46818

INTEGRATED SAFEGUARDS DATASHEET
APPRAISAL STAGE

Report No.: _____
Date prepared/updated: November 21, 2008

I. Basic Information

1. Basic Project Data

Country: Philippines		Project ID: P106732	
		Additional Project ID *(if any)*:	
Project Name: Ethanol Plant Wastewater Biogas Project			
Task Team Leader: Josefo Tuyor			
Estimated Appraisal Date: November 24, 2008		Estimated Board Date: N/A	
Managing Unit: EASRE		Lending Instrument: Carbon Finance	
Sector: Agro-Industry(50%), Environment (40%), Rural Development (10%)			
Theme: Climate Change			
IBRD Amount (US$m.): 0.00 IDA Amount (US$m.): 0.00 GEF Amount (US$m.): 0.00 CF Amount (US$m.): 4.36 Other financing amounts by source: Project Entity/Sponsor: US$34.5 million			
Environmental Category: A			
Is this a transferred project	Yes [ ]	No [x]	
Simplified Processing	Simple [ ]	Repeater [ ]	
Is this project processed under OP 8.00 (Rapid Response to Crises and Emergencies)		Yes [ ]	No [x]

2. Project Objective:

The project development objective is to reduce GHG emissions through: (i) the avoidance of methane emission from the ethanol plant's wastewater treatment system; and (ii) the displacement of bunker fuel with the methane collected from the wastewater treatment system and bagasse mixed with concentrated vinasse for the plant boiler's fuel requirements.

3. Project Descriptions:

The project has three components as follows:

Component A. Construction and Operation of the Ethanol Plant and Support Facilities. This component involves the construction and operation of a 100,000 liters/day ethanol production plant with waste-to-energy recovery using molasses, a by-product of sugar mills, as feedstock. Molasses will be sourced from the nearby Central Azucarera de la Carlota, Inc. (CACI) sugar mill, a member of the Central Azucarera de Don Pedro Group (CADPG) and from other sugar mills of the CADPG, where the project entity, the Roxol Bioenergy Corporation, is a member

company. The plant will produce anhydrous or fuel grade alcohol and potable alcohol for the domestic market. It will comprise of the following subcomponents:

Ethanol Manufacturing/Production Plant. The main production plant will consist of the following facilities: (i) a fermentation facility; (ii) a distillation unit consisting of several distillation columns; (iii) a dehydration facility to produce fuel grade ethanol; (iv) several handling and storage facilities for molasses, bagasse fuel and the final ethanol product; and (v) an office building.

Wastewater Treatment Facility and Disposal System. The ethanol plant will adopt a zero-discharge system for all its liquid waste. The plant's estimated 1,000m^3/day distillery slops or raw wastewater will undergo primary treatment through thermophilic anaerobic digestion (TAD) with the treated wastewater or vinasse concentrated through an evaporation process. The concentrated vinasse will be mixed with bagasse and burn as fuel for the plant's boiler. The system will consist of: (i) an anaerobic biodigester tank; (ii) an evaporator unit to concentrate the treated vinasse; and (iii) a 5,000m^3-capacity emergency holding pond to contain the treated vinasse in case of failure of the evaporator unit. All excess sludge is included in the concentrated vinasse/bagasse mixture for burning. For its process water, consisting mostly of steam condensates and cooling tower blowdown, the plant will employ a closed loop system wherein low-BOD wastewater will be treated and, together with zero-BOD water, recycled back into the system.

Waste-to-Energy Recovery. The waste-to-energy recovery will involve the utilization of the collected methane and the concentrated vinasse mixed with bagasse, as fuel for plant's boiler and power generator system. It will consist of (i) a methane gas scrubbing/collection and storage system; (ii) a bagasse shed and conveyor system; (iii) bagasse-vinasse concentrate mixer/dryer unit; (iv) a 40 ton/hr-capacity boiler that accepts methane, concentrated vinasse-bagasse mixture or bunker oil as fuel; and (v) a 4.0MW-capacity steam turbine generator. This subcomponent will supply the plant's mechanical energy and power requirements.

