



Sustainable Fuels: The Role of Ethanol

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raízen

WHERE WE ARE

- Brazil
- + Argentina
- + Paraguay
- + Singapore
- + Philippines
- + Switzerland
- + USA
- + Colombia

NUMBERS FROM THE 24'25 CROP YEAR



24  PLANTS

70+  DISTRIBUTION BASES

68+  AIRPORT FUELING STATIONS AND PORTS BASES

6,000+  FUEL STATIONS IN BRAZIL

2,000+  SHELL SELECT CONVENIENCE STORES AND OXXO PROXIMITY MARKETS

2  LUBRICANT PLANTS (BRAZIL AND ARGENTINA)

Ethanol Evolution to Advance Decarbonization



Cane Juice





Bagasse



Cane Trash





1^a Wave

-  SUGAR
-  ETHANOL 1G



2^a Wave

-  BIOELECTRICITY

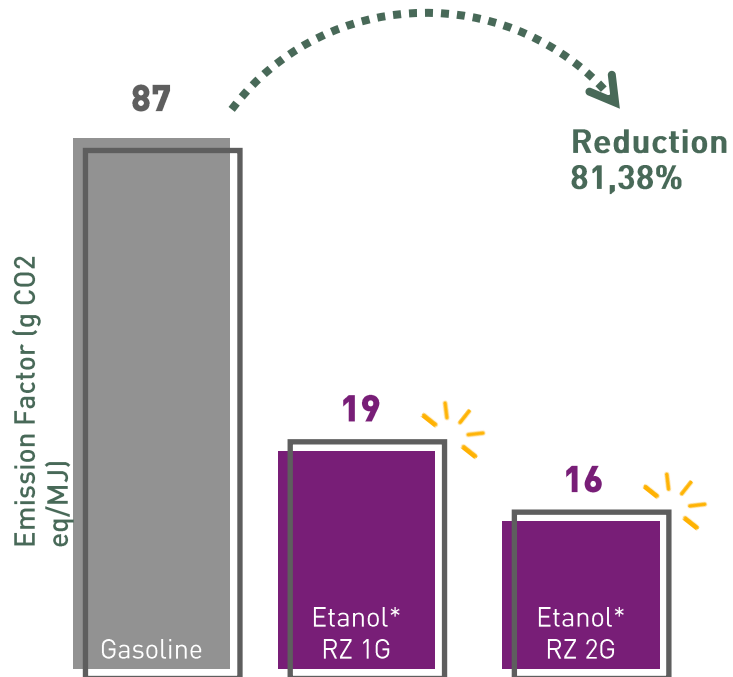
3^a Wave

-  Ethanol 2G
-  BIOGÁS (Biomethane)

4^a Wave

-  SAF
-  BIOBUNKER
-  BIOPLASTICS
-  BIO METHANOL
-  LIGNINA
-  GREEN AMONIA
-  HYDROGEN

Ethanol as a Sustainable Fuel



*Raízen data, 23'24 Crop year

1GE

First-Generation Ethanol

We are the world's largest producer of ethanol from sugarcane - a cost-competitive solution. It **emits up to 80% less greenhouse gases (GHG) into the atmosphere** than Brazilian gasoline.

2GE

Second-Generation Ethanol

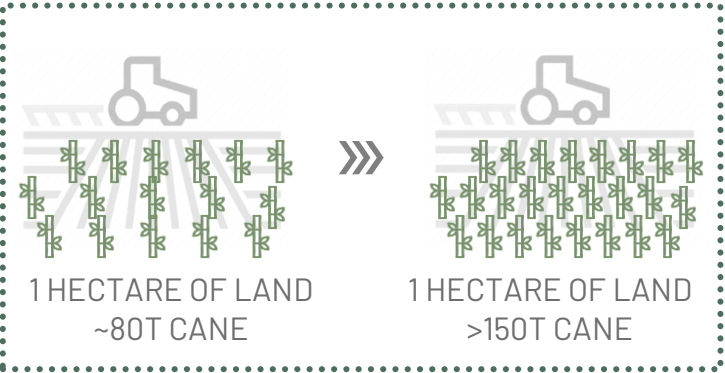
Made from sugarcane residue and with advanced technology that produces **+50% ethanol** with the same planted area. Its production generates **30% less greenhouse gases compared to ethanol (E1G)**.



