction of net GHG emissions associated with additional electricity generation verified based on actual operating data from mills #1, #2, and #3.	- No GHG reductions because no trash system in place	- Quantitative understanding of potential net GHG reductions from use of trash for electricity generation.	- Trash use GHG potential report - Project progress reports	***Risks***: - Not getting the proper information ***Assumptions***: - Trash system is implanted and operated successfully - Required information is available on time
			- Sector wide analysis of CDM potential for enhanced trash use.	- Project report - Project progress reports	***Risks***: - Not getting the proper information ***Assumptions***: - Trash system is implanted and operated successfully - Required information is available on time
	Sugarcane expansion clearly demonstrated as having minimal impact on deforestation rates in Brazil	- Studies conducted to date do not link sugar sector to increased deforestation	- Specific assessment conducted to demonstrate the potential impacts on deforestation. - Mitigation strategy developed and under implementation	- Project generated reports	***Risks***: - Assessment reveals more impact on deforestation than currently assumed ***Assumptions***: - Full information is available to conduct assessment.
	Additional removal of trash for electricity generation demonstrated no have negligible detrimental impact on soil	Historical data suggests that additional trash removal does not impact soil quality	Project assessment conducted to further assess impact of trash removal on soil quality	- Project generated reports	***Risks***: - Assessment reveals more impact on soil quality than currently assumed ***Assumptions***: - Full information is available to conduct assessment.
Outcome 4:	Guidelines issued	No existing	Clear, streamlined	- Project	***Assumptions***:

Dissemination, capacity building, replication strategy across the sugar cane sector is under implementation.	for general pre feasibility assessment in sugar mills	guidelines or procedures in place	guidelines and procedures for assessing potential benefits of additional generation with sugarcane trash	documentation	Knowledge generated through implementation in 3 mills is sufficient to generate guidelines
	Feasibility studies and basic engineering of 7 mills (beyond the first three) interested in installing the trash system completed.	- No pre-feasibility studies being made	- Guidelines for general pre-feasibility assessment of trash utilization - Feasibility studies for 7 mills (beyond the first three) completed	- Specific pre-feasibility studies - Project progress reports - Convinced investors	***Risks***: - Not getting the proper information ***Assumptions***: - Trash system is implanted and operated successfully - Required information is available on time
	Sale of additional 120,000 MWh/yr (from mills #2, and #3) after five years	- No trash system installed	- Generation of electricity from trash at mill #2 and #3	- Project progress reports - Physical inspection	***Risks***: - Not having the trash system available for installation - Not getting the required permits - Not solving the legal and institutional issues ***Assumptions***: - Financial support available - Suppliers deliver on time - Team in place on schedule
	Mill #4 invests in electricity generation with bagasse	Mill #4 not yet committed to project implementation	Funding is leveraged from mill #4 to implement generation of electricity with trash.	- Project progress reports	***Risks***: - Investment in first three mills does not clearly demonstrate the economic benefits of investment in generation with sugar cane trash ***Assumptions***: - Sugar sector remains financially healthy and is not adversely affected by external economic crisis
	Expressions of interest (contracted studies, letters of interest, participation at seminars, phone inquiries, etc.) from companies in trash-electricity, indicating market transformation.	- No trash system in place in additional mills - No investors interested	- Clear demonstration of interest by 7 additional mills in investing in additional electricity generation with trash	- Participant lists from seminars, emails and letters from interested investors, studies contracted, website visits - Convinced investors - Project progress reports	***Risks***: - Quality of information dissemination is inadequate to gain interest of stakeholders ***Assumptions***: - Information dissemination systems are effective
Outcome 5: Institutional, legal, regulatory framework is in place to promote the sustainable use of biomass for electricity generation and sales to the grid.	Mutually beneficial regulations fostering increased electricity generation with sugarcane trash are implemented	- Current legislation favorable to IPP generation but does not consider technicalities of generation with bagasse	- Full knowledge of relevant legislation regulating the electricity sector in Brazil is obtained, including potential solutions to address remaining barriers for generation with trash	- Regulatory study report - Project progress reports	***Risks***: - Not getting the proper information ***Assumptions***: - Required information is available on time
			- Meetings conducted with relevant state entities to discuss new regulatory	- Minutes of meetings - Project progress reports	***Risks***: - No access to government officials. ***Assumptions***: - Meetings are held.