Component B: Carbon Finance Transaction. This component involves the creation and eventual purchase by the Bank of the carbon emission reduction (CER) assets from the ethanol plant and support facilities under the CDM of the Kyoto Protocol. In creating the asset, the World Bank will assist, the project entity, Roxol Bioenergy Corporation in: (i) preparing the PDD based on the new CDM methodology (ACM00014); (ii) having the project validated by a Designated Operational Entity (DOE), an independent firm accredited by the UNFCCC, leading to the project's registration with the UNFCCC; and, (iii) during project operation, having the ERs verified by a DOE leading to their certification by the UNFCCC. The purchase of the CER assets which will be generated annually by the CFO will be governed by the ERPA, a performance-based contract under which payments are triggered by successful verification of avoided GHG generation by a DOE. The quantity of ERs to be contracted, the length of time over which the purchase will be made, and the price paid will be agreed between the World Bank and the project entity and recorded in the ERPA.

The ERs which will be subject to Carbon Finance Transaction will come from the operation of the Wastewater Treatment Facility and Disposal System and the Waste-to-Energy Recovery

System of the ethanol plant, as described above. The amount of ERs to be generated is reckoned against the GHG emissions of a conventional or "business as usual" ethanol plant design which uses an open lagoon system for treating wastewater and bunker fuel to power its boiler. A conventional ethanol plant releases GHGs in the form of methane produced from its open wastewater lagoons and anthropogenic carbon dioxide (CO_2) from the combustion of bunker fuel. These emissions will be avoided in the proposed CFO. Hence, the total amount of ERs to be generated is equal to the amount of GHG emissions that will be avoided due to the adoption of an advanced wastewater treatment system and the use of collected methane and bagasse-concentrated vinasse mixture as boiler fuel in lieu of bunker oil. Initial calculations indicate that the CFO will avoid up to 68,151 tCO_2e per year. The ER amount which will be used in the ERPA will be determined in the PDD based on the application of a UNFCCC Secretariat-approved CDM methodology.

Component C: Community Benefits. To meet the CDCF objectives, the CFO will support activities to improve the quality of life of the local communities. A CBP has been prepared to address the priority needs of the three communities immediately surrounding the project. These priority needs were identified through a social assessment and validated through a series of consultations with the surrounding communities. The CBP will complement the ongoing community development and extension services of CADPG in the area through its corporate social arm, the Roxas Gargollo Foundation, Inc. (RGFI), and will include the following activities: (i) community organizing, focusing on the formation and strengthening of people's organization and/or cooperatives; (ii) livelihood and entrepreneurial support through a micro-lending scheme for various productive activities; (iii) health services in the form of quarterly medical outreach to communities and assistance in availment of health insurance; and, (iv) education services such as vocational skills training for out-of-school youths, scholarship grants, a reading program and rehabilitation of the existing pre-school/day care center. These activities will be funded from a premium equal to US$1.0 for every CER actually purchased by the CDCF from the project with CADPG providing staff and equipment as counterpart.

4. Project Location and salient physical characteristics relevant to the safeguard analysis:

The project is located in Barangay Roberto S. Benedicto (formerly Barangay Consuelo), La Carlota City, Negros Occidental on a former 25-hectare sugarcane lot near the existing sugar mill of CACI. Part of the site is currently being used by CACI sugar mill as stockpile area for its mudpress. The site has a flat topography and covered with napier grass. The area is drained by large farm canals that empty into the nearby Najalin River (Vol. flow: 3.75m^3/s). The proposed plant site is approximately 700 meters from the CACI sugar mill and about the same distance from the village center. The site has been approved by the City Government for agro-industrial land use.

5. Environmental and Social Safeguards Specialists on the Team:

Environmental Safeguards: Jonas Bautista, Josefo Tuyor (EASRE)
Social Safeguards: Victoria Florian Lazaro (EASSO)

6. Safeguard Policies Triggered *(please explain why)*	Yes	No
Environmental Assessment (OP/BP 4.01)	X	
Natural Habitats (OP/BP 4.04)		X
Forests (OP/BP 4.36)		X
Pest Management (OP 4.09)		X
Physical Cultural Resources (OP/BP 4.11)		X
Indigenous Peoples (OP/BP 4.10)		X
Involuntary Resettlement (OP/BP 4.12)		X
Safety of Dams (OP/BP 4.37)		X
Projects on International Waterways (OP/BP 7.50)		X
Projects in Disputed Areas (OP/BP 7.60)		X

II. Key Safeguard Policy Issues and Their Management

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The project site, an existing agro-industrial area, is located in a land owned by the Roxol Bioenergy Corporation, the project entity. The results of the socio-economic assessment as part of the environmental impact assessment (EIA) study, and as validated during the field visits and interactions with the host communities and the City of La Carlota, revealed the absence of any indigenous peoples in the area. The socio-economic assessment also indicated that the project will not cause adverse negative impacts on the host communities and that the social safeguards would not be triggered.

