

BR-L1108 Campina Verde Bioenergy Project Brazil

Environmental and Social Strategy¹

A. Project and Company Overview

1. The Project involves: (i) the construction and operation of a greenfield sugar and ethanol mill located in the Municipality of *Campina Verde*, State of *Minas Gerais* in Brazil, with a sugarcane crushing capacity of 2.5 million tons per year (equivalent to a production capacity of 55 million gallon per year of ethanol, or 338 thousand tons of sugar); (ii) the construction of a 35-Megawatt (“MW”) cogeneration power plant that will supply energy to the sugar and ethanol mill and sell the excess energy to the Brazilian electricity grid; and (iii) the development of sugarcane plantations to a total of approximately 30 thousand hectares (all together the “Project”).
2. The Project will be developed, constructed, commissioned, owned, operated and maintained by *Campina Verde Bioenergia Ltda.* (“Campina Verde” or “Borrower”) a special purpose subsidiary of *Companhia Nacional de Açúcar e Alcool* (“CNAA”). CNAA is a holding company incorporated in Brazil; it was founded and is managed by *Global Foods Holding, N.V.* (“Global Foods”) and *Companhia Energética Santa Elisa S.A.* (located in the Municipality of *Sertãozinho*, State of *São Paulo*) (“Santa Elisa”, together with Global Foods, the “Sponsors”). Santa Elisa will be closely involved in the construction and operation and maintenance of the new Projects.
3. Also, CNAA is the sole owner of *Ituiutaba Bioenergia Ltda.*, which is developing the Ituiutaba Bioenergy Project in the Municipality of Ituiutaba (State of Minas Gerais), and CNAA and a partner, *Usina Santa Luzia Ltda.*, own (78 and 22 percent respectively) *Companhia Itumbiara de Bioenergia e Alimentos Ltda.* (“Itumbiara”), which is developing the Itumbiara Bioenergy located in the Municipality of *Itumbiara*, State of *Goiás*. Those two other projects are very similar to the Campina Verde Project and are also being analyzed separately for possible financing by IDB.

B. Environmental and Social Compliance Status

4. Brazilian federal and state environmental legislation usually foresees three sequential environmental licenses for the type of project that is being analyzed: (i) a Preliminary License at planning stage; (ii) an Installation License to initiate construction; and (iii) an Operating License authorizing operation of the facility.

¹ This Environmental and Social Strategy (ESS) is being made available to the public in accordance with the Bank’s Policy on Disclosure of Information. The ESS has been prepared based primarily upon information provided by the project sponsors and does not represent either the Bank’s approval of the project or verification of the completeness or accuracy of the information. The Bank, as part of its due diligence on the feasibility of the project, will assess the environmental and social aspects. This assessment will be presented in the project Environmental and Social Management Report, prepared by the Bank, which will be made available to the public prior to consideration of the project by the Bank’s Board of Executive Directors.

5. In the case of the Project, the respective environmental impact assessment reports (Portuguese acronym - EIA/RIMA) have already been prepared and submitted, and the competent environmental authorities granted the respective Preliminary and Installation Licenses for the Project.
6. The environmental impact assessment reports relating to the Project have been disclosed according to IDB's Operational Policy OP-102 on Information Disclosure, at the Bank's Public Information Centers in Washington and Country Office, and placed for public consultation locally.

C Potential Impacts and Risks and Control Measures

7. The Project presents significant environmental benefits and potential negative environmental impacts and risks (see section C.1 to C.4 for potential negative impacts and mitigating measures associated with the different phases of the project). The use of ethanol as an alternative source of energy provides important environmental advantages compared with other fuels. It is renewable and its use as a fuel generates much lower levels of air contaminants such as greenhouse gasses, sulfur and nitrogen oxides, solid particulate matter and lead. The energy balance of the whole ethanol from sugarcane production cycle also indicates that the energy that can be obtained in its use is 8 to 10 times greater than the energy needed in the production. Furthermore, boilers at ethanol producing mills are fed by wastes generated at the plants (e.g., sugarcane bagasse); thus eliminating the use of other fuels.
8. In addition, the cogeneration plant fueled by biomass (sugarcane bagasse) will generate more energy than necessary in the industrial process and the excess renewable energy can be added to the public grid for other users. Thus, besides reducing considerably the amount of wastes that need to be discarded, the process allows the production of extra energy that can benefit other consumers.
9. Strategically, the use of ethanol as an alternative source of energy contributes to diversification of fuel sources and lessens the dependency on oil. In the Americas in general, and in Latin America and Caribbean Region, in particular, there are important initiatives being developed to foster the production and use of ethanol as an alternative to fossil fuels. IDB recently launched its Sustainable Energy and Climate Change Initiative to promote alternative energy sources and clean fuels, such as ethanol, and the participation of the Bank in this Project will represent an excellent opportunity to demonstrate its strong commitment to the new initiative.
10. It should be pointed out that the Project's facilities and plantations will be located away from any conservation, indigenous and urban areas, and apparently the land acquisition and preparation process will not require or involve the relocation of people. Thus, the Project's facilities and plantations will not: (i) convert or degrade critical natural habitats or damage critical cultural sites; (ii) significantly convert or degrade natural habitats; (iii) raise any significantly negative indigenous issues; (iv) generate any resettlement issues; or (v) have associated any trans-boundary issue.

