PSR

OptBio

Optimization for the Bioenergy Industry

Advanced strategy for defining your product mix to maximize returns while mitigating risk

The challenge of diversification in bioenergy

Bioenergy goes far beyond traditional models. Biomass sources like sugarcane, for example, are now reaching markets ranging from biomethane to hydrogen, SAF, and biochar. Investment decisions are becoming increasingly complex given the multitude of options, volatile prices influenced by public policies, and multiple production routes. Traditional analyses fail to capture so many variables and market uncertainties, which can lead to suboptimal capital allocation and unnecessary risks.

The optimized OptBio solution

Developed from an ANEEL R&D project, **OptBio** is a stochastic optimization software designed to support strategic decision-making. The model evaluates hundreds of price scenarios and crop variations to determine the product mix and investment plan that maximize your profit. Flexible and with built-in risk aversion, OptBio **protects your operation** in adverse scenarios and **ensures the best profitability** for your plant.

What does OptBio deliver?

Profit maximization

Evaluates all possible products from the crop and identifies the mix that maximizes expected revenue, factoring in investment costs, operational expenses, multiple price scenarios, and risk management.

New markets

Analyzes the economic viability of new products (such as renewable H_2, SAF, or methanol) by comparing different available routes against traditional raw material uses, quantifying the expected return for each scenario.

Risk management

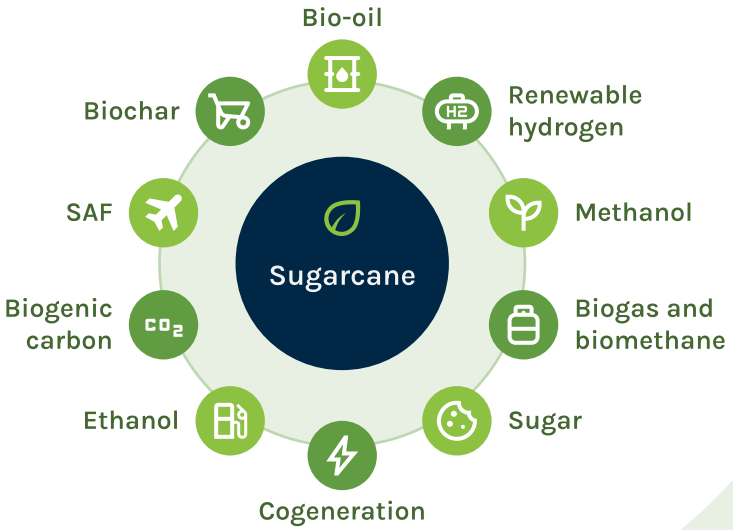
Incorporates risk aversion into the objective function, protecting producers during the most adverse price scenarios. The model balances the pursuit of expected profit with financial robustness in worst-case market conditions.

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One input, multiple products

From a single raw material, OptBio models the production and economic viability of a wide range of products.



Stochastic optimization

Incorporates hundreds of price scenarios and crop yield variations, ensuring that investment decisions remain robust against market uncertainty.

Customizable assumptions

With fully customizable CAPEX, OPEX, and operational limits, the software evaluates everything from specific projects to the production potential of an entire region.

Intuitive interface and reporting

Results are presented in interactive dashboards and detailed CSV exports, streamlining decision-making and communication with investors and partners.

OptBio in the sugarcane supply chain

Biomass valorization

Decision-making on bagasse utilization, factoring in production costs and alternative product prices.

Carbon monetization

Evaluating the best destination for biogenic CO_2: carbon capture (BECCS) or synthetic fuel production (e-fuels).

H_2 viability

Defining the most cost-effective route for renewable H_2 production: biomethane reforming, ethanol steam reforming, or electrolysis.

Tailor-made innovation for bioenergy

Originating from the **ANEEL** R&D project *Hydrogen in the Ethanol Supply Chain*, developed by **PSR** in partnership with **Eneva** and **Tropicália**, **OptBio** represents the state of the art in bioenergy optimization. Flexible and adaptable to various crops and biomasses, our **Research, Development, and Innovation** team tailors the software's intelligence precisely to your operation's reality.

ANEEL Agência Nacional de Energia Elétrica — Programa de Pesquisa, Desenvolvimento e Inovação

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