



**PETROBRAS**

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# ***BIOFUEL***

- Proven reserves: 11.0 billion boe (SEC)

- 16 Refineries with a refine capacity of 2,060 thousand bpd

- Oil & gas production: 2,036 thousand boe/d

- Pipelines: 22,390 km



- More than 7,000 service stations (33% of the Brazilian retail market)

- 720 stations in Argentina

- Ethylene Production: 2.4 million ton/year

- 20% of the distribution market in Bolivia and 14% in Argentina

- Gas sales: 27.5million m<sup>3</sup>/d

**Growth - Profitability - Social and Environmental Responsibility**

- **Biofuels market – alcohol and biodiesel**
- **Biodiesel production**
- **Renewable energy**
- **R&D Petrobras Center (Cenpes) - projects on renewables**

**Business Plan 2007-2011 → total US\$ 87.1 billion**

<b>2007-2011 Investments</b>	<b>2011</b>
Biodiesel Plants	Availability of 855 Thous. m <sup>3</sup> /year
H-Bio (Bio-Refining)	Processing 425 Thous. m <sup>3</sup> /year of vegetable oil
Alcohol pipelines	3.5 million m <sup>3</sup> Ethanol Exports
Alcohol Vessel Project	
Wind Power	240 MW Installed Capacity of Power Generation from Renewable Sources
Photovoltaic	
Other Renewable Energy Sources	

**Investments of US\$ 700 millions in development of renewable  
energy sources and biofuels**

- ~ 50.000 industries
- Exports: US\$ 2.5 billion/year (sugar and ethanol)
- Total area of plantations: 5 million hectares
- Sugar cane production: 340 million tons/year
- Installed capacity for ethanol production: 16 million m<sup>3</sup>/year
- Ethanol production: >14 million m<sup>3</sup>/year
- Ethanol present potential surplus (for export) : 2 million m<sup>3</sup>/y  
– can be expanded

## Brazilian Potential Seeds

<i>Type of Seed</i>	<i>Oil Content (%m)</i>	<i>Productivity (kg/ha.year)</i>	<i>Oil Production (kg/ha.year)</i>
<b>Animals Fat</b>	<b>100</b>	<b>-</b>	<b>-</b>
<b>Castor Bean</b>	<b>50</b>	<b>1 500</b>	<b>750</b>
<b>Sunflower</b>	<b>42</b>	<b>1 600</b>	<b>672</b>
<b>Peanut</b>	<b>39</b>	<b>1 800</b>	<b>702</b>
<b>Sesame</b>	<b>39</b>	<b>1 000</b>	<b>390</b>
<b>Rape Seed</b>	<b>38</b>	<b>1 800</b>	<b>684</b>
<b>Palm</b>	<b>20</b>	<b>10 000</b>	<b>2 000</b>
<b>Soy Bean</b>	<b>18</b>	<b>2 200</b>	<b>396</b>
<b>Cotton</b>	<b>15</b>	<b>1 800</b>	<b>270</b>
<b>Babassu</b>	<b>6</b>	<b>15 000</b>	<b>900</b>







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- **Social and environmental aspects of biofuels**

- **Renewable sources of energy**
- **Job creation and social inclusion**
- **Diversity of seeds and regions**
- **Castor bean and palm seeds production are manpower intensive.**
- **Soy bean production is highly automated**

