



CSTD 2022-2023 Inter-sessional Panel

Technology and innovation for cleaner and more productive competitive production

Advanced BioFuels: Energy Transition with Social Impact

- Pro-Alcohol example in Brazil
- 2G Biorefineries: Global Net Zero value chains
- Biomass to SAF: an idea to walk the talk
- Who can orchestrate complex cooperation?

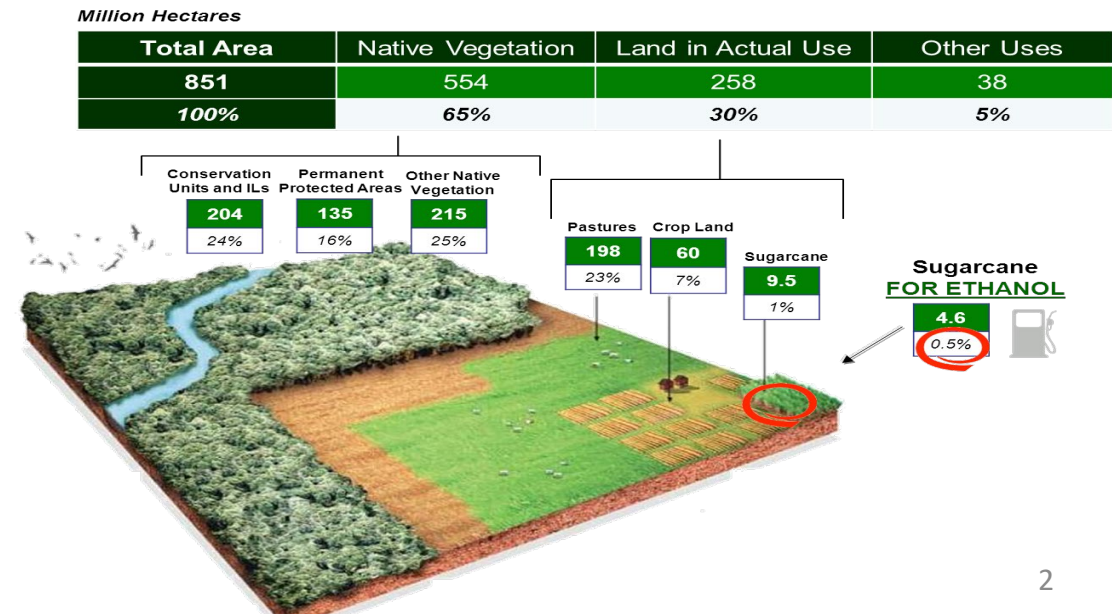
by Bernardo Gradin – CEO GranBio

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ProAcohol – a “Mission Oriented” successful case in Brazil

- Need to respond to 1973 Oil Crisis – government top down regulatory initiative
- Innovation based on comparative advantage and existing core technologies
- 2,000,000 green jobs and more than 500,000,000 tons of CO2 emissions avoided (1)
- Cellulosic ethanol or 2G ethanol can increase output by 50% with no additional land
- Use if less than 1% of Brazil’s land



(1) Source: Unica

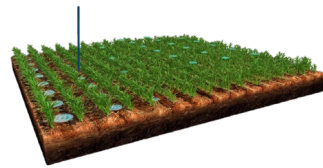
2G Biorefineries: Net Zero global value chains narrowing STI gap

- Biomass 2G biorefineries have the potential to revolutionize energy transition
- Low level of complexity, plug in to existing demand and drastic GHG reduction
- According to FAO Africa has 1 billion ha of degraded or pasture land
- The example of energy cane:
 - 24K liters/ha of ethanol
 - 2.5 more biomass
 - recovers degraded soil
 - 100x Amazon net CO₂
- 100Mha can replace global Gasoline!



Biomass to SAF: an idea to walk the talk...

- IATA goal: 450 billion liters of SAF by 2050
- Biomass to Net Zero SAF from degraded areas: social & economic impact
- Cooperation on green value chains combining private demand and project finance
- Creation of STI transferring by securing SAF supply, green jobs and carbon capture



Land

50.000 ha of drip irrigated energy cane – used area.

Energycane production

12 MM tons/year



1G Ethanol
560 k tons/year



2G Ethanol
500 K tons/year



Power
142 GWh/year



Bio Gas
70 tons/year



2G SAF
100 million gallons/year
34 gallons/bdt

Who can orchestrate the complex challenge of ESG global cooperation?

- Main challenges: geopolitics, national security agendas and corporate interest conflict
- Mission combining protecting the planet, creating green jobs and STI cooperation
- E: Innovation and technology makes crossborder green value chains viable
- S: Biomass biorefineries can generate millions of green jobs in Africa, LA and Asia
- G: UN may lead Governance security for private investment in developing regions
- Investment shall preferably be driven by the private sector – i.e.: Project Finance
- There are ready solutions to revert climate change and we are wasting precious time