11. The Project is being planned and developed using modern and more efficient technologies for the agricultural and industrial cycles, resulting in lower use of resources (water, energy, etc.), fertilizers, soil correctors, pesticides, and consequently in more environmentally sustainable processes.
12. In the sugarcane plantations, synthetic fertilizers will be partially substituted by the use of wastes and liquid effluents generated at the mill and cogeneration facilities, such as the filter cake coming from vacuum filters, the ashes coming from the gas scrubbers at the cogeneration plant, and the stillage (or vinasse) generated at the distillation process. To reduce soil and water contamination by pesticides, the Company will adopt integrated pest management procedures based on specific soil characteristics, climate conditions, pest history, and crop type for a particular field. This approach will limit pesticide use and help manage the necessary applications to minimize pesticide movement in the field. In addition, the Company will adopt a program of crop rotation and every given number of years (e.g., very likely five) the sugarcane harvest will be alternated with another type of crop (e.g., soy). This crop rotation will improve the nitrogen naturally occurring in the soil, reducing the need for fertilizer, assist in weed, disease, and pest control, restore organic matter in the soil and protect against erosion; besides helping to diversify agricultural production.
13. Harvesting will be performed mechanically or manually in those areas where mechanical harvesting is not possible (e.g., due to sloped terrain). In ethanol and sugar production, harvesting is the activity that requires the largest amount of workers. In plantation areas where manual harvesting will be practiced, the sugarcane leafy material needs to be previously burned in a controlled way, to make the conditions less harsh for harvesting workers, decrease their health risks (e.g., cuts, poisonous animals, etc.), reduce the costs of manual harvesting, and reduce transportation costs. Burning the sugarcane crop will generate emissions of air contaminants such as carbon dioxide, methane, other organic compounds, nitrogen oxides, and soot. Cane burning will not be required where mechanical harvesting will be applied. The Company is planning to extend mechanical harvesting to 80 percent of the crop, which will contribute substantially to reduce the amount of crop areas that need to be burned, emissions of air contaminants and health risks to workers. Furthermore, with mechanical harvesting the leafy material that is left on the ground helps attenuate erosion processes and recycles more biomass back to the fields. In addition, mechanically harvested cane cannot be washed (as the manually harvested is at the mill), because it would lose precious sugar, as the stalks are cut in small pieces during mechanical harvesting; therefore, the overall water requirements will be proportionally reduced.
14. The use of water for irrigation of sugarcane crops in Brazil is traditionally very low. Sugarcane is less water-demanding than other types of crops, such as corn or soybean, and the natural climatic conditions (humidity, rainfall) prevailing in most of the territory provide naturally the water that is needed for crop growth. This is the case for the region where the Company will operate. The annual average rainfall of around 1500 mm is sufficient to satisfy the sugar cane crop water needs. Therefore, the water intake for the production of ethanol and sugar will be essentially needed to satisfy requirements at mill and cogeneration facilities. In this regard, all the water used in the industrial process of the Project will be recycled in closed-circuit systems; thus

requiring substantially lower water intake from nearby water bodies. In addition, almost all the industrial liquid effluents and solid wastes generated at the mill and cogeneration facilities will be recycled in crop growing areas, and gas scrubbers will be used to clean the atmospheric emissions generated at the cogeneration plant. Furthermore, boilers at the cogeneration plant will be fed by wastes generated at the mill (sugarcane bagasse); thus eliminating the use of other fuels and reducing considerably the amount of wastes that need to be discarded.

15. To properly manage the environmental, social, health and safety and labor impacts and risks associated with the implementation of the Project, the Company devised a series of programs and procedures to avoid, mitigate, monitor, or compensate for the main impacts and risks associated with the Project.

