



Sugarcane biorefineries towards bioeconomy: residues management, energy planning and recovery

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"Produção sustentável de biomassa para a bioeconomia"

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Center for Energy - NIPE

Organization, instrumentalization and support research on energy and bioenergy at University of Campinas - UNICAMP



Vision

To be a reference in the interdisciplinary area of energy and its multiple relationships with sustainable development towards the bioeconomy.

Mission

Produce knowledge aimed at scientific and technological development and influence the design and implementation of energy policies based on the sustainability tripod

Research, Development, Innovation and Application:
Key initiatives to leverage sustainable development based on energy and bioenergy



Proposal Outline

Subject of RD&I:

✓ Technological innovation on the biogas production within the sugarcane industry

Topics:

- Biogas production during sugarcane season and offseason
- Prospection of technological arrangements and evaluation of business models
- Technological development of the biogas production process
 - Development of Anaerobic Digestion Reactors and process scaling-up
 - Use of biogas in the truck fleet
- Prospecting the future
 - Technologies for increasing electricity production
 - Second-generation ethanol
 - Plant energy balance
 - Advent of the electric car
 - Environmental and economic impact of different scenarios

Research, Development, Innovation and Application



Theoretical and Laboratorial Scale



Pilot Scale



Full Scale

FROM BASIC TO APPLIED RESEARCH

Sugarcane biorefinery at the center of the sustainability tripod: technological arrangement and business model

- ✓ Continuous biogas production throughout the year (along season and off-season)
- ✓ Waste management, energy use from vinasse, from potential co-substrates, potential uses of biogas.
- ✓ Living Laboratory (scaling-up of the bio-process at the university): Pilot Plant for Bioenergy (PPBIOEN)
- ✓ Energy and economic impact assessment, on the environment and society



Potential Partnerships

- Sugarcane industries
- Equipment Manufacturers for the Sugarcane Plants
- Manufacturers of equipment for the production and treatment of biogas
- Biomethane Engine Manufacturers

THANK YOU!

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