

Brazil-France Dialogue on ST&I in Cellulosic Biomass

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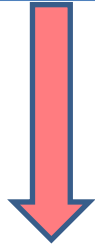
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BIOMASS IN MCTIC

MCTIC

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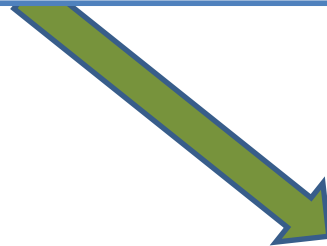
Energy, Fuels, Oil & Gas, Mineral Resources



Bioenergy, Biofuels, Bioproducts, Biorefineries
Others Renewables Energies & Fuels
Others Low Carbon Energies and Fuels



Production Chain



Bioeconomy

Climate Change

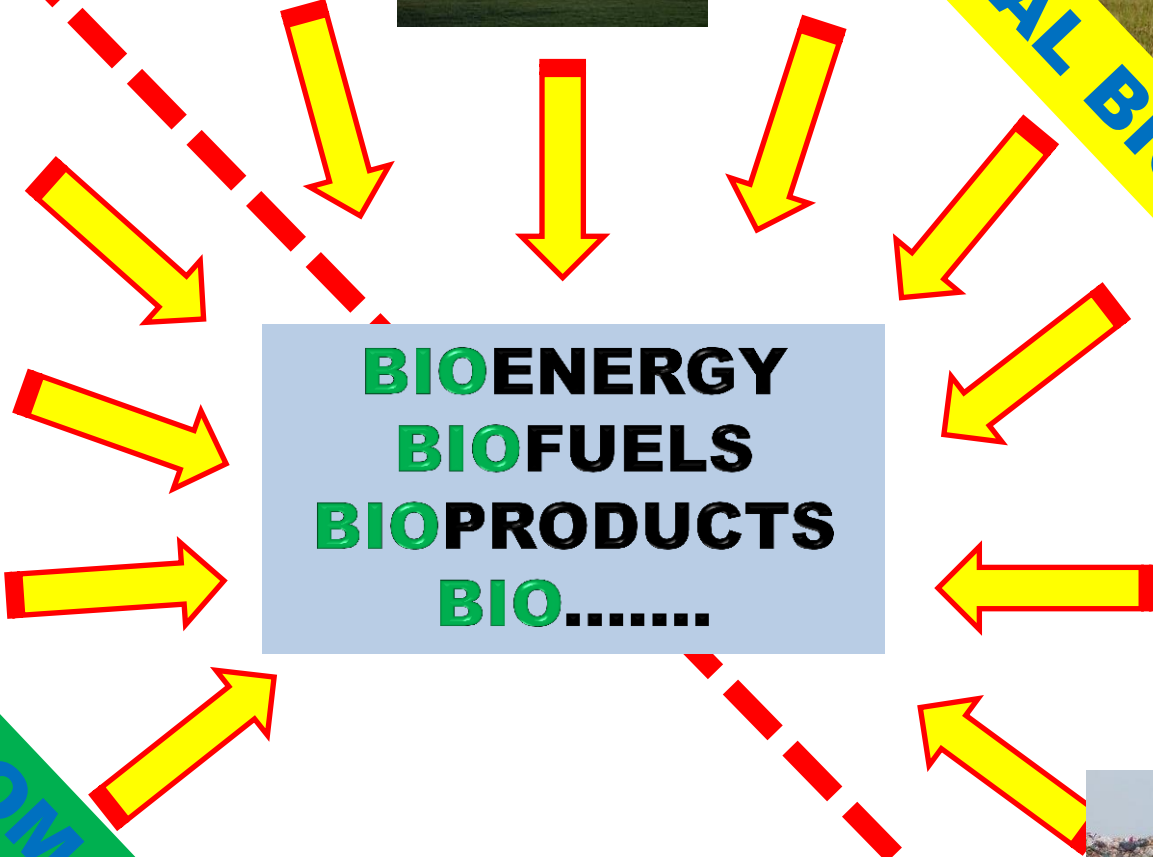
BRAZIL: THE "BIOMASSLAND"