C.1 Development of the new sugarcane plantations for the Project

16. Potential negative impacts. The main potential negative impacts or risks associated with the development of the new sugarcane plantations for the Project will be the following: (i) alteration of land use, including the relocation of former agricultural to more sensitive ecological areas; and (ii) risk of expansion of sugar plantations into environmentally sensitive areas.
17. Mitigating measures. The Company has in place procedures to mitigate these impacts, as for instance, the area chosen for the location of the Project is characterized mostly by land that have already been used by farming and pasture activities in the past and is located away from the Amazon Rain Forest, the remaining remnants of the Atlantic Forest, the *Pantanal*, *Caatinga*, and Southern Fields – which are considered the major biomes in Brazil, the only limited areas that present some sensitivity and are located near or in the agricultural properties are Permanent Protected Areas (acronym in Portuguese - APP), namely patches of native forests located near water streams and that are protected by law. However, the Company will try to avoid as much as possible to affect these areas and will establish a program to help restore and recover these and other previously degraded areas by replanting native trees.

C.2 Construction of mill and cogeneration facilities

18. Potential negative impacts. The main potential negative impacts related to the construction of mill and cogeneration facilities will be the following: (i) alteration of landscape; (ii) increase in dust emissions; (v) generation of construction related wastes and liquid effluents; (vi) increase in vehicular traffic; (vii) creation of expectations on the local population; (viii) interference in the day-to-day life of the local population; (ix) risk of falls involving workers; (x) risk of exposure of workers to health-hazardous environmental conditions (*e.g.*, noise, dust, combustion gases and poisonous animals).
19. Mitigating measures. It should be pointed out that the new facilities will be surrounded by plantations and away from urbanized areas, so the visual impact will be attenuated. The other impacts will occur on a limited scale, be temporary and can be prevented or mitigated with the basic precautions or standard construction environmental management procedures and programs established by the Company.

C.3 Sugarcane plantation operation

20. Potential negative impacts. The main potential impacts and risks associated with sugarcane plantation operation will be the following: (i) soil and water contamination by agrochemicals and risk of contamination of local communities during application; (ii) impacts on air quality due to burning of sugarcane crop and risk of fire in neighboring properties; (iii) induced soil erosion processes after harvesting; (iv) induced population growth and conflicts with local communities; (v) risk of chemical, physical and biological hazards for workers during crop preparation; (vi) risk of injuries and heat exposure during harvesting; and (vii) non-adequate working conditions and disrespect for workers' rights.
21. Mitigating measures. To minimize impacts associated with agrochemical application and use, the Company will adopt integrated management procedures to reduce amounts needed; in addition, the properties selected for the development of the plantations are located away from any urbanized areas, so no communities will be at risk of being contaminated; furthermore, the agrochemicals will be applied using tractor-mounted sprayers or other similar equipment and not aerial means, thus minimizing the risk of contamination of neighboring areas.
22. The Company will adopt as much as possible mechanical harvesting and this practice will contribute to reduce substantially the crop areas that need to be burned and the amounts of air contaminants generated, the leafy material that is left on the ground with mechanical harvesting will help attenuate erosion processes, and mechanical harvesting will require considerably fewer workers coming from other regions, decreasing the risk of conflicts and pressure on local communities.
23. To minimize risks to health and safety of harvesting workers, the Company will provide appropriate personal protective equipment ("PPE") and all workers will be required to use the appropriate PPE and follow established procedures to reduce these kinds of risks.
24. In the past, it was not uncommon to find in some regions of Brazil sugarcane plantations employing child and slave labor, under harsh, unsafe and unhealthy working conditions. Most of the seasonal workers had no rights or benefits and were poorly paid. Fortunately, conditions have improved in general in Brazil, and particularly in regions like the one where the Project will be located. The Company intends to adopt procedures to ensure that all workers in agricultural and industrial production will be registered and legally employed, have their rights respected as established by the Brazilian Consolidated Labor Laws, and will be entitled to health, education and other benefits provided by the Company. To alleviate the pressure for services in the cities, the Company will provide financial assistance to public entities in those communities. Furthermore, the Company will develop and implement actions and programs to address migrant worker needs, and maintain consultations with local authorities to develop measures to improve the quality of life of workers coming from other regions.

