



**Bioenergy – The overlooked contributor to the 1.5°C climate objective**

*28<sup>th</sup> European Biomass Conference and Exhibition (EUBCE 2020)*

*9 July 2020 – 14.00-15.30 CEST*

Good example on liquid biofuels for transportation -  
focus on emission reduction potentials

Prof Suani Coelho, PhD

In collaboration with Danilo Perecin (PhD candidate)

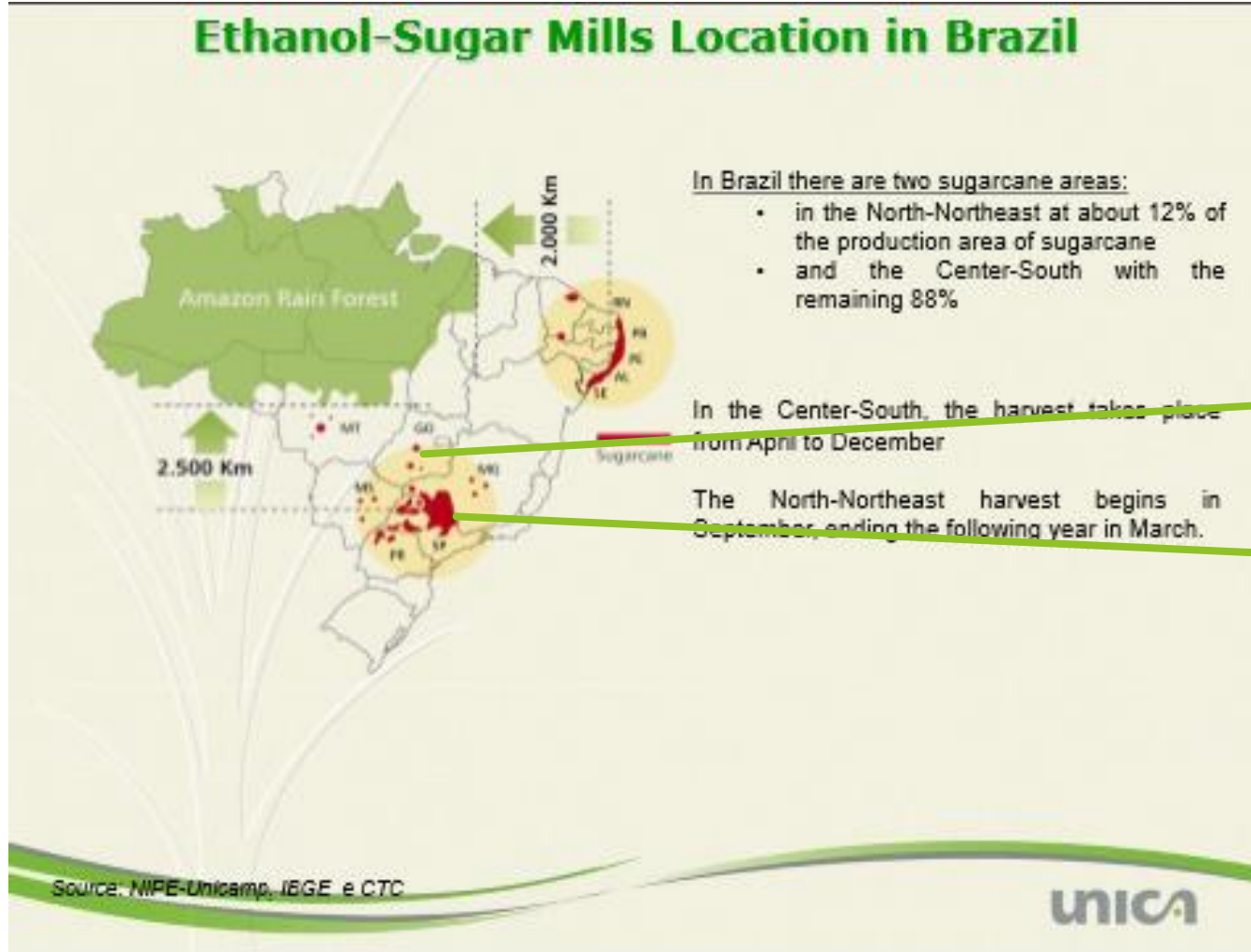
e-EUBCE 2020, July 9, 2020

Research Group on Bioenergy/Institute of Energy and Environment

Research Center on Gas Innovation - RCGI - FAPESP-SHELL

UNIVERSITY OF SÃO PAULO - BRAZIL

# Biofuels in Brazil



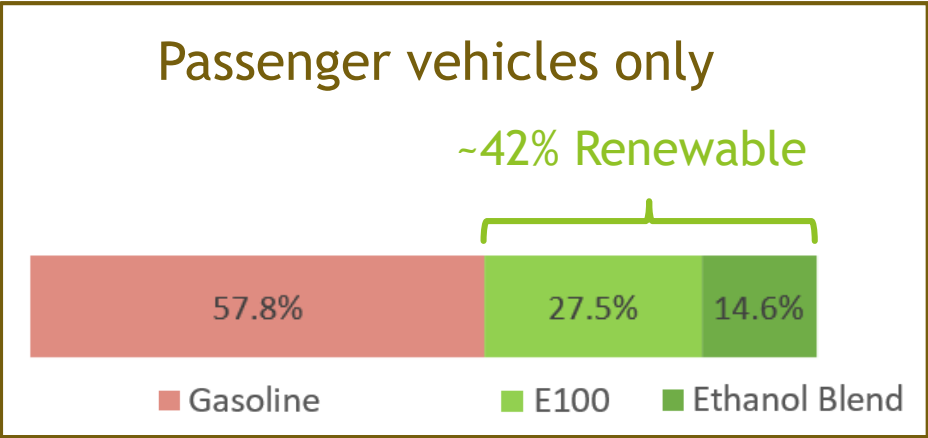
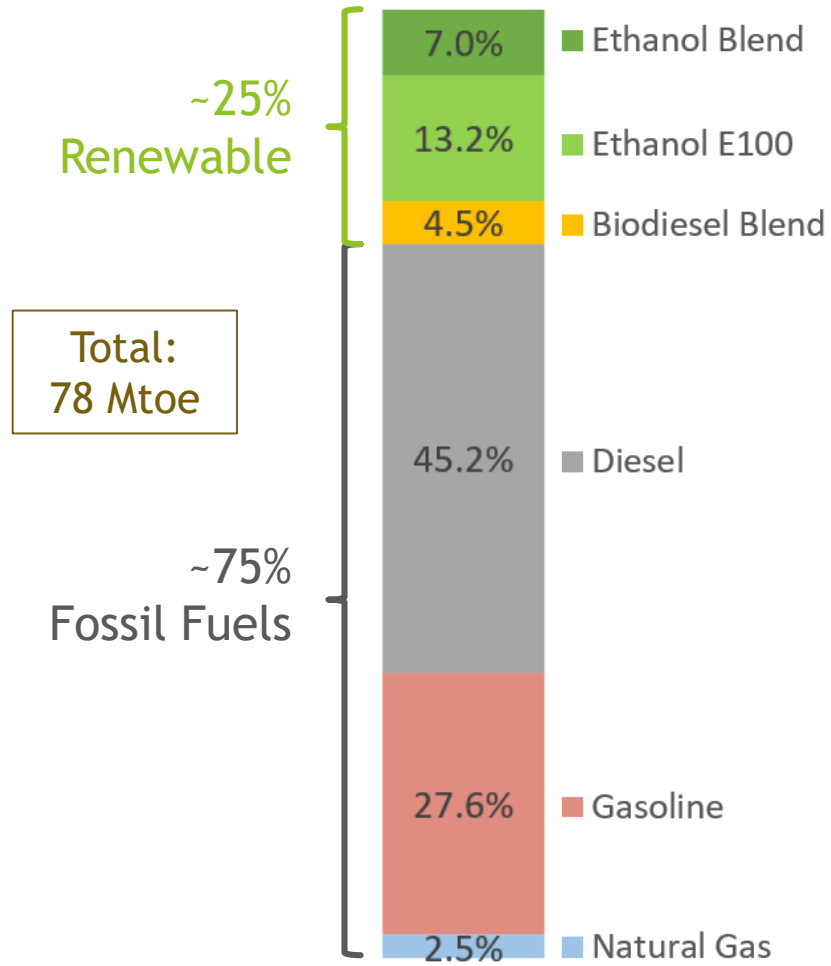
**2019/2020  
Sugarcane season**

