IEA Bioenergy
Technology Collaboration Programme

Task 39
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Country Update – Brazil

Brazilian Teams:

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Collaborators:

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Brazilian Energy Matrix

01 Largely renewable energy matrix

02 No country with more than 60 million people has an energy matrix with more than 40% of renewables

03 Fuel matrix of 50.2% ethanol in 2018 – an all time record

04 43% of its total energy renewable – more than twice the global average

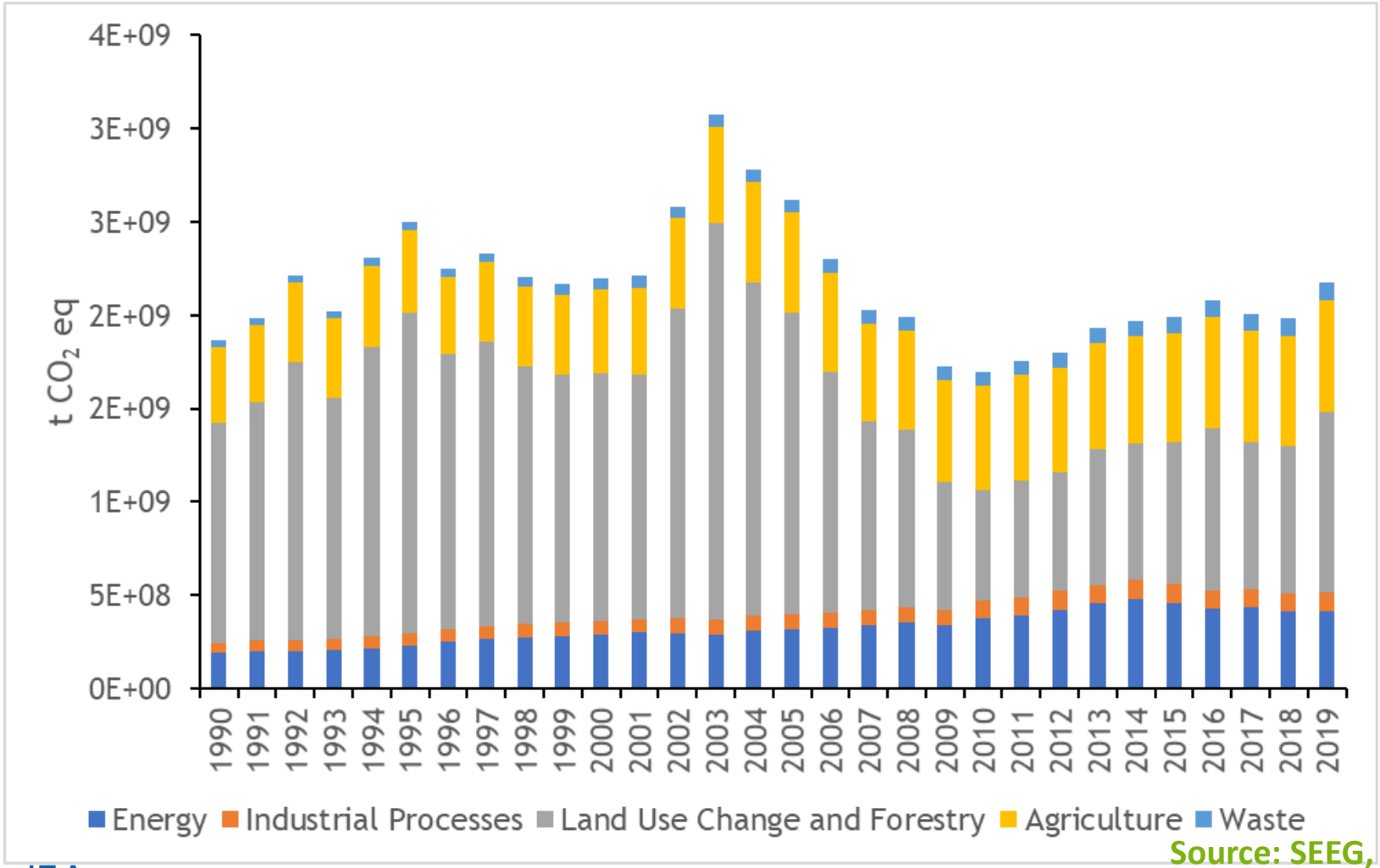
05 Electricity matrix of 17% bagasse-derived sugarcane

