UNITED NATIONS
Seminar on Ensuring Access to Energy for all
Addis Ababa, Ethiopia
ECOMETANO: REBEWABLE FUEL UPSTREAM COMPANY IN BRAZIL
BRAZIL: A NATURAL GAS CULTURE – 100 MILLION m3/day MARKET
MARKET DRIVERS

BIOGAS BEING FLARED

AVAILABILITY

BRAZIL’S AGRI-INDUSTRY IS WORLD LEADER

BIOMASS

POSITIVE POPULATION GROWTH RATE

BIOMASS

NEW NATURAL GAS REGULATION GUARANTEENING TRADING MECHANISMS

MATURE TECHNOLOGIES

MASSIVE GOVERNMENT INVESTMENT IN SUSTAINABLE HOUSING AND GREEN INFRASTRUCTURE

MOMENTUM

CONFIDENCIAL
BEAUTIFUL LANDFILLS AND WWTP FOR APPROPRIATE DESTINATION OF MSW
BUT WE ALSO HAVE THIS ...

35% OF MSW GOES TO ILLEGAL DUMPS
45% of URBAN SEWAGE IS NOT TREATED
SAME APPLIES FOR AGRO INDUSTRIAL RESIDUES ... LARGE SCALE COMPOSTING FACILITY
BUT THERE STILL ARE RIVERS DYING DUE TO ILLEGAL RESIDUAL DISPOSAL

SOME CITIES CANNOT EXPAND THEIR SWINE POPULATION UNLESS THEY CHANGE THE RESIDUE TREATMENT MODEL
BOTH IN AGRICULTURE AND URBAN POPULATION BRAZIL IS A WORLD POWER

<table>
<thead>
<tr>
<th>Country</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>1,372 million</td>
</tr>
<tr>
<td>India</td>
<td>1,314 million</td>
</tr>
<tr>
<td>United States</td>
<td>321 million</td>
</tr>
<tr>
<td>Indonesia</td>
<td>256 million</td>
</tr>
<tr>
<td>Brazil</td>
<td>205 million</td>
</tr>
<tr>
<td>Pakistan</td>
<td>199 million</td>
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<tr>
<td>Nigeria</td>
<td>182 million</td>
</tr>
</tbody>
</table>

O Brasil é o maior produtor mundial de cana-de-açúcar. Em 2012, produziu 594,3 milhões de toneladas. O país é o 2º maior produtor mundial de soja, perdendo apenas para os EUA. A produção de 2013/2014 foi de 86,27 milhões de toneladas. Também lidera o ranking das vendas externas do complexo de soja (grão, feno e óleo), que é o principal gerador de divisas cambiais. O Brasil é o primeiro produtor e exportador de: Café, Açúcar, Etanol, Suco de Laranja.
When considering options to modernise the transport sector in Europe, biomethane offers a unique set of benefits. Biomethane is a powerful weapon against climate change. Anaerobic digestion of manure and similar materials captures methane emissions which are up to 23 times more harmful than CO$_2$. In the absence of the biogas technology, methane is emitted to the atmosphere due to the decomposing manure and waste, such as sewage sludge, municipal waste, agro-industrial effluents and agricultural residues. Therefore, the CO$_2$ emissions from burning biomethane are a small fraction of the avoided methane emissions from decomposing manure and waste. As a result, the total carbon footprint is very low, when compared with its fossil equivalents, as shown below in Figure 2.

In the case of manure, it often has a negative emission balance (i.e.: by turning it into biomethane, it avoids more GHG to the atmosphere than what production releases), as it is shown in Figure 3. Other effluents reach very good levels ranging between 70% and 80%. Energy crops for biomethane production (such as maize) have a low carbon footprint due to their high production yields, which can go up to twice the yield per hectare compared to other crops destined to produce liquid biofuels. Therefore, under the right conditions biomethane from energy crops can save 66% - 70% in emissions compared to oil products (Figure 2) and more than 50% when compared to EU fossil fuel mix including coal and natural gas (Figure 3). Moreover, if crops are co-digested with manure, as is often the case, the GHG savings are significantly higher.