642.7 MM t cane

**Center-South:  
590.4 MM t cane**

**Sao Paulo State  
343.7 MM t cane**

# Scale of biofuels in Brazil: Road transport fuel mix



Road transport energy supply  
Source: data from EPE (2019) – Year 2018

## GHG emissions avoided with gasoline replacement

Feedstock	Avoided emissions
Sugarcane	61% to 82%
Corn	-30% to 38%
Wheat	19% to 47%
Sugar Beet	35% to 56%
Cassava	63%
Lignocellulosic residues*	66.5% to 73%

- UNICA (2010) - including iLUC - sugarcane ethanol has a reduction of GHG emissions of 73-82% compared with gasoline, on a 30- or 100-year time horizon, respectively.

- EPA's calculations - sugarcane ethanol from Brazil reduces GHG emissions compared to gasoline by 61%, using a 30-year payback for iLUC emissions

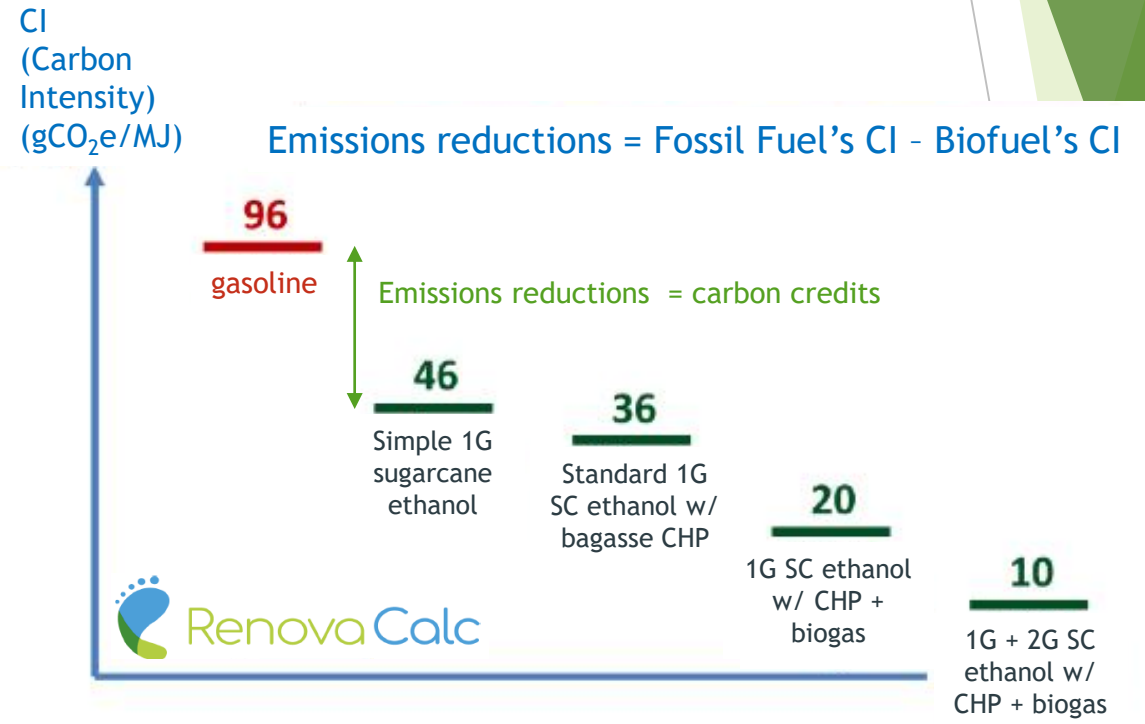
# RenovaBio: incentive to reduce carbon footprint - available and new technologies