06 Small land use (7%)

07 Avoided CO_2 emissions in 20 years (4 billion trees)

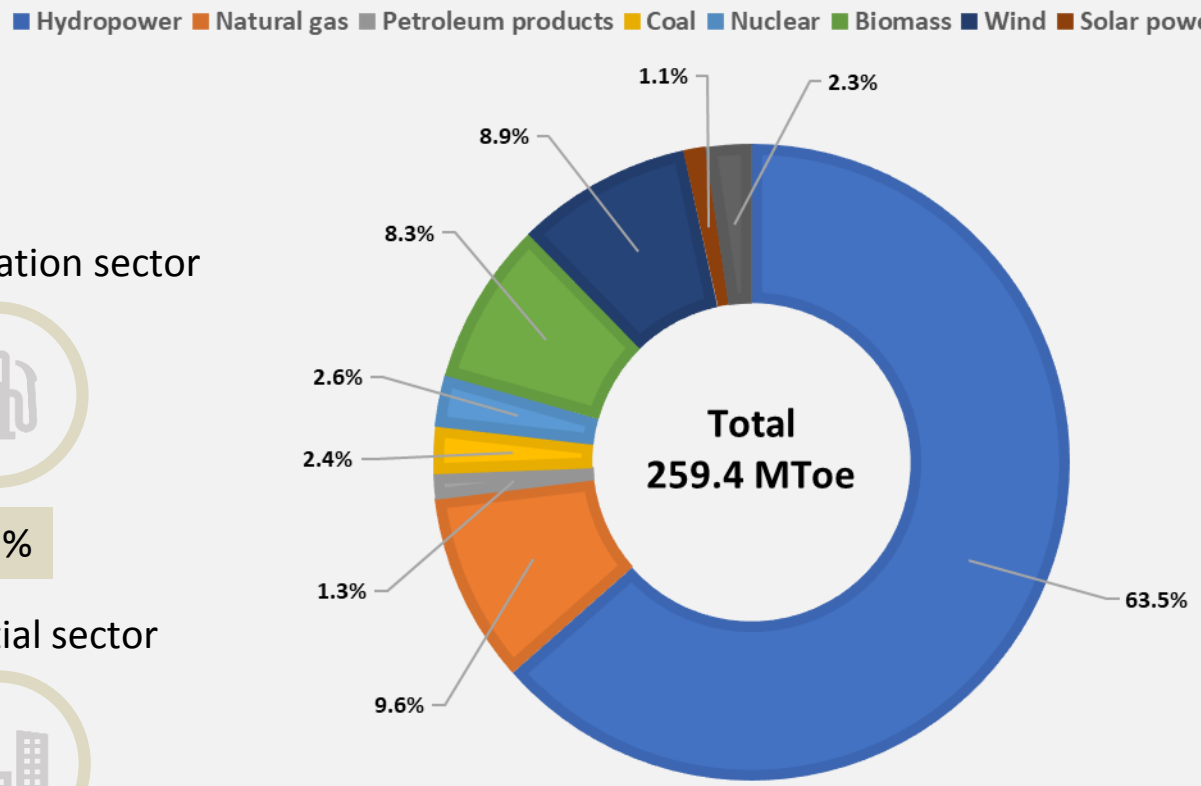
Green house gas emissions

Brazil committed to reduce GHG emissions in 37% by 2025 and 43% by 2030 (ref 2005)
Increase the share of sustainable bioenergy in the Brazilian energy matrix to approximately 18% by 2030



Source: SEEG, 2021.

Energy consumption (2019) Sources and Sectors



Transportation sector

33%

Residential sector

10.4%

Industrial sector

30.3%

Commercial sector

3.4%

Energy sector

11.2%

Agricultural and livestock sector

4.5%

Public sector

1.6%

Source: EPE, 2020

Sugarcane derivatives:
In the transport sector: 20.6% of the energy consumed (22.2% for road transport)
In industrial sector: 16.7% (68.4% in the food and beverage segment)

RenovaBio is a market driven incentive mechanism for pricing externalities

It transforms the social/environmental costs of using fossil fuels into revenues for producers of biofuels

RenovaBio

RenovaCalc Well-to-wheel LCA

WITHOUT deforestaion

WITHOUT additional taxes or subsidies WITHOUT setting volumetric targets WITHOUT establishing a captive market

With RenovaBio, the government plans to increase annual ethanol production from the current 30 billion liters to around 50 billion liters and biodiesel production from 4 billion liters to 13 billion liters