			framework that addresses sugarcane industry trash-to-electricity issues and barriers - Mutually beneficial regulatory reforms agreed between regulating entities and the sugar sector		- Electric market adjustments required are suitable for the environment and electricity regulators
Outcome 6: Project monitoring, learning, adaptive feedback and evaluation	Internal monitoring is applied and adaptive feedback mechanisms are implemented	Internal monitoring procedure described in project document	Internal monitoring procedures implemented with at least two project reports generated per year	- Project progress reports	***Risks*** - Lessons learnt during project implementation require major strategy revision ***Assumptions***: - Assumptions made during the project design process are valid, allowing for a project implementation that is aligned to the conditions presented in the project document **Note: Any major revisions to project outcomes and/or project objective will be consulted with the GEF Secretariat**
		Project document reflects current understanding of best project strategy	Project implementation strategy is strengthened by continuous integration of lessons learnt during implementation	- Project reports and amendment compilation	
	High quality external evaluations are conducted	No evaluations conducted	One Mid Term evaluation and One Final Evaluation conducted	Evaluation reports	***N/A***

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF)

1) GEF SECRETARIAT

Question	Secretariat Comment	Responses
15. Is the value-added of GEF involvement in the project clearly demonstrated through incremental reasoning?	The project PIF argues that cogeneration by the sugar industry cannot maximize its real potential without systematic use of cane-trash, which is now not utilized. The GEF contribution of $8m on a total project of $70m, is designed to catalyze the expanded use of cane trash for co-generation. The endorsement document needs to fortify this argument, as the reader may now be left with doubts about the necessity of the GEF contribution in the face of the electricity-sector conditions in Brazil.	The Project Document that accompanies this submission clearly describes the expected trends in bagasse use for electricity generation, in which the expanded use of trash is not envisioned. The GEF contribution at this stage is essential to allow the trash use technology to shift from a pre-commercial to a commercial phase. By co-financing some pre-investments costs that the private sector is unwilling to assume, as well as providing a full technical support package offered by CTC, the project is promoting an environment that reduces the risk perception of private entities and encourages lead adopters of technology to make the required investments.

23. Items worth noting at CEO Endorsement.	The project document for CEO endorsement must make clear to the readers and project implementers that GEF funds will not be used as a grant to private sector entities making investments in sugar mills. GEF grants are to be limited to technical assistance and capacity building activities.	After extensive discussion with the project proponents and the GEF Secretariat, it has been agreed that the most cost effective use of GEF funding is to provide technical assistance and capacity building, but also to provide limited co-financing for incremental investment, in association with MCT and the participating mills. Given that the technology is still in a pre-market phase, the additional upfront costs and perceived risks by mills prevent them from entirely financing the investment without additional technical and financial support from the project. Since the project intends to facility the transition of the technology to full commercial feasibility, the allocation of limited GEF funding for investment has the potential to trigger wide scale replication across the sector. This approach is well aligned with the GEF's technology development and technology transfer strategy during GEF 4. The Project Document provides full justification for the proposed allocation of GEF resources.

2) COUNCIL AT WORK PROGRAM INCLUSION

Country	Comments	Responses
United States	The focus on disseminating and replicating innovations from other projects is commendable. This project appears to be sufficiently focused on technical assistance and capacity building to be within UNDP's comparative advantage, but we are a bit surprised that UNDP did not seek to partner with one of the development banks since it mentions the need for "large investments in technology upgrades." The final proposal should explain more clearly who is funding the investment in the first set of mills. There should also be a clearer plan for replication beyond the first few plants, including outreach to potential investors.	The project has been designed as a capacity building and technical support initiative, clearly falling within UNDP's comparative advantage. While investment resources are clearly required for the project, obtaining such financing is not the main thrust of the project, thus it was not considered necessary to present this proposal jointly with the development banking agencies of the GEF, such as World Bank or IADB. The funding for the initial three mills is already secured, as demonstrated in the co-financing commitments attached to this proposal. Furthermore, given the importance and relevance of the sugar cane sector in Brazil, it is expected that the Brazilian banking sector, both commercial and development oriented, will be willing to provide financing for energy investments in this sector upon successful demonstration of the technical and economical viability of the technology. Thus, with the successful demonstration of the commercial application of this technology and adequate information dissemination and outreach to the financial sector, it is not expected that customized credit mechanisms will need to be created to allow for further investment. The project includes an outcome specifically dedicated to project replication, which is a primary focus of this initiative. This component will include outreach to the financial sector and will work with an additional 7 mills to allow them to incorporate the bagasse and trash generation technology in the near future. It is expected that widespread adoption of the technology will rapidly follow, once 10 mills clearly demonstrate the viability of the system. In this replication effort, collaboration with the development banking agencies of the GEF, such as World Bank or IADB, will be sought, in order to ensure that the most effective financing options in Brazil are available to mills seeking to adopt the technology.
Germany	The Project Identification Form (PIF) does not mention land-use issues with regard to the potential impact of an expanding sugarcane industry. The PIF does mention that the	UNDP fully shares the Council Member's concern regarding the increased use of biomass for fuel production and its potential impact on land use changes. As such, a thorough assessment of the sugar cane sector has been conducted during the preparation phase of the project – this information has been included in the accompanying Project Document. This assessment has concluded that there is a low risk of the project resulting in negative environmental impacts such as the clearing of forest land. The areas of main sugar cane growth and projected