C.4 Operation of mill and cogeneration facilities

25. Potential negative impacts. The main potential negative impacts related to the operation of mill and cogeneration facilities will be the following: (i) impact on air quality associated with combustion of bagasse in boilers; (ii) impacts on water resources and use; (iii) impacts associated with solid waste disposal; (iv) impacts associated with liquid effluents disposal; (v) increased noise levels; (vi) risk of explosion and fire due to the storage of ethanol; and (vii) health and safety risks to workers.
26. Mitigating measures. The Company will use gas scrubbers to reduce the amounts of air contaminants introduced into the atmosphere, the natural conditions in the Project area can be considered relatively fair to good for dispersion of air contaminants and the stack will be of acceptable height to promote diffusion. Therefore, the impact on air quality is not expected to be significant in the case of the Project.
27. Similarly, as the mill and cogeneration facilities will be located away from any community and/or sensitive receptor and surrounded by plantations that will work as a buffer zone allowing significant attenuation between the noise generating sources and site boundaries, the risk that noise generated at the mills may disturb sensitive receptors or areas is considered to be minimal in this case.
28. In addition, as a result of the modern technologies and processes to be adopted in the Project and high level of water recycling in the industrial facilities, the amount of water intake will be considerably reduced; therefore, minimizing the impacts on water resources and other users. Most of the liquid effluents and wastes generated will be recycled in the mill and cogeneration facilities or in the crop fields; some relatively minor quantities of wastes that cannot be recycled will be sent for treatment and/or disposal by specialized companies.
29. Ethanol will be temporarily stored in tanks at the mill site. The storage tanks will be designed and built in accordance to Brazilian technical safety standards and include the necessary protection and containment devices. To minimize health and safety risks to workers the Company will developed specific technical specifications and procedures to minimize the frequency and consequences of accidents, and will require all workers to use appropriate PPE provided by the Company.

C.5 Positive impacts and environmental opportunities

30. Other positive impacts and environmental opportunities associated with the Project will be related to the following: (i) job creation - the operation of the plantation and industrial facilities is expected to generate around 1600 new direct jobs, some of them recruited from local communities, as well as a number of new indirect jobs on the service and retail sectors, and this will have a positive impact on the economy of these communities; (ii) potential for participation in carbon emission reduction markets, as the Project will include a 35 MW cogeneration plant fueled by biomass that will supply energy to the sugar and ethanol mill and sell the excess energy to the Brazilian electricity grid, thus contributing to sustainable energy generation and energy efficiency; (iii) opportunity for carbon sequestration through the program that

the Company will establish to help restore and recover Permanent Protected Areas and other previously degraded areas by replanting native trees; and (iv) improvement in regional and national air quality through the substitution of gasoline as a fuel, as the use of hydrated ethanol or a mixture of anhydrous ethanol and gasoline as fuel reduces emissions of carbon dioxide, sulfur and nitrogen oxides, lead, aromatic compounds and soot (its disadvantages include the production of some aldehydes).

D. Environmental and Social Strategy

31. Taking into account the aspects discussed in the previous sections and the requirements outlined in IDB's OP 703 Environment and Safeguards Compliance Policy, the Team proposes that the Project be classified as a Category B operation.
32. The Bank will perform an Environmental and Social Due Diligence ("ESDD") in order to confirm that all Project relevant impacts and risks have been, or will be properly and adequately evaluated and mitigated. The environmental and social due diligence will specifically address the following aspects:
 - (a) Assessment of project compliance status with the applicable country (national, state, and municipal) environmental, social, health and safety and labor regulatory requirements (e.g., laws, regulations, standards, permits, authorizations, applicable international treaties/conventions, etc.), in particular the Brazilian EIA requirements; project-specific legal requirements; and any applicable Bank environmental and social policy or guideline, in particular the OP-703 Environment and Safeguards Compliance Policy, OP-102 on Information Disclosure, OP-710 on Involuntary Resettlement and OP-765 on Indigenous Peoples.
 - (b) Evaluation of the available environmental impact assessment reports related to the Project to confirm that the Project's relevant direct, indirect, cumulative and regional environmental and social impacts and risks have been properly identified and evaluated.
 - (c) Assessment of the adequacy and sufficiency of all Project's existing environmental and social plans, programs and procedures developed for both the Company and their subcontractors.
 - (d) Assessment of Company's Environmental, Health and Safety Management System, including plans and procedures, to assess their adequacy in terms of responsibilities, training, auditing, reporting, and resources to be made available to ensure adequate implementation, and specifically all the system components necessary to ensure that Project's works that will be implemented will not generate significant negative impacts.
 - (e) Evaluation, and further development as necessary, of Project execution monitoring/supervision procedures to ensure proper implementation of environmental, social, health and safety and labor actions and requirements.

- (f) Assessment of corporate social responsibility programs and other initiatives developed by the Company to improve integration and relationship with local communities and, if applicable, formulate actions and opportunities for further improvements. Evaluation of Company's programs intended to maximize the positive outcomes of the Project.
- (g) As part of the ESDD process, the Project Team will analyze the environmental and social aspects of the Project and prepare an Environmental and Social Management Report ("ESMR").