By 2030

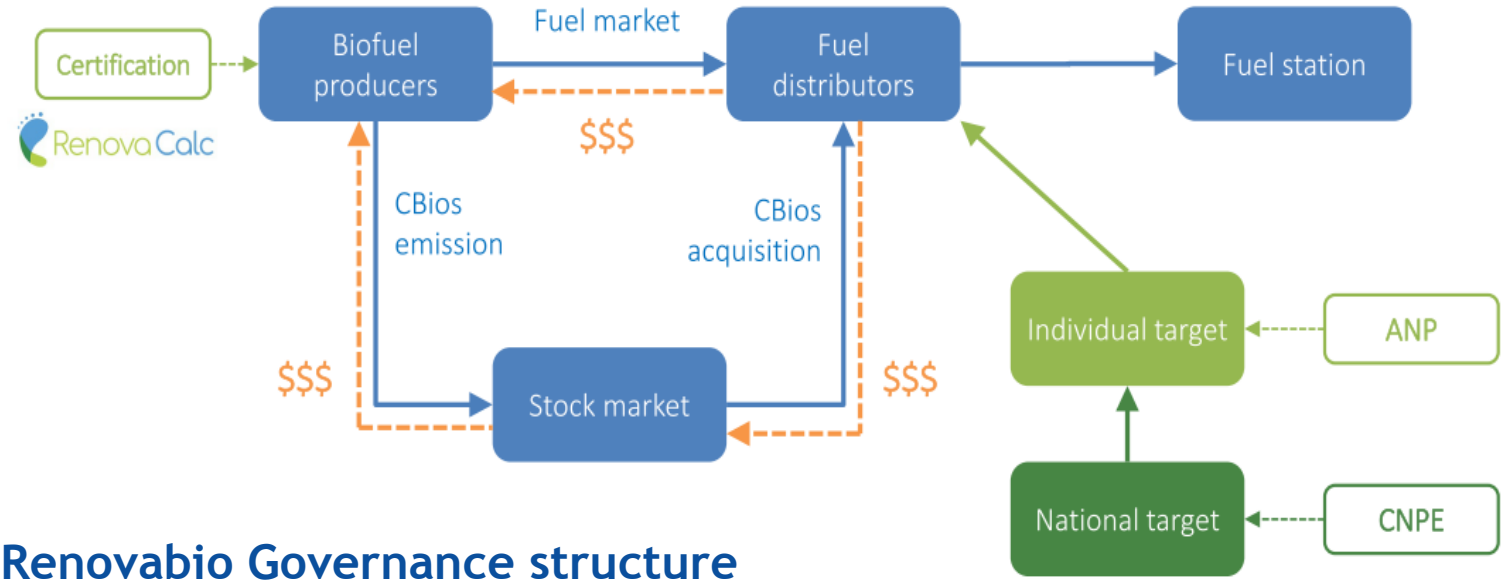
Savings of 300 billion L of imported gasoline and diesel

RENOVABIO

1. **RENOVABIO** – Establishes a **strategic plan for biofuels in Brazil**
2. All certified production must originate from land that was not deforested after December 26th, 2017
3. Sugarcane and palm must comply with the Brazilian agroforestry zoning (Decrees 6961 and 7172
4. All area must be in conformity with the Forest Code and regularized through CAR
5. Annual decarbonization targets set by the government: 10% carbon intensity reduction target for the transport fuels matrix by 2028
6. Producers undergo certification of emissions reduction and are issued GHG emissions reduction certificates “CBios” (Decarbonization Credits)
7. One CBio corresponds to a reduction of one ton of carbon dioxide equivalent (CO2eq), in comparison to fossil fuel emissions
8. Distributers have individual targets to purchase CBios sold in the Stock Exchange

14,535,334 CBIOS
Originally 16 million
R$ 40-60 each
97.6% of target met in 2019/2020