The environmental impact assessment of the project identified three key environmental issues related to the project, namely: air emissions from the boiler; liquid effluents consisting of distillery slops and process water; and solid wastes consisting of construction spoils, biodigester sludge and boiler ash.

- Air emissions - The main air emissions will come from the plant's 40 ton/hr capacity boiler which will burn methane and bagasse, a biomass by-product of sugar milling. The air pollutants of concern are particulate matter (PM) and sulfur dioxide (SO_2). Other air emission concerns include odor from the distillery slops or vinasse, trace gases from the digested vinasse and dust generation during construction of the ethanol plant and support facilities.
- Liquid wastes – Vinasse, the wastewater effluent of ethanol plants, is a troublesome and strong organic industrial effluents, having extremely high chemical oxygen demand (COD) and BOD values. If not treated and disposed of properly, vinasse would cause organic pollution of the receiving water body, the Najalin river.
- Solid wastes - Three types of solid wastes will be generated: construction spoils generated during civil works and installation of facilities; the sludge from the biodigester, and the boiler ash during operation.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

There is a plan to expand the sugar milling capacity of CACI. The owner of the project also plans to expand ethanol plant capacity in the future. These activities are compatible with the agro-industrial land use of the area.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts:

Plant Site. The project entity evaluated different plant site alternatives and wastewater treatment system configurations. Three alternative sites for the ethanol plant were originally considered namely: (i) an ethanol plant in Batangas (Luzon) coastal area; (ii) an ethanol plant in Binalbagan, Negros Occidental coastal area; and (iii) an ethanol plant adjacent to Central Azucarera de la Carlota (CACI) in La Carlota City. The coastal area sites were originally considered due to the ease of transporting the products to markets, especially in the case of Luzon site. However, detailed cost analysis revealed that higher transport cost would be incurred at coastal sites due to the need to transport fuel (bagasse) and raw materials (molasses).

Alternative Wastewater Treatment System. The project sponsor evaluated at least three wastewater management options. These include: (i) conventional open lagooning and river disposal; (ii) primary biomethanation and a combination of land application (fertigation) and sea disposal through a pipeline; and (iii) primary biomethanation and concentration by evaporation, and combustion with bagasse fuel. The first option would involve the use of high capacity two-stage lagoon system to treat wastewater, a relatively cheap method that meets the national standards for biochemical oxygen demand but emits a foul odor coming from the decomposing organic matter. This was ruled out due to potential lack of acceptability and potentially high and uncertain costs of compliance with the Philippine water pollution laws. It would also not earn any ER credit. The second option would involve substantial transport cost in the delivery of vinasse to cane fields and to the coastal area. The project sponsor also anticipates low acceptance by farmers of the fertigation scheme and expects to be able to initially dispose only 10%-20% of the vinasse, hence much of the vinasse would end up in the sea, requiring substantial investment in transport and/or piping. There is also a potential lack of acceptance among coastal communities due to the possible water discoloration. The third option was adopted because it is less costly than the second option and would eliminate potential pollution liabilities of the project.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described:

The project entity conducted a full blown environmental impact assessment to assess the environmental and social impacts of the project. The entity also conducted a rapid rural appraisal and a detailed socio-economic assessment as part of the EIA.

An Environmental Management Plan (EMP) was developed as part of the EIA and agreed with the project entity. The plan contains the built-in measures in the project design which the project

entity has committed to undertake such as "zero discharge system" for distillery slops, "close loop system" for the process water and installation of a wet scrubber for the plant boiler. It also includes additional measures such as the installation of a good drainage system, provision of ash stockpiling area, regular watering/sprinkling of the site during construction and the adoption of occupation health and safety policies and procedures. An environmental monitoring plan was also developed to monitor project impacts on the environment.

In particular, the boiler will be equipped with a wet scrubber and provided with stack of sufficient height (35 m) in order to comply with the Philippine Clean Air Act and the relevant emissions standards in the World Bank Group's Environmental, Health, and Safety Guidelines.