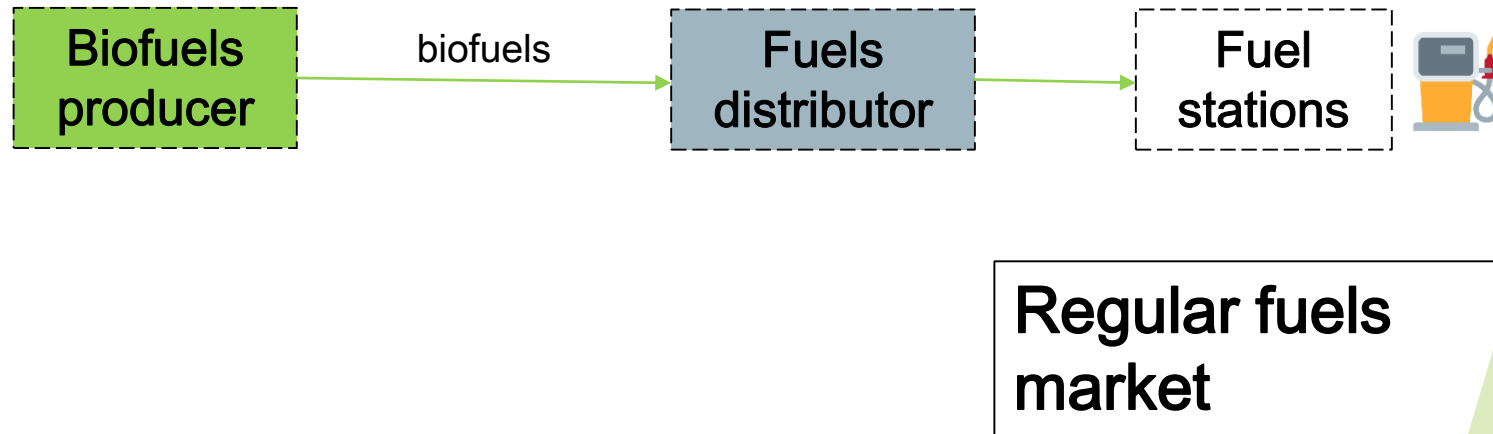
**Carbon credits for biofuels based on lifecycle emissions reductions vs a fossil fuel**