1 CBIO → 1 ton CO_2 eq



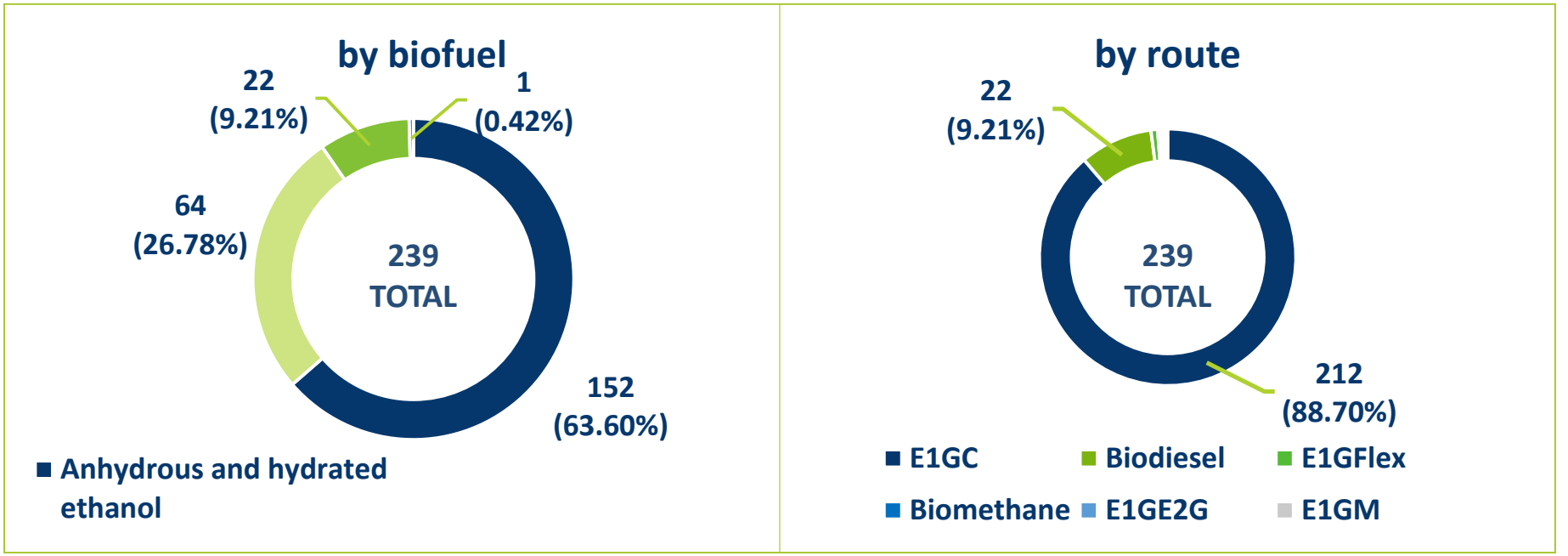
Renovabio Governance structure

Source: ANP, 2020.

