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SESSION T4-2 Integration of Sustainable Development Goals Assessment and Bottom-Up LCA

3rd September 2019, Tuesday 3:30 - 5:00 pm

RenovaBio: the Brazilian biofuels policy and its Carbon Intensity calculator

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It is well-known that the world is undergoing an energy transition due to global awareness regarding the climate change making the biofuels a consistent option for large-scale fossil fuel substitution.

Considering Brazil's large tradition in producing bioenergy the country's government assumed a Nationally Determined Contribution (NDC) during COP-21 which includes the reduction of GHG emissions of 43% by 2030. To fulfill the commitment, the Brazilian Energy sector proposes, among other goals, to increase the share of bioenergy in the national energy matrix to approximately 18%. As most emissions in the energy sector are related to transportation, one of the strategies for achieving this goal is to expand the biofuels consumption. In order to promote stability of the biofuels market and to achieve NDC, the Brazilian Ministry of Mines and Energy (MME) launched in December 2016 the RenovaBio Program. One year later it became a Federal Law (n° 13.576) which establishes the Brazilian Biofuels Policy. By drawing up a joint strategy to recognize Brazilian biofuels contribution to energy security, predictability and mitigation of GHG emissions, RenovaBio has been acknowledged and praised in different spheres of society. The development of the program has occurred in a transparent way and with the involvement of research and academic institutes, private industries and sectors associations. RenovaBio encourages each biofuel producer unit to submit data for calculating Carbon Intensity index (g CO₂ eq./MJ). The current Brazilian fuel matrix CI value is 74.25 g CO₂ eq./MJ and in June 2018, national authorities set a GHG reduction target of 10.1% by 2028. This target will become individual targets and applied to fuel distributors. To achieve those targets distributors will need to acquire the so called CBIOs (decarbonization credits available as bonds to be freely traded on the stock market). Each CBIO corresponds to one tonne of CO₂ that has been avoided and is calculated by multiplying the Environmental-Energy Efficiency Grade by the biofuel commercialization volume. The grade corresponds to the difference of the CI from a fossil to its biofuel alternative (e.g. gasoline and ethanol). Therefore, a customized LCA-based tool (RenovaCalc) was developed for a multidisciplinary team (LCA, LUC, GIS experts), to run calculations and support RenovaBio certification scheme. RenovaCalc's framework is based on "well to wheels" attributional LCA approach using energy allocation criteria for calculating of Sucarcane and Corn Ethanol, Biodiesel, Biomethane and Biojetfuel grades. Background data (carbon profiles of inputs, like fertilizers, electricity, etc.) comes from Ecoinvent 3.1 and emission and characterizations factors from IPCC. With its powerful tools and mechanism, it is expected that RenovaBio can stimulate competition and encourage producers to be more efficient taking a Life Cycle Management approach in its routines. Research and innovation in new technologies development for system improvement (e.g. machinery efficiency, chemicals, fuels and fertilizers changes towards sustainable sources) and price and market analysis tends to grow with the success in RenovaBio implementation.