	sugarcane industry is expanding in response to successful ethanol production, which implies a greater demand for land. Given the concerns raised in recent months with regard to land-use and emissions impacts from bio fuel production, the inclusion of a land-clearing mitigation strategy, which would address a scenario, such as sugarcane encroachment on forest land, may be necessary. Planning Steps: 1) Include monitoring component of direct and indirect land-use changes as a result of an expanding sugarcane industry. 2) Have a strategic plan in place to mitigate for land-use impacts should they arise.	expansion are in the south-eastern region of the country, distant from the forested regions of Brazil. Projections show that, even with the expansion of the sector expected by 2020, the sugar cane sector would still account for the use of less than 4% of the total currently cultivated cropland and pasture in Brazil. Furthermore, the government is increasingly responsive to this concern, and is in the process of establishing a law that forbids to planting sugarcane in the Amazon and will issue a zoning map which specifies where sugar cane cultivation is allowed. The sugarcane sector itself is incorporating environmental principles in its operations, as can be seen by the massive decreases in pollution and increases in efficiency over the past decades. CTC, the executing agency of this project, has been essential in leading these green efforts and will continue to do so with this project. As such, the sector itself sees the value added in being perceived as eco-friendly and has demonstrated full compliance with environmental laws and principles to this effect. Finally, and most importantly, it is essential to note that ultimately, this project promotes an improved yield of energy per hectare of cultivated land, and as such dos not directly promote the agricultural expansion of the sector. It may, of course, increase the profitability of sugar mills by increasing the energy revenue stream, which could promote further investment in the sugarcane sector. However, for the reasons described above, it is unlikely that this will lead to increase d deforestation. In addition to the assessment described above, UNDP feels that it is essential to include the appropriate safeguards within the project to avoid direct and indirect negative land use impacts. As such an entire outcome focused on the environmental impacts of the project has been included. This Outcome includes the assessments of direct environmental impacts, but also addresses the more widespread and indirect environmental implications of the expanded use of bagasse for energy generation. The monitoring component suggested by the Council member has been incorporated into this outcome, as well as the development of a mitigation strategy. The risks section of the project includes a specific reference to this issue, which ensures that it will be incorporated into the monitoring strategy of the project. Finally, the regulatory component of the project also incorporates and environmental dimension to support the development of an environmentally sustainable regulatory framework for the sugar sector, as well as appropriate monitoring mechanisms.

3) STAP

Comment	Responses
1. Based on this PIF screening, STAP's advisory response to the GEF Secretariat and GEF Agency (ies): **Consent** 2. STAP has no objections to the proposal "Sugarcane Renewable Electricity (SUCRE)" in Brazil. STAP, however, would like to recommend that the project not only focus on the technical aspects of promoting a market-based approach for renewable energy, but also on technical assistance to reform -strengthen policies that will help secure a viable market. If the project will focus on this aspect, perhaps the project proponent could specify how the project will seek to address market policy reforms.	*Response: An outcome has been included to address this issue. Please note, however, that the regulatory barriers for IPP energy generation with bagasse are considered relatively low. Hence, this component will focus on refining the policy/legal framework rather than on large scale regulatory reform.*
The project from Brazil for promoting use of sugarcane tops and leaves in addition to bagasse in the sugar mills for generating surplus electricity is an interesting concept. IPCC 2007 has also highlighted the potential of producing electricity from sugarcane bagasse and other organic residues, as a cost-effective mitigation option. Technological Interventions: Currently only bagasse is used for generating electricity largely for meeting their in-house power	*Response: The above technical issues have been fully incorporated to the project proposal during the design phase and will be addressed during project execution.*