In addition to using pure biomethane in vehicles, a smart cost-efficient way to reduce GHG emissions to meet national targets is by blending it with natural gas. Blending the two, even by using a low biomethane to natural gas ratio, can result in fuel that has substantially lower emissions than plain natural gas. For example, using a blend with 20% biomethane can yield GHG emission savings of 39% when compared to gasoline on the well-to-wheel basis (NGVA Europe, 2015). This is particularly the case when biomethane from waste with very low (or even negative) GHG emissions is used (Figure 3). Such policy can be implemented quickly and in a cost-effective way to match emission reduction targets, since most countries already have adequate natural gas grids and some even dispose of a good network of CNG stations. This would enable countries to make substantial GHG reductions in transport with mostly existing infrastructure in the coming years, ahead of developing additional long term alternatives. In order to implement this, it is essential that public authorities encourage and actively support the construction of biomethane upgrading facilities and the connection of these plants to the natural gas grid. If the biomethane and natural gas sectors work together, they can rapidly lower the total GHG emissions in the European transport sector. EBA is committed to cooperate with the natural gas industry, particularly with NGVA Europe, to promote sustainable gas-powered transport in the years to come.

Using biomethane and natural gas significantly reduces pollutant emissions (hydrocarbons, carbon monoxide, nitrogen oxides and particulate matter), 2.1 the environment.
Uma referência na produção de biogás

A Usina Dois Arcos, da EcoMetano, que produz biogás purificado (biometano) a partir de resíduos sólidos urbanos de oito municípios da Região dos Lagos, foi apresentada como estudo de caso no International Conference on Renewable Energy Gas Technology (Regatec) 2015. O evento reuniu em Barcelona, na Espanha, especialistas e empreendedores na produção de biometano por meio de conversão microbiológica e termoquímica de biomassa e resíduos de todo o mundo.

O investimento na usina foi de R$ 20 milhões, incluindo a instalação do aterro sanitário. A estimativa de produção é de cerca de 8 mil m³ de biometano/dia, chegando a 15 mil m³/dia em 2020. O aterro recebe aproximadamente 700 toneladas/dia de resíduos sólidos urbanos. No início, o biometano será fornecido em cilindros, como gás natural comprimido (GNC), para clientes industriais. Futuramente, a usina poderá ser ligada à rede de distribuição da CEG e da CEG Rio, concessionárias de gás canalizado do Estado.
DOIS ARCOS LANDFILL
DOIS ARCOS BIOGAS UPGRADE FACILITY
HIGH QUALITY BIOMETHANE
CAPACITY TO FUEL CNG TRUCKS AND PIPELINE INJECTION
URBAN BUSES ON BIOMETHANE
WASTE COLLECTION FLEET POWERED BY BIOMETHANE
COMPANY GROWTH PLAN

Contracted Biomethane Volume Projection
(in ‘000 m³/day)

- Volume Contracted
- Volume to be Contracted

- 3 projects
- +15 projects
- Umbrella GSA: 400,000 m³/day

States with ongoing project development

- GNR Fortaleza: 85,000 m³/day
- GNR Dois Arcos: 14,000 mil m³/day
- UTER Estrela: 35,000 mil m³/day

1.200

UTER Estrela:

GNR Fortaleza:

GNR Dois Arcos:
LARGE SCALE LFG–TO–PIPELINE UNIT: OPERATION BEGINS 06/2017
LARGE SCALE BIOMASS–TO–PIPELINE UNIT: CONSTRUCTION BEGINS 12/2016
LARGE SCALE VINASSE–TO–PIPELINE UNIT: CONSTRUCTION BEGINS 2017
ECOMETANO’S VALUE PROPOSITION

• Capital Intensive **Feedstock to Customer** Business Model;

• **Certified Emissions Reductions** (CDM) portfolio;

• Replacement of Fossil Fuels generates **positive environmental impact**;

• Improvement of residue treatment methods increases **social returns**;

• Increase in local RNG production **decreases LNG imports** and weighs positively on commercial balance;

• Heavyweight work for **positive regulation** creates ground for long term competitiveness
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