RESIDUAL BIOMASS

PLANTED BIOMASS

**BIOENERGY
BIOFUELS
BIOPRODUCTS
BIO.....**



THE MAIN SOURCES OF CELLULOSIC BIOMASS



Pulp and Paper
Industry



Timber Industry

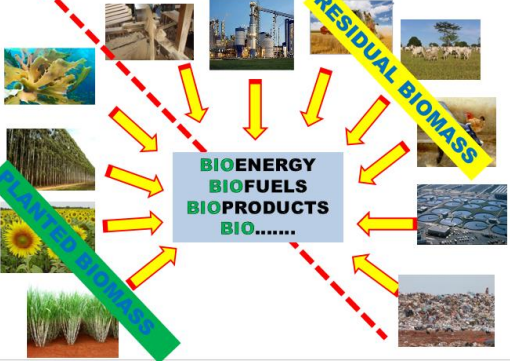


Sugarcane
Industry

PRE-TREATMENT /CONVERSION ROUTES

BRAZIL: THE "BIOMASSLAND"

RESIDUAL BIOMASS



physical



biological



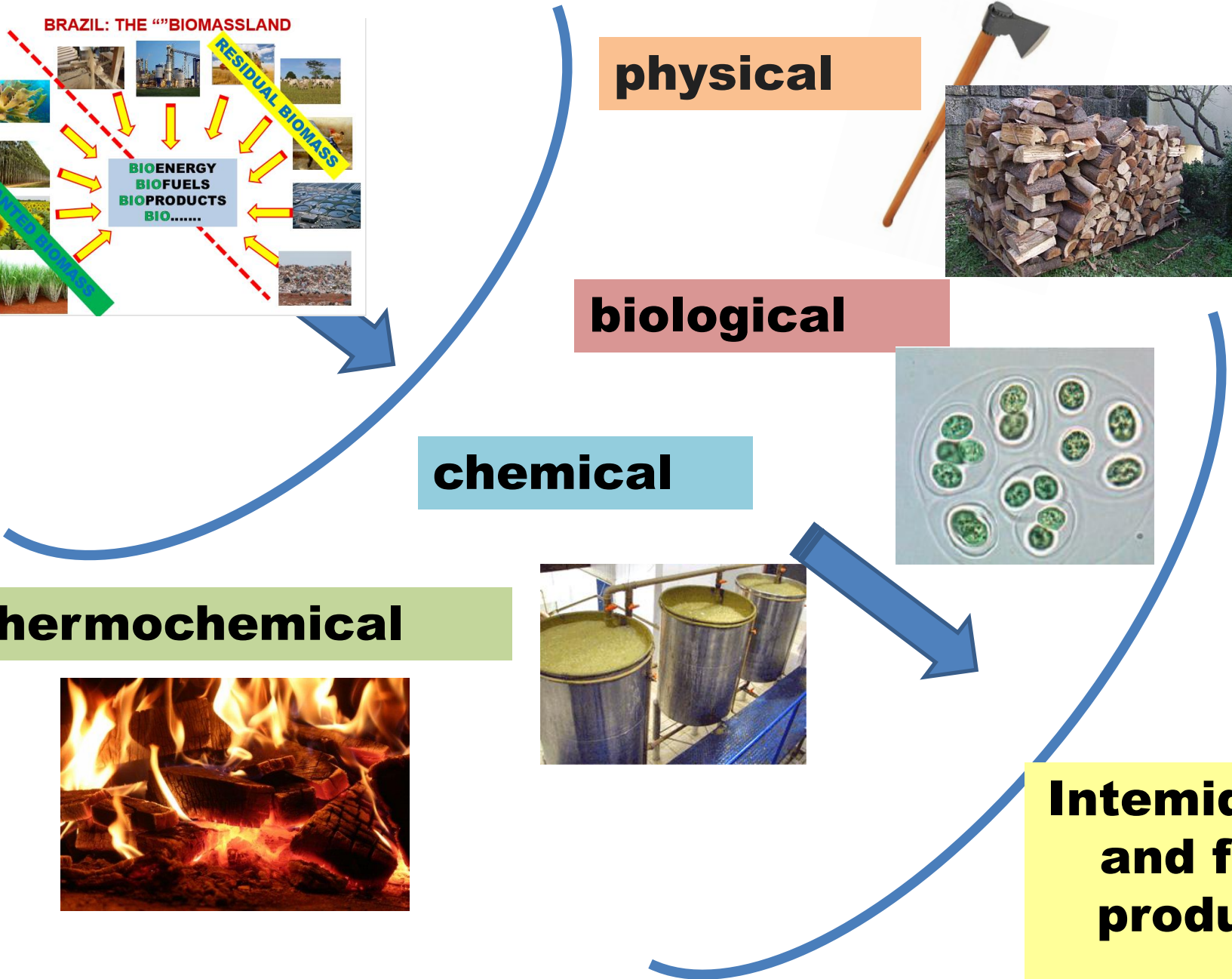
chemical



thermochemical

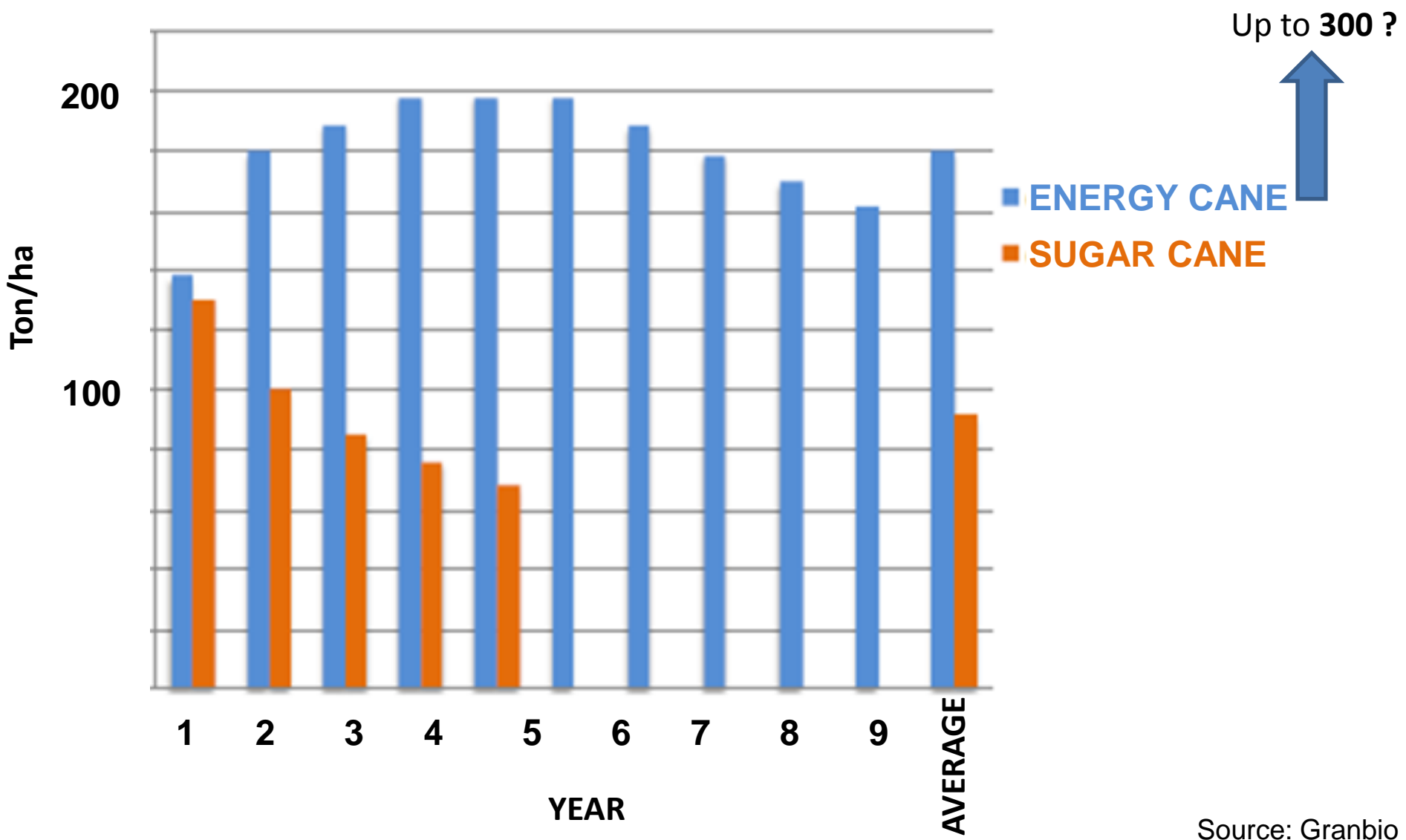


Intemidiates and final products



EXAMPLE OF CELLULOSIC BIOMASS SUGARCANE INDUSTRY

More cycles More productivity