requirements, particularly during the harvesting season. The project aims to generate electricity with the use of sugarcane trash as a supplementary fuel to bagasse using conventional boiler/steam-turbine system of high pressure boilers. One of the critical technical issues in using bagasse and sugarcane trash is the proportion of the mix of bagasse and trash. Higher proportion of sugarcane trash may have implications for the operation of the system as well as system corrosion. It is also important to consider at what stage the trash would be removed from the field. The sugarcane trash is known to have low bulk density and high lignin and ash content. The economic challenge of harvesting and transporting the trash from the fields to the sugar mills is also an issue to be addressed. Ecological implications for soil fertility of removal of trash, as well as the potential of returning of ash to the field could be explored.	
Baseline: It is important to consider that even under the baseline, increasing quantity of surplus electricity is being generated and exported. Thus, this trend should be considered while estimating the incremental electricity generated or CO2 emissions avoided. It is also important to consider to what extent the sugarcane bagasse electricity replaces fossil fuel electricity, since hydroelectricity dominates the power generation in Brazil.	*Response: The baseline analysis does effectively consider an increasing trend in electricity sales to the grid as result of increased efficiency and technology upgrades in the mills.CO2 emission reductions are calculated based on the additional electricity generated due to the incorporation of more trash into the biomass mix. The CO2 calculation is also based on the marginal technologies that would be added to the Brazilian energy system. While currently, hydroelectricity dominates, the trends are towards an increase in natural gas and coal; hence the project will directly replace fossil fuel generation.*
Economic Risk: A comparative analysis of incremental investment (operation and maintenance) cost required for raw material collection, processing and use in the boiler system with the financial value of incremental power generation, is required.	*Please refer to Annex 5 in the Project document. UNDP requests on behalf of the project proponent that circulation of the annex is limited to the GEF Secretariat Council and STAP since it contains confidential commercial information.*

ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT

Position Titles	*$/person week*	*Estimated person weeks*	*Source of $*	*Total US$*	*Key Tasks to be performed*
For Project Management					
Local					
National Project Director (NPD)	2400	150	CTC	360,000	Responsible for the whole project development. Advise the Project Steering Committee (PSC). Approve project schedule, budget, services and equipment contracts. Hiring personnel. Supervise and control the project development and progress. Supervise the work done by the Project Coordinator. Define and make the corrections of course in order to attain the project objectives in time and within budget. Supervise, coordinate, and control the actions of the teams leaded by the Technical Managers. Make the formal link with the funding institutions, investing mills or investors, cane growers, utilities, NGOs, governmental institutions, and the external public in general. Prepare the PSC meetings
Technical Manager	2400	50	CTC	120,000	Responsible for the development and implementation of all technical aspects of the project. Supervise, control, and coordinate the actions of the team leaders that will be responsible for the trash separation and processing; industrial production; power generation, and agricultural aspects of the project. Define, together with the National Project Director, the scope of the work to be done by team leaders. Plan the work of team leaders and the technical work in general. Prepare schedules and budgets pertaining to the technical area of the project. Continuously monitor the performance and quality of the personnel working under his responsibility
Economic and Financial Manager	2400	25	CTC	60,000	Responsible for the development and implementation of all economic and financial aspects of the project. Supervise, control, and coordinate all the activities and studies related with the economic and financial aspects included in the scope of the project. Define, together with the National Project Director, the scope of the work to be done by team leaders or third parties. Plan the work of team leaders and or third parties. Be responsible for the preparation of schedules and budgets pertaining to the economic and financial areas of the project. Be responsible for the preparation of economic and financial analyses and specific and feasibility studies required by the project to achieve its objectives. Define and make the corrections of course in order to attain the economical and financial objectives of the project, in time and within budget. Guarantee the quality of the work developed by team leaders and or third parties. Participate and support the National Project Director in the hiring personnel process. Continuously monitor the performance and quality of the personnel or third parties working under his responsibility.
Environmental Manager	2400	25	CTC	60,000	Responsible for the development and implementation of all environmental aspects of the project. - Supervise, control, and coordinate all the activities and studies related with the environmental aspects included in the scope of the project. Define, together with the National Project Director, the scope of the work to be done by team leaders or third parties comprising the evaluation of environmental impacts, definition of mitigating measures, supporting licensing of