Scalability: Key Pathways

1. AGRICULTURAL YIELD

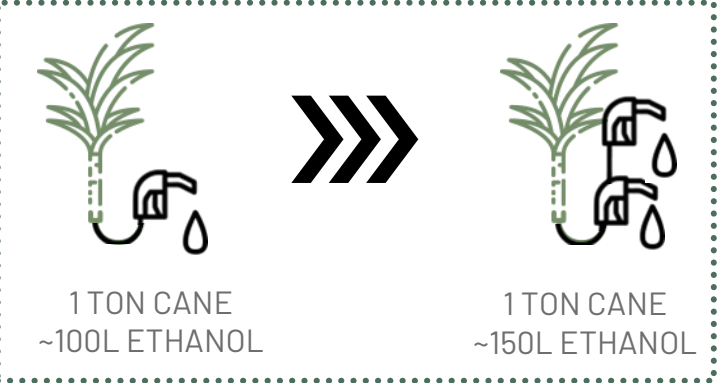
(ie. Irrigation, Biotech, seeds)



2x

2. INDUSTRIAL YIELD

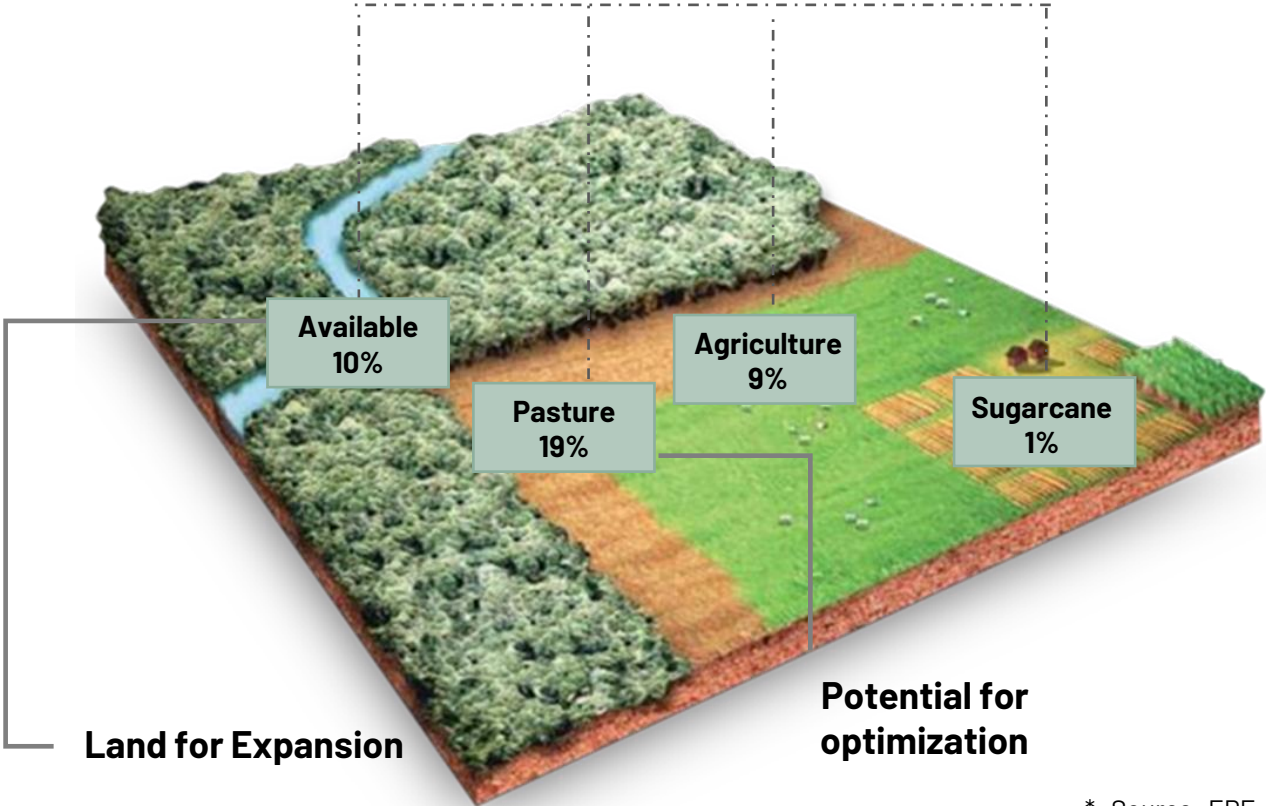
(ie. E2G, straw, electrification, Energy Efficiency)