In regard to liquid wastes, the plant will adopt a zero-discharge system. After primary treatment through TAD, the treated vinasse will be concentrated by evaporation and mixed with bagasse for use as boiler fuel. Meanwhile, the process water consisting of steam condensate and cooling tower blowdown will be continuously recycled. Low-BOD distillation condensates will be treated through an Upflow Anaerobic Sludge Blanket (UASB) process followed by an aerobic polishing before being recycled into the process.

Reusable materials which the project owner wants to keep will be stored in a designated area while waste materials will be disposed at the municipal landfill. The sludge from the biodigester will be continuously recycled as required by the biodigestion technology while the boiler ash will be stockpiled into a designated ash yard and will be sold or given off to farmers as fertilizers as is traditionally done in sugar milling operations. Boiler ash is composed of minerals in theor elemental forms and no harmful compounds is expected to leach from the stockpile.

A CBP, as required by the CDCF, the buyer of the ER credits from the project, has been formulated based on existing social programs of CACI and the results of rapid rural appraisal and the socio-economic assessment. The CBP will enhance the positive economic impacts of the project to the local communities.

The sugar milling/manufacturing operations group of RHI, the CADPG, has an Environmental Management and Safety (EMS) unit which handles the environmental and safety aspects of the group's sugar milling operations. The unit has helped the company earned environmental awards such as "Likas Yaman Award for Environmental Excellence - Best Partner in the Industry" also given by DENR in 1996. The company was also given official commendation from the Municipal Council of Pontevedra, Negros Occidental for the zero pollution of Pontevedra River. For its pioneering effort in waste management, the Company received several recognition/awards including Most Environmental Friendly Sugar Mill Award from the Philippine Sugar Millers Association, Inc. (PSMA), etc. Its Pollution Control Officer was adjudged as one of the Ten Outstanding Pollution Control Officers (PCO) for the year 1998. The CADPG has a large Community Development Department (CDD) which is in charge of the implementation of the Group's corporate social responsibility programs with funding form the RGFI and from other fund sources. The Foundation has been implementing social development interventions for the host communities with internal and external funding. The EMS and the CDD units of the CADPG will handle all the environmental and social concerns of the project, including the

implementation of the CBP through the RGFI, as provided for in the directive issued by the RHI, the parent company, to the CADPG.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people:

The key stakeholders of the project are: residents of Barangay Roberto S. Benedicto, the sugar planters who may want to sell their molasses to the ethanol plant, the City Government of La Carlota City, the National Government agencies in charge of promoting the development of biofuel's industry.

At least two public consultations were held: on May 30, 2008 during the EA scoping and on September 21, 2008 during the validation of EA findings. The local residents including some sugar planters have attended these consultations. Community acceptance of the project is based on anticipated employment and business opportunities that may be generated by the project. The Community Benefits Plan to be funded from the proceeds of Emission Reduction (equal to US$1.0 per ER purchased from the project) was welcome by the community as an enhancement of the corporate social responsibility programs currently being implemented by CACI. Initial concerns on air and water pollution were sufficiently explained as very low risk during the presentation of the EA results.

Copies of the EA report were disclosed locally on September 21, 2008 through presentation and distribution to the host barangay of DSB, city government of La Carlota, the provincial government of Negros Occidental and the Regional Office of DENR in Region VI. The executive summary of the EA report was also posted in the Company Website. The EA report was also posted in the Bank's InfoShop on October 24, 2008.

B. Disclosure Requirements Date	
Environmental Assessment/Audit/Management Plan/Other:	
Was the document disclosed prior to appraisal? Yes	
Date of receipt by the Bank	October 24, 2008
Date of "in-country" disclosure	September 21, 2008
Date of submission to InfoShop	October 24, 2008
For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors	
Resettlement Action Plan/Framework/Policy Process: N/A	
Was the document disclosed ***prior to appraisal?***	N/A
Date of receipt by the Bank	N/A
Date of "in-country" disclosure	N/A
Date of submission to InfoShop	N/A
Indigenous Peoples Plan/Planning Framework: N/A	
Was the document disclosed ***prior to appraisal?***	N/A
Date of receipt by the Bank	N/A
Date of "in-country" disclosure	N/A
Date of submission to InfoShop	N/A

