

# Development of Bio-oil Production Plants in Brazil

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## Presentation:

- Introduction
  - Who is BTG
  - BTG's Technology
- Scenario for Brazil
  - Background and advantages
  - Vision
- Present Status
  - Implementation
  - Co-combustion tests
  - R&D
- Conclusions

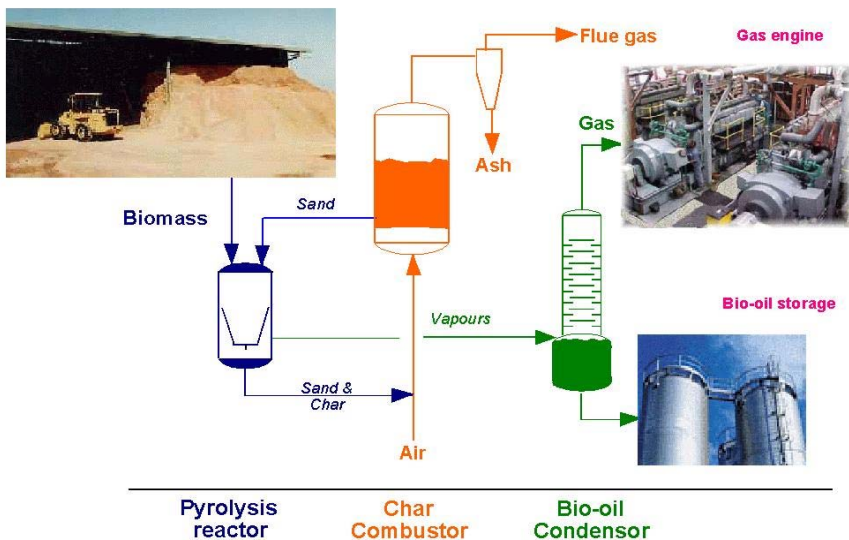


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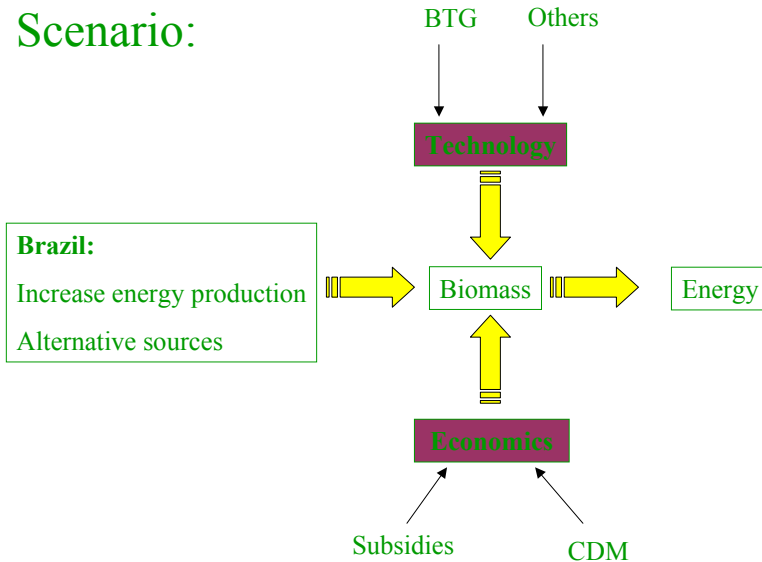
## BTG - Biomass Technology Group BV:

- More than 20 years experience
- Offices and Projects all over the world
- Latin America since 1997
- CDM services
- Representative office in Brazil

### Biomass storage



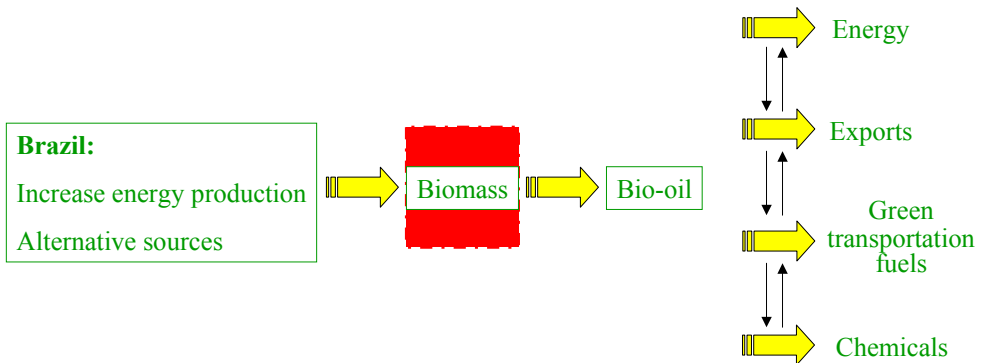
## Scenario:



## Technology:

- Main technologies nowadays:
  - Direct Combustion
  - Gasification
  - (Constraints)
- Pyrolysis
  - Liquid (fuel)
  - Different kinds of biomass
  - De-couple fuel production X energy generation  
(scale, time and location)
  - Processes integration
  - Niche expansion

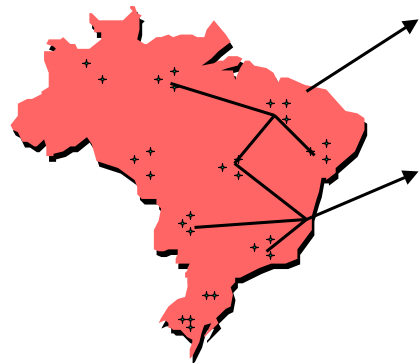
## Bio-oil Scenario:



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## Vision:

- Thousands of plants
  - Various kinds of feedstock
  - Infra-structure
  - More than 10 million tons of oil
- Bio-oil applications
  - Buffer for electricity production
  - Exports
  - Green transportation fuels
- Sustainable and profitable
- Green OPEC



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## Present Status:

- Implementation Projects
  - Bio-oil Co-firing tests
  - Bio-oil application's Research
- 

## Implementation Projects:

- First Commercial Plant end 2003
  - Negotiations under way in other countries
  - **Brazil:**
    - Negotiating with Potential Partners
    - Expected production cost of 40 US\$/ton
    - CDM Possibilities
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## Bio-oil Co-firing Tests:

- Natural Gas Thermal Plant
  - No cleaning device, no adaptations
  - Total success (flame, heat, emissions, feeding etc.)
  - Immediate market for bio-oil
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## Research Perspectives:

- Diesel Engines
  - Gas Turbines
  - Fischer-Tropsch to diesel/benzine
  - Fuel Cell
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## Fuel Cell Research Project:

- EU Project
  - 2.7 Million Euro
  - 03 Years
  - Netherlands, Italy and Estonia
- Biomass to electricity
  - High efficiency
  - Renewable and Clean
  - Different kinds of biomass

## Conclusions:

- Pyrolysis is a serious route to be considered
- Technology/process integration is possible
- Bio-oil is a reality with great potential
- Co-firing of bio-oil immediate market
- Bio-oil application - Great developments expected
- High credibility and expectations

# Thank you!!

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