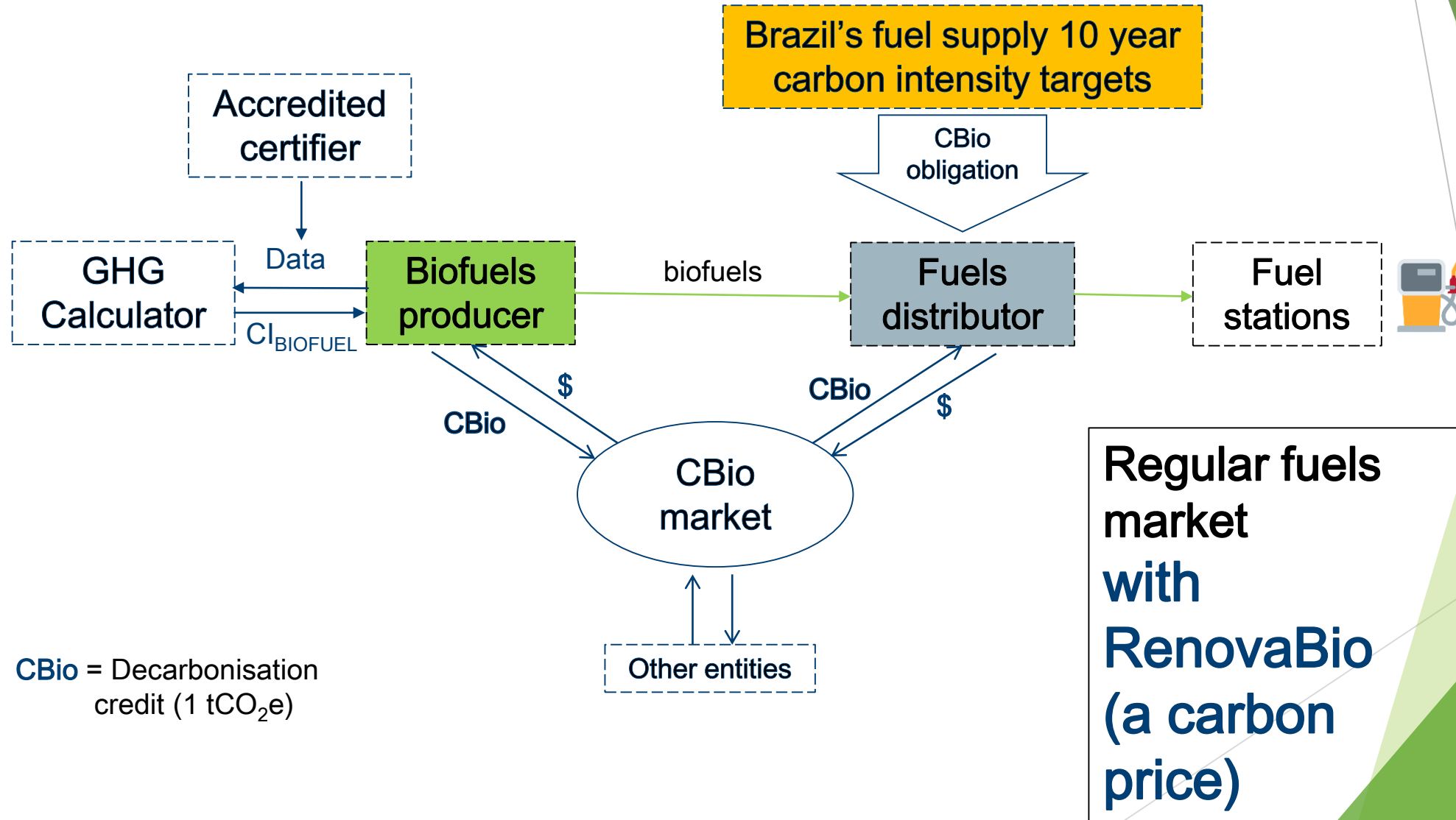
Credits purchased by fuel distributors based on CI reduction targets for the fuel supply

All biofuels: Ethanol, biodiesel, biomethane, HEFA-aviation, ...



2020 - Our new Project proposals at RCGI/FAPESP/SHELL - BECCS perspectives and impacts on RenovaBio





CBio = Decarbonisation credit (1 tCO<sub>2</sub>e)

## Impacts of COVID pandemic on biofuels\*

- ▶ ↓ demand for fuels and ↓ oil prices: huge impact on biofuels
- ▶ In Brazil:
  - ▶ Ethanol demand ↓ by 50% (UNICA)
  - ▶ Ethanol prices ↓ by 35% (from 2.0 BRL down to 1.3 BRL)
  - ▶ Main difficulty is ethanol storage, as cane must be crushed
  - ▶ Only large groups have relevant storage capacity
  - ▶ Sugar production is an option only for industries with flexible process
  - ▶ **Special financing policies under discussion to face the crisis**

\* COELHO, S. T. How bleak is the future for Brazil's biofuels sector? Latin America Advisor - Energy Advisor. Washington, DC, USA, p.1 - 6, 2020. <https://www.thedialogue.org/energy-advisor/>



# Thanks!

[suani@iee.usp.br](mailto:suani@iee.usp.br); [danieloperecin@usp.br](mailto:danieloperecin@usp.br)

[www.iee.usp.br/gbio](http://www.iee.usp.br/gbio)

[www.usp.br/rcgi](http://www.usp.br/rcgi)