Pest Management Plan: N/A	
Was the document disclosed *prior to appraisal?*	N/A
Date of receipt by the Bank	N/A
Date of "in-country" disclosure	N/A
Date of submission to InfoShop	N/A
*** If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/Audit/or EMP.**	
If in-country disclosure of any of the above documents is not expected, please explain why:	

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)

OP/BP 4.01 - Environment Assessment			
Does the project require a stand-alone EA (including EMP) report?	Yes [x]	No [ ]	N/A [ ]
If yes, then did the Regional Environment Unit or Sector Manager (SM) review and approve the EA report?			
Are the cost and the accountabilities for the EMP incorporated in the credit/loan?	Yes		
OP/BP 4.04 - Natural Habitats			
Would the project result in any significant conversion or degradation of critical natural habitats?	Yes [ ]	No [x]	N/A [ ]
If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?			
OP 4.09 - Pest Management			
Does the EA adequately address the pest management issues?	Yes [ ]	No [ ]	N/A [x]
Is a separate PMP required?	Yes [ ]	No [ ]	N/A [x]
If yes, has the PMP been reviewed and approved by a safeguards specialist or Sector Manager? Are PMP requirements included in project design? If yes, does the project team include a Pest Management Specialist?			
OP/BP 4.11 – Physical Cultural Resources			
Does the EA include adequate measures related to cultural property?	Yes [ ]	No [ ]	N/A [x]
Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on physical cultural resources?			
OP/BP 4.10 - Indigenous Peoples			
Has a separate Indigenous Peoples Plan/Planning Framework (as appropriate) been prepared in consultation with affected Indigenous Peoples?	Yes [ ]	No [ ]	N/A [x]

If yes, then did the Regional unit responsible for safeguards or Sector Manager review the plan?			
If the whole project is designed to benefit IP, has the design been reviewed and approved by the Regional Social Development Unit?			
OP/BP 4.12 - Involuntary Resettlement			
Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?	Yes [ ]	No [ ]	N/A [x]
If yes, then did the Regional unit responsible for safeguards or Sector Manager review and approve the plan/policy framework/process framework?			
OP/BP 4.36 – Forests			
Has the sector-wide analysis of policy and institutional issues and constraints been carried out?	Yes [ ]	No [ ]	N/A [x]
Does the project design include satisfactory measures to overcome these constraints?			
Does the project finance commercial harvesting, and if so, does it include provisions for certification system?			
OP/BP 4.37 - Safety of Dams			
Have dam safety plans been prepared?	Yes [ ]	No [ ]	N/A [x]
Have the TORs as well as composition for the independent Panel of Experts (POE) been reviewed and approved by the Bank?			
Has an Emergency Preparedness Plan (EPP) been prepared and arrangements been made for public awareness and training?			
OP/BP 7.50 - Projects on International Waterways			
Have the other riparians been notified of the project?	Yes [ ]	No [ ]	N/A [x]
If the project falls under one of the exceptions to the notification requirement, has this been cleared with the Legal Department, and the memo to the RVP prepared and sent?			
What are the reasons for the exception? Please explain:			
Has the RVP approved such an exception?			
OP/BP 7.60 - Projects in Disputed Areas			
Has the memo conveying all pertinent information on the international aspects of the project, including the procedures to be followed, and the recommendations for dealing with the issue, been prepared	Yes [ ]	No [ ]	N/A [x]
Does the PAD/MOP include the standard disclaimer referred to in the OP?			
The World Bank Policy on Disclosure of Information			
Have relevant safeguard policies documents been sent to the World Bank's Infoshop?	Yes [x]	No [ ]	N/A [ ]

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?	Yes
All Safeguard Policies	
Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?	Yes [x] No [ ] N/A [ ]
Have costs related to safeguard policy measures been included in the project cost?	Yes
Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?	Yes
Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?	Yes

D. Approvals

Signed and submitted by:	***Name***	***Date***
Task Team Leader:	Josefo Tuyor	November 21, 2008
Environmental Specialist:	Jonas Bautista	November 21, 2008
Social Development Specialist	Victoria Florian Lazaro	November 21, 2008
Additional Environmental and/or Social Development Specialist(s):	Gerardo Parco Haddy Jatou Sey Maria Theresa Quinones	November 21, 2008
Approved by:		
Regional Safeguards Coordinator:	L. Panneer Selvam Jose V. Zevallos (Acting)	Nov. 21, 2008
Comments:		
Sector Manager:	Rahul Raturi	Nov. 26, 2008
Comments:		