					industrial installations, and environmental monitoring. Plan the work of team leaders and or of third parties, related with the environmental aspects of the project. Prepare schedules and budgets pertaining to the environmental area of the project. Prepare the environmental analyses and studies required by the project to achieve its objectives. Define and make the corrections of course in order to attain the technical objectives of the project, in time and within budget. Guarantee the quality of the work developed by team leaders.
Dissemination Manager	2400	25	CTC	60,000	Responsible for the coordination, development and implementation of all activities related with the dissemination aspects of the project. -Supervise, control, and coordinate all the activities and studies related with the dissemination aspects included in the scope of the project. Define, together with the National Project Director, the scope of the work to be done by team leaders or third parties. Plan the work of team leaders and or of third parties, related with the dissemination aspects of the project. Be responsible for the preparation of schedules and budgets pertaining to the dissemination area of the project. Be responsible for the preparation of analyses and studies, within the scope of the tasks pertaining to the dissemination area and required to achieve project objectives. Guarantee the quality of the work developed by team leaders. Continuously monitor the performance and quality of the personnel working under his responsibility.
Legal and regulatory Manager	2400	25	CTC	60,000	Responsible for the coordination, development and implementation of all activities related with the institutional, legal and regulatory aspects of the project. - Supervise, control, and coordinate all the activities and studies related with the institutional, legal and regulatory aspects included in the scope of the project. Define, together with the National Project Director, the scope of the work to be done by team leaders or third parties. Plan the work of team leaders and or of third parties, related with the institutional, legal and regulatory aspects of the project. Be responsible for the preparation the analyses and studies, within the scope of the tasks pertaining to the institutional, legal and regulatory area and required to achieve project objectives. Guarantee the quality of the work developed by team leaders. Continuously monitor the performance and quality of the personnel working under his responsibility.
Assistant NPD	1,520	184	GEF	280,000	Project budget administration and management, assist NPD in coordination activities.
NPD Secretary	400	250	CTC	100,000	Responsible for the documentation organization and control. Help the members of the team with their schedules. Assist the NPD and NPD assistants on general administrative and operational issues.
TOTAL		**734**		**1,100,000**	

For Technical Assistance					
Local					
Position Titles	***$/person week***	***Estimated person weeks***	***Source of $***	***Total US$***	***Key Tasks to be performed***
National Project Director (NPD)	2400	27	CTC	66,000	Responsible for the whole project development. Technical Advisement / Guidance of Project. Data, Results and Reports analysis
Assistant NPD	1,520	66	GEF	100,320	Support the NDP with technical work
Technical Manager	2400	108	CTC	260,000	Responsible for the whole project development. Technical Advisement / Guidance of Project. Data, Results and Reports analysis
Technical Manager	2400	42	GEF	100,000	Responsible for the whole project development. Technical Advisement / Guidance of Project. Data, Results and Reports analysis
Trash Leader	1400	260	CTC	364,000	Responsible for the coordination of the implementation of all activities related with the trash utilization *(recovering, transport, handling, and delivering to the mill)*
Industrial Leader	2400	260	CTC	624,000	Responsible for the coordination of the implementation of all industrial activities derived from the trash utilization (*storage, processing, boiler feeding*)
Power Generation Leader – Phase 1	2400	276	CTC	662,653	Responsible for the coordination and execution of the implementation of all activities related with the power generation. Responsible of energy and heat balances for the power plants mills # 1, 2, 3 and 4.
Power Generation Leader – Phase 2	2400	96	GEF	230,400	Responsible for the coordination and execution of the studies and activities related with the power generation in the dissemination phase. Responsible of energy and heat balances for the 6 additional mills power plants studies.
Agricultural Leader	2400	260	CTC	625,152	Responsible for the coordination of the implementation of all agricultural activities related with the trash utilization. Responsible for the harvesting machine modifications, increasing its performance for trash recovery.
Economic Feasibility Leader	2400	100	GEF	240,000	Responsible for the feasibility and economic studies.
Financial Support Leader	1400	95	GEF	133,000	Responsible for the implementation of the activities related with the financial aspects of the project
Licensing Leader	2400	132	GEF	316,800	Responsible for all activities related with the project's environmental licensing, environmental studies impacts due to trash recovery.
Impact Mitigation Leader	2400	130	GEF	312,000	Responsible for all activities related with the project's environmental impact mitigation and automation systems.
Greenhouse Gas Leader	1400	95	GEF	133,000	Control, and coordinate all the activities and studies related with the green house gas aspects included in the scope of the project
Technical	1400	95	GEF	133,000	Responsible for all the activities related with the technical

