

## Energy Policy on Bioenergy Ministry of Mines and Energy - Brazil

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Ministry of Mines and Energy

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## Technological Development 2001/2002

- **Implementation of Sectorial Funds**  
Coordinated by the Ministry of Science and Technology

**CT-PETRO**  
US\$ 54 million

**CT-ENERG**  
US\$ 24 million

**CT-HIDRO**  
US\$ 1 million

- **Implementation of “Avança Brasil” Program**  
Applied Research in the Energy Area Program – (US\$ 4 million)

Urban buses with  
hydrogen cells  
(GEF/CT-ENERG/EMTU-SP)

Natural gas turbines  
(Brasil-Ucrânia)

Fuel cells  
Bio-fuels  
Other alternative sources  
(Universities and  
Research Centers)



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## R&D targets in Bioenergy

### Biofuels

- **Alcohol/sugarcane ethanol**
  - to improve energy production efficiency and volume
  - to optimize the mix with gasoline and diesel
- **Biopetroleum from biomass**
- **Biodiesel from vegetable oils such as dendê, mamona, soja and babaçu**
  - with transesterification via ethanol
  - direct vegetable oil application for micro generation with diesel engines



## R&D targets in Bioenergy

### Electricity generation

- **Direct burning of sugarcane residue**
  - to improve efficiency
  - to use new residues
- **Biomass gaseification**
  - to use in gas turbine and fuel cells
- **Ethanol as fuel to fuel cells and gas turbine power plant**



## Internacional cooperation IEA Implementing Agreements

### SolarPACES – Bioenergy

- Government represents Brazil's interest on the ExCo meetings
- Leaders of thematic networks involved in task activities  
Example of networks:
  - Biodiesel
  - Renabio
- Financial support comes from network activities approved by Sectorial Funds such as
  - CT-Petro
  - CT-Energ



## Incentives to introduce renewable energy in the power market

### Off-grid projects

- Financial support from CCC (Fuel Consumption Account)  
Total budget: US\$ 200 million (dolar R\$3,50) to cover the overcost of power generation in isolated systems
- Economic value of displaced diesel can benefits renewable project budget
  - Vegetable oil
  - Biodiesel
  - Gaseification
  - Direct burning



## Incentives to introduce renewable energy in the power market

### On-grid projects

- **PROINFA (Incentive to Alternative Sources of Energy Program)**
  - Total investments – US\$ 8.1 billion (dolar R\$3,50)
  - Insertion in the grid of biomass, small hydro plants and wind energy
- **CDE (Energetic Development Account)**
  - To cover the gap between the economic and the competitive value for biomass, small hydro centrals and wind energy



## PROINFA

- **PROINFA – Phase #1**  
Insertion in the grid of 3300 MW of renewable sources till Dec/2006

**Wind**  
1100 MW  
2.89 TWh/year

**SHP**  
1100 MW  
5.78 TWh/year

**Biomass**  
1100 MW  
6.75 TWh/year

- **PROINFA – Phase #2**  
Insertion in the grid, from 2006 to 2019, of 15% of annual market growth until reaching 10% of total consumption

**Wind**  
6518 MW  
17.13 TWh/year

**SHP**  
6518 MW  
34.26 TWh/year

**BioMass**  
6518 MW  
39.97 TWh/year

