

Environmental and Social Data Sheet

Overview

Project Name:	Steelanol
Project Number:	2017 0622
Country:	Belgium
Project Description:	The project intends to produce bio-ethanol via an innovative combination of torrefaction of waste wood ("Torero part") to be used in the blast furnace in lieu of fossil coal for PCI (pulverised coal injection) and a gas fermentation process using exhaust gases emitted by the blast furnace (or basic oxygen furnaces BOF) to produce 64,000 t/a ethanol ("Steelanol part"). This is a first-of-its-kind industrial size demonstration plant for the production of advanced bio-ethanol with such a process.
EIA required:	no
Project included in Carbon Footprint Exercise ¹ :	yes

(details for projects included are provided in section: "EIB Carbon Footprint Exercise")

Environmental and Social Assessment

Environmental Assessment

The project is embedded in an existing integrated steel mill and covers new industrial installations to produce bio-ethanol. It comprises two distinct parts:

- Torero: the torrefaction part to transform waste wood into biocoal to be used as PCI (pulverized coal injection) coal in the blast furnace partly substituting fossil coal. This part comprises the delivery of waste wood as biomass feedstock, the drying and torrefaction of the wood, the coal mill and the pressured pipe to the blast furnace. It is integrated with the sinterplant regards fuel off-gas handling and provision of heat.
- Steelanol: instead of sending the off-gases of the blast furnace (in particular carbon monoxide) to the power plant to produce electricity, this process transforms the larger part of the off-gases to ethanol by means of bacterial fermentation. Main components are filters and a gas compressor, a pressure swing adsorption plant, the bioreactors, a distillation unit and lastly a waste water treatment plant. The ethanol produced is expected to be classified as bio-ethanol as it is deriving from the waste wood.

Sustainability is an integral part of the promoter's corporate strategy that follows strict policies on topics such as energy efficiency, environmental protection and public health and safety. Almost all its industrial operations are certified under ISO 14001 under OHSAS 18001.

The investments enable the promoter to change the process, and the technical solutions are expected to bring significant positive environmental results, in terms of direct and in particular indirect CO₂ emission reduction.

¹ Only projects that meet the scope of the Pilot Exercise, as defined in the EIB draft Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: above 100,000 tons CO₂e/year absolute (gross) or 20,000 tons CO₂e/year relative (net) – both increases and savings.

Luxembourg, 17 July 2018

- **Compliance with applicable Environmental Legislation**

The project falls under Annex II of EIA Directive 2014/52/EU amending Directive 2011/92/EU. The competent local authority has screened out the project, not requiring a full EIA. However, the respective decision comprises a series of requirements for the promoter to follow.

The investments will be implemented in existing facilities which are covered by valid permits and are certified according to the ISO 14001 Environmental System. Biodiversity or nature conservation issues are not touched.

The project does not lead to any additional emissions and its treated waste water is recycled back into the process.

- **Energy efficiency**

The Torero part of the project counts as climate action – mitigation: A significant amount of fossil coal is being replaced by biocoal, thus lowering the fossil energy used.

EIB Carbon Footprint Exercise

Only CO₂ emissions of scope 1 of the blast furnace operation have been taken into consideration for this carbon footprint exercise.

Absolute emissions: With the project implemented, the estimated CO₂ emissions of the blast furnace including those of its off-gases still burnt in a dedicated power plant, will amount to 3,244 kt/a. This is based on a standard production of 2.5 Mt/a of pig iron.

Baseline: This is again based on the current standard production of 2.5 Mt/a of pig iron, however without using any “biocoal”, but only PCI fossil coal being injected into the blast furnace. This leads to CO₂ emissions at the blast furnace and the power plant of 3,378 kt/a. Based on the Bank’s carbon footprint exercise methodology, it is therefore estimated that the project, by way of partially substituting fossil coal by biocoal, will lead to emission savings of 134 kt/a CO₂.

The use of the 64,000 t/a of bio-ethanol produced (being the main purpose of the project) as fuel for transport purposes and substituting fossil fuels falls under scope 3 emissions and is not considered in this exercise.

For the annual accounting purposes of the EIB Carbon Footprint, the project emissions will be prorated according to the EIB lending amount signed in that year, as a proportion of project cost.

Conclusions and Recommendations

The project will increase energy efficiency of the overall plant and result in a significant reduction of GHG emissions. In particular, the project will not lead to additional negative environmental, nature conservation and social impacts compared to the situation without the project. To the contrary, it mitigates climate change and contributes to a circular economy by finding, developing and applying measures to make use of steel plant off-gases and turn them into valuable chemicals, such as here ethanol which is classified as bio-ethanol. In such way, the project contributes to the circular economy goals.

The project is therefore considered acceptable for Bank financing.