Monitoring Leader					monitoring aspects of the project.
Project Replication Leader	1400	95	GEF	133,000	Responsible for all the activities related with the replication aspects of the project.
Web and Publication Leader	1400	52	GEF	72,800	Control, and coordinate all the activities related with the web and publication aspects of the project.
Electricity Data Base Leader	1400	95	GEF	133,000	Responsible for all the activities related with the electricity data base aspects of the project.
Energy Contracts Leader	1400	95	GEF	133,000	Responsible for all activities related with the energy contract aspects of the project.
Legal and Regulatory Leader	1400	95	GEF	133,000	Control, and coordinate all the activities and studies related with the legal and regulatory aspects included in the scope of the project
Regulatory specialist	2400	42	UNICA	100,800	Specialist in the electrical sector that is involved in the day by day problems of electricity generation by the mills.
Total Local		**2,514**		**5,005,925**	

For Monitoring					
International					
Position Titles	***$/person week***	***Estimated person weeks***	***Source of $***	***Total US$***	***Key Tasks to be performed***
1 Final evaluation consultant	3,750	8	GEF	30,000	GEF trust international consultant for final project evaluation
1 Medium term evaluation consultant	3,750	8	GEF	30,000	GEF trust international consultant for mid-term project evaluation
2 Monitoring consultant	4,200	50	GEF	210,000	National monitoring consultant for internal project monitoring
Total International		**66**		**270,000**	

For Technical Assistance/ Monitoring				
TOTAL TECHNICAL	**2,580**		**5,275,925**	

Table D. Detailed explanation of Items-PMU budget.

Office facilities, equipment, vehicles and communications	**$USD**
1 Laser Printer	3,000
2 Notebook to NPD + Assistant	8,000
2 MS Project License NPD + Assistant	4,000
1 PC Desktop for NPD Secretary	3,000
Total Office facilities & Equip.	**$18,000**
Travel	$USD
10 tickets from Campinas SP to Brasília DF	**$6,000**

ANNEX D: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS

A. EXPLAIN IF THE PPG OBJECTIVE HAS BEEN ACHIEVED THROUGH THE PPG ACTIVITIES UNDERTAKEN.

Project preparation activities were aimed at producing an eligible GEF project for financing. In this regard, all the activities undertaken fulfilled the proposed objective: The status of currently most promising technology for trash recovery and energy generation at sugarcane mills was defined, the commitment of sugar mills was obtained, legal and regulatory studies were undertaken and the Project Document (PRODOC) prepared. The project management consultants need to be trained at UNDP operational systems and project implementation is expected to run smoothly after CEO endorsement is provided.

B. DESCRIBE IF ANY FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION.

The delay in obtaining project approval has caused great concerns on national partners given that sugar cane harvesting is seasonal and studies have proper timing to occur in the field. As a result, the project has been delayed one year. It is expected that once the project is finally initiated, any further delays in obtaining necessary data are avoided not to commit the projects' timely results.

Technical management of the project is a key element for successful implementation and proper mechanisms and resources were considered and will be closely monitored during project implementation.

C. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES AND THEIR IMPLEMTATION STATUS IN THE TABLE BELOW:

Project Preparation Activities Approved	*Implementation Status*	*GEF Amount ($)*				*Co-financing ($)*
		Amount Approved	*Amount Spent To-date*	*Amount Committed*	*Uncommitted Amount**	
1. Technical data compilation and analysis	Completed	60,000	60,000	-	-	590,945
2. Economic feasibility analysis	Completed	55,000	55,000	-	-	63,000
3. Policy/regulatory analysis and engagement of energy government institutions.	Completed	25,000	25,000	-	-	
4. Selection of sugarcane mills and securing project co-financing	Completed	20,000	20,000	-	-	30,000
5. Drafting of Prodoc and Executive Summary	Completed	20,000	20,000	-	-	50,000
6. PPG management cost	Completed	20,000	16,875	3,125	-	-
Total		**$200,000**	**$196,874**	**$3,125**	**-**	**$733,945****

* Uncommitted amount should be returned to the GEF Trust Fund. Please indicate expected date of refund transaction to Trustee.

** Co-financing for approved PPG increased to what was calculated to be $600,000.