1,5x

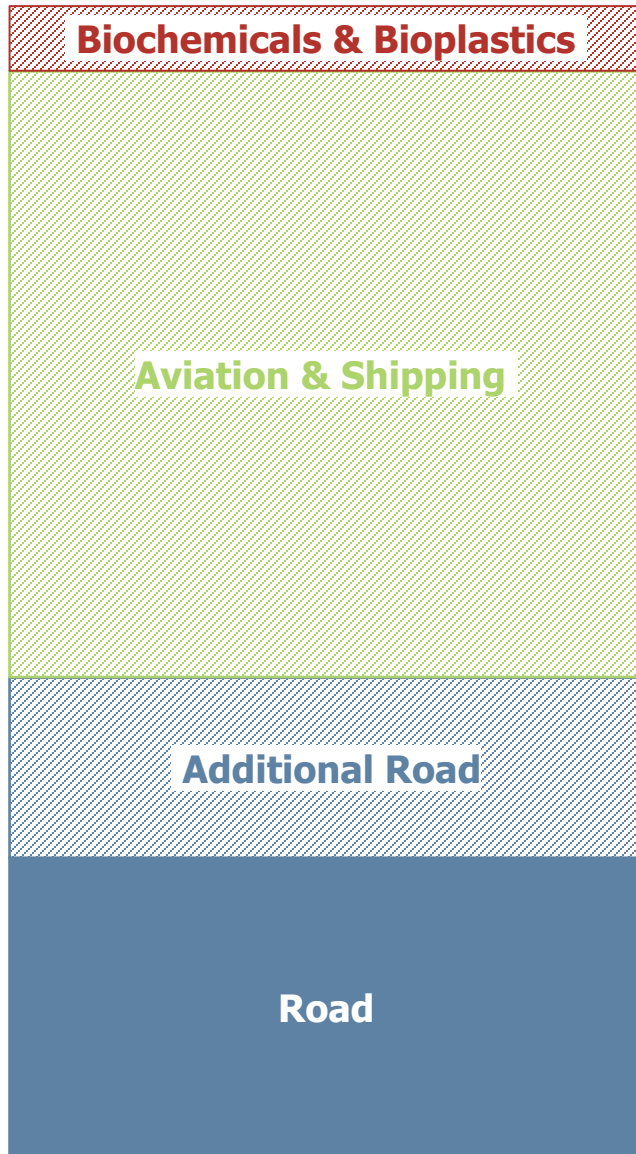
3. SUSTAINABLE USE OF LAND

	Total Area	Protected/ Native	Arable Land	Others
Millions of hectares	851	496	330	26
	100%	58%	39%	3%



* Source: EPE, ANP

Enablers: Regulatory and Demand Predictability



Long-term demand predictability

Blending mandates and decarbonization targets to provide investment certainty.



Aviation & Shipping

Technology-neutral, performance-based regulations

Design policies that reward verified emissions reductions without prescribing specific technologies.



Additional Road

Science-based LCA frameworks for policymaking

Establish consistent lifecycle methodologies to ensure transparent and comparable emissions assessment across all pathways.



Road

International alignment of sustainability and certification systems

Promote interoperability and alignment across certification and sustainability systems.

Business cases: Aviation & Shipping



Raízen is the world's first company with ethanol certified under ISCC CORSIA PLUS for use in SAF production



Maersk is testing a blend of Brazilian ethanol with methanol and marine diesel

Business cases: Motorsports



Raízen's biofuel is one of the fuels that power Ferrari's Formula 1 cars

Through its partnership with Shell, Raízen's second-generation ethanol contributes to the renewable ethanol blend (E10)

Scaling-up Sustainable Fuels Means...

All Sustainable Solutions Are Needed

No single technology can deliver the energy transition alone.

Science-Based Policymaking

Decisions must be grounded in evidence, not perceptions.

Proper Life Cycle Analysis

Lifecycle approach ensures real GHG reductions.