14,535,334 CBIOS

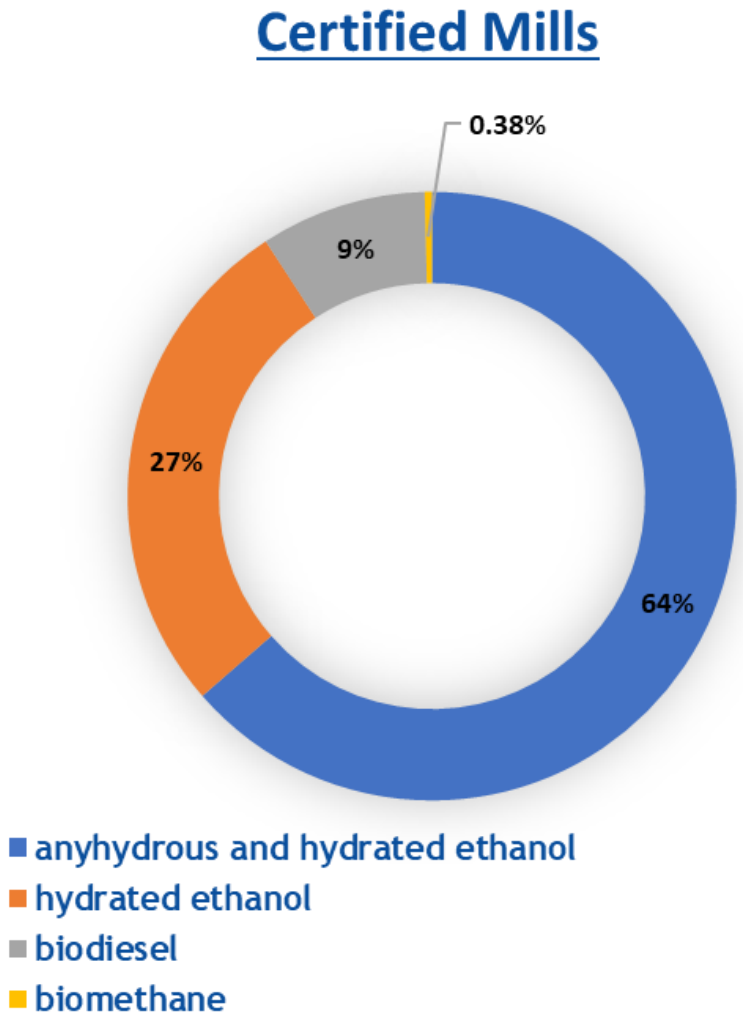
1 CBIO → 1 ton CO_2 eq

Renovabio – 239 Certified Mills



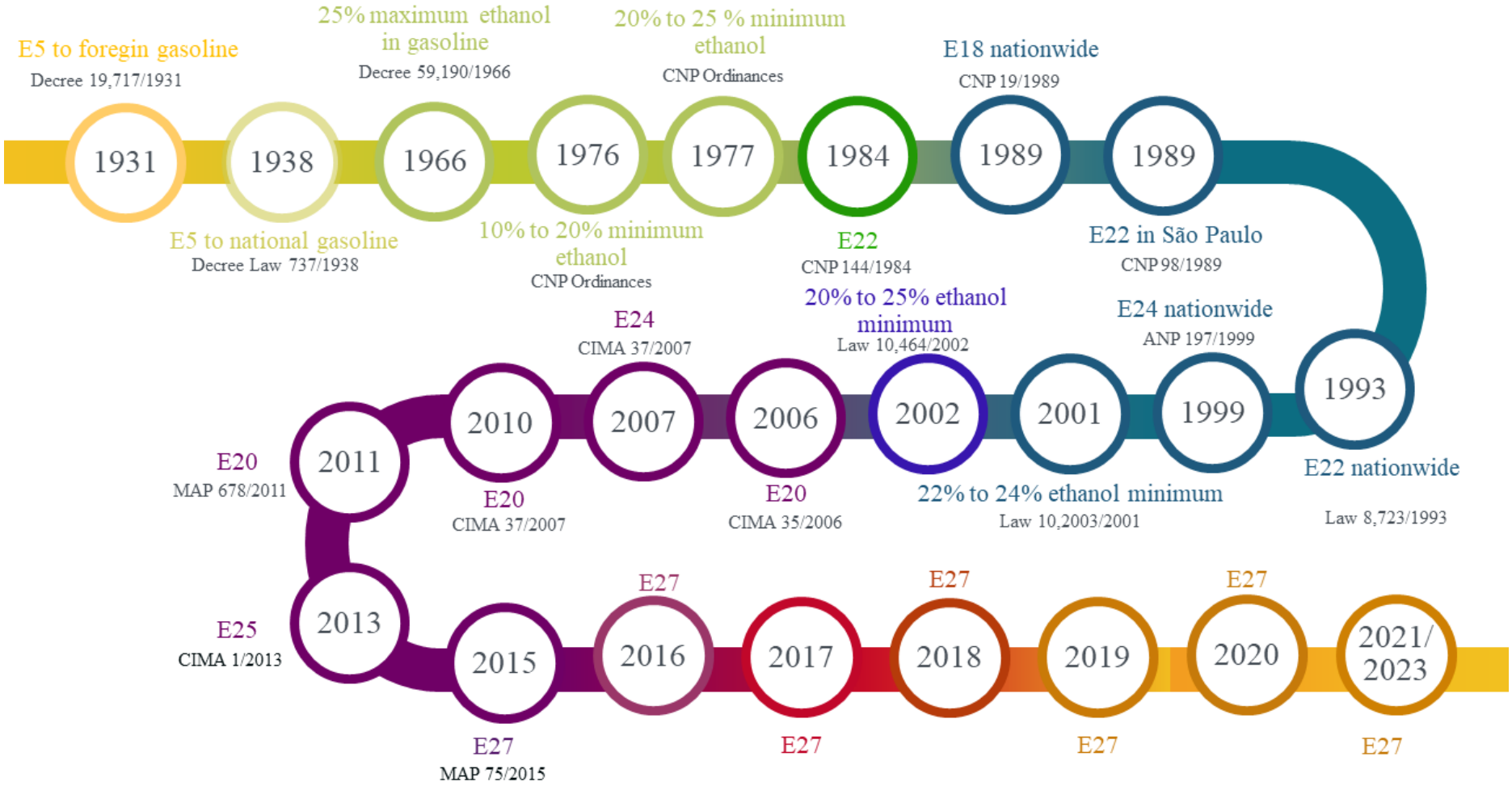
Source: ANP, 2020.

