CHANGE THE WORLD THROUGH BIOGAS

Mission
To promote the sustainable energetic valorization of waste, developing the biogas market

Vision
To be a reference in biogas in Brazil by being a protagonist in the development of the industry value chain
ABIOGÁS WORK FOR THE REGULATION OF BIOGÁS

- **DEC 2012**: State Policy on Renewable Natural Gas - RJ
- **JUL 2013**: ICMS Agreement No. 112 - SP / MS
- **NOV 2015**: Amendment of 482/2012 – Nacional Electric Energy Agency
- **JUL 2015**: Regulation of biomethane as vehicle fuel
- **APR 2016**: First closed deal with biogas in an electric energy auction
- **AUG 2017**: Biogas appears on PDE2027 (EPE) for the first time
- **FEB 2018**: Approval at CEPE of the minimum mandatory biomethane in SP
- **JUN 2018**: Legal Framework of Biogas in Santa Catarina (SC-Biogas)

- **JUL 2018**: Legal Framework of Biogas in Paraná (PR-Biogas)
- **SEP 2018**: PDE projects 400 MW of installed capacity for biogas

- **APR 2013**: Change of the Tax Code in Minas Gerais
- **JAN 2015**: Regulation of biomethane as vehicle fuel
- **APR 2015**: Amendment of 482/2012 – Nacional Electric Energy Agency
- **JUL 2015**: Regulation of biomethane as vehicle fuel from landfills and sewage treatment plants
- **DEC 2015**: Approval of Law 13575 / 2017 - the RenovaBio Program

- **NOV 2015**: Regulation of biomethane as vehicle fuel from landfills and sewage treatment plants
BRAZIL: A DEVELOPING POWER

BRAZILIAN BIOGAS POTENTIAL, BY SOURCE
(Nm³/year)

- Sugarcane: 41.4 billion
- Agribusiness: 37.4 billion
- Sanitation: 5.8 billion
BIOGAS: ECONOMY AND SUSTAINABILITY

ENERGY EQUIVALENCE

DEMAND OF ELECTRICITY
EPE

- Installed Power
  23.05 GW
  CF: 90%

BIOGAS
38% of the demand
(181,707 GWh)

ELECTRIC POWER
479,586 GWh

DEMAND OF FUEL
ANP

- BIOMETHANE
  12.5 Million m³/day

- DIESEL
  60 Bil liters

- BIOMETHANE
  70% of total demand
  (45.5 BI/year)

Source: Canal Bioenergia | Em: https://www.abiogas.org.br/producao-ritmo-acelerado
BIOGAS: ECONOMY AND SUSTAINABILITY

DEMAND OF FUEL ANP

BIOMETHANE
12.5 Million m³/day

BIOMETHANE POTENCIAL BY SUBSTRACT (m³/yr)

DIESEL
60 BI L

BIOMETHANE
70% of total demand
(45.5 BI/year)

SUGARCANE 48,1%
AGROINDUSTRIAL 44%
WASTE AND SEWAGE PLANTS 7,9%
BIOGAS: ECONOMY AND SUSTAINABILITY

* Carbon footprint through life cycle analysis of various fuels. ARB, 2016.
Biogas is prepared to take advantage of the regional raw materials distribution found in Brazil.

<table>
<thead>
<tr>
<th>Sanitation</th>
<th>Sugarcane</th>
<th>Animal Protein</th>
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<tbody>
<tr>
<td>51% Southeast</td>
<td>66% Southeast</td>
<td>43% South</td>
</tr>
<tr>
<td>22% Northeast</td>
<td>19% Midwest</td>
<td>20% Southeast</td>
</tr>
<tr>
<td>11% South</td>
<td>6% South</td>
<td>15% Midwest</td>
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<tr>
<td>8% Midwest</td>
<td>5% Northeast</td>
<td>13% Northeast</td>
</tr>
<tr>
<td>6% North</td>
<td>1% North</td>
<td>8% North</td>
</tr>
</tbody>
</table>
Information

Biofuel
- Ethanol: 381 plants
- Biogas: 125 plants

Biogas Infrastructure
- Transport Pipelines
  - Existing Pipelines
  - Pipelines under evaluation
  - Pipelines under construction
HOW CAN BIOGAS HELP THE COUNTRY?

- GHG reduction
- Reduction in particulate emission
- Sustainability of generating activities
- Non-intermittent renewable energy
- Regional decentralized generation
- Interiorization of methane
- Generation of economy and income
- Training
- Production of biofertilizers
- Pathway to Hydrogen Production (CH4)
A SUSTAINABLE REALITY
SUCCESS STORIES

BONFIM PLANT - SP

Electricity: 138,000 MWh/year (under construction)
Biomethane: -
Substract: Sucroenergetic
Investment: U$ 40 MM
Expansion: -

The Pioneer

- A joint-venture between Raizen and Geo Energetica
- The first commercial plant to use vinasse and filter cake technology
- Project:
  - 180 mi ton: 9000 m³ CH₄ – filter cake
  - 20 mi ton: 120 m³ CH₄ - vinasse
- 96,000 MWh to be commercialized
SUCCESS STORIES

SUSTAINABLE CITY

Biomethane: 118 000 m³/dia (Project)

Substract: Sucroenergetic

Investment: U$ 8 MM – GasBrasiliano
U$ 35 MM Cocal

Extension: 68 km pipeline: Narandiba - Pirapozinho

Concession of natural gas distribution

Energy use

Dedicated Pipeline:
Narandiba - Presidente Prudente

230 THOUSAND PEOPLE BENEFITED

150 000 ton – filter cake
1,5 mi ton – vinasse
120 000 ton - leaves
SUCCESS STORIES

**ITALAJÁ - SC**
- **Electricity:** 1 MW
- **Biomethane:** -
- **Subtract:** RSU
- **Investment:** U$ 2 MM
- **Expansion:** 2.6 MW

**CAIEIRAS - SP**
- **Electricity:** 30 MW
- **Biomethane:** -
- **Subtract:** RSU
- **Investment:** U$ 29 MM
- **Expansion:** 34.2 MW
SUCCESS STORIES

FRANCA - SP

- **Electricity:** -
- **Biomethane:** 2500 m³/day
- **Subtract:** Sanitary sewage
- **Investment:** U$ 28 MM
- **Expansion:** -

CSBIOENERGIA - PR

- **Electricity:** 2,4 MW
- **Biomethane:** 3,000 Nm³/day
- **Subtract:** Treatment plant sludge
- **Investment:** U$ 26 MM
- **Expansion:** -
SUCCESS STORIES

FORTALEZA - CE

Electricity: -

Biomethane: 100,000 m³/day

Substract: Urban solid waste

Investment: U$ 1,9 MM

Expansion: 2020 – 150 mil m³/day

DOIS ARCOS - RJ

Electricity: -

Biomethane: 15,000 Nm³/day

Substract: Urban solid waste

Investment: U$ 5 MM

Expansion: 2020 – 22,000 Nm³/day
COME CHANGE THE FUTURE WITH ABIOGÁS

THANK YOU!

Contact:
www.abiogas.org.br
presidente@abiogas.org.br
+55 (11) 2655-1802