EXAMPLE OF CELLULOSIC BIOMASS SUGARCANE INDUSTRY

More sugar More fiber

SUGAR CANE

ENERGY CANE Type 3

ENERGY CANE Type 9



Produção

Cana: 100 (t/ha)
Açúcar (135 ATR): 13,5 (t/ha)
Bagaço (12,5% fibra): 25 (t/ha)



Produção

Cana: 221 (t/ha)
Açúcar (115 ATR): 25,3 (t/ha)
Bagaço (17,9% fibra): 79,1 (t/ha)



Produção

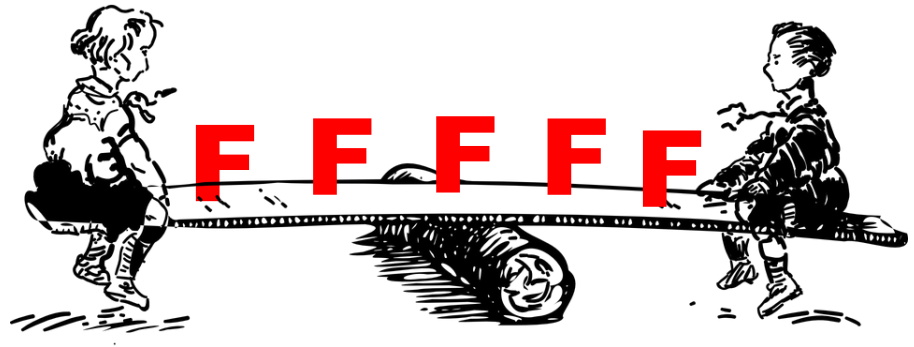
Cana: 185 (t/ha)
Açúcar (93 ATR): 17,2 (t/ha)
Bagaço (26% fibra): 96,2 (t/ha)

Vignis
Plantando Energia

EXAMPLE OF CELLULOSIC BIOMASS SUGARCANE INDUSTRY

The 5 F debate

- **F**ood
- **F**eed
- **F**uel
- **F**ertilizer
- **F**eedstock



BIOFUEL POLICY → POSITIVE SUSTAINABILITY IMPACTS

Land availability

Energy crops

Integration: food, feed, fuel, fertilizer and feedstock

Straw recovery

Efficient mechanization

Biorefineries concept

Distributed energy generation

Low carbon products

High local content

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obrigado merci

Thanks danke gracias 謝謝 ありがとう tak
ευχαριστώ благодарностъ dzięki grazie धन्यवाद
감사합니다 شكرا hvala kiitos Благодаря tack díky
mulțumesc takk bedankt



Image: Goeldi Museum - MCTIC