For 2021 target is 24.8 million CBIOS
Selling in average for R$ 30 each in 2021
261 certified mills



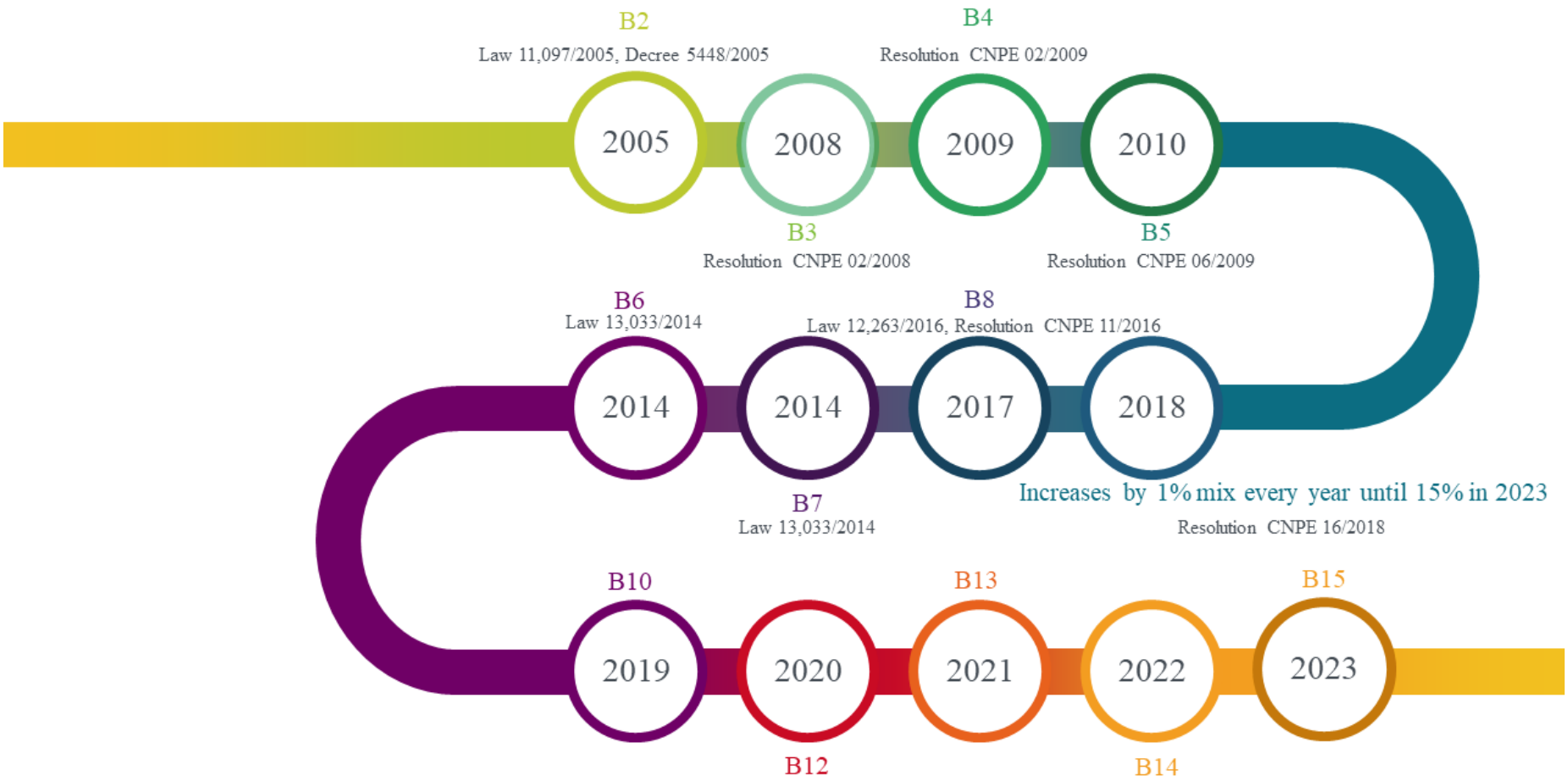
Source: ANP, 2021

Biofuels Blending mandates in Brazil – Ethanol (1931 – 2023)



The mandatory blend levels for ethanol is currently 27% (E27) 100% hydrated ethanol (a.k.a. “hydrous ethanol”) is also marketed in all gas stations in Brazil.

Biofuels Blending mandates in Brazil – Biodiesel (2005 – 2023)



The mandatory blend levels for biodiesel is currently 10 %
In 2020 Brazil issued regulation on green diesel (not HVO)
Co-processing of fossil diesel with 5% soy oil (2,8% emissions reduction)
Soy biodiesel reduction is 70%

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Thank you for your attention!

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