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India SMART UTILITY Week 2024

Supporting Ministries



Session : 1ST INDIA - BRAZIL SMART ENERGY WORKSHOP

Introduction to Biofuels in Brazil

Presented By

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- **Sugar cane ethanol** is the **Main Biofuel** used in Brazil
- After the **1st world oil crisis**, in 1973, Brazil created a National Program called **Proalcool** in 1975. **Transportation use peaked in 1986**, but **dramatically dropped during the decade of 1990** due to lower oil prices in the international market. **The vehicular use of ethanol increased again in the decade of 2000**, due to the **oil prices** and to **technological advances with flex motors technology** (gasoline and alcohol).
- **Sugar cane production** in the country **grew a lot** and the installation of **sugar and alcohol plants** gave a huge quantitative leap. **There are approximately 450 plants installed** in the country, that **also produces sugar and electric energy from the sugar cane bagasse**.
- By **2004 Biodiesel** was **adopted in Brazil** with the aim of **reducing national dependence on diesel price**. The sources of production of this fuel are vegetable oils (produced from seeds, mainly castor beans) and remains of animal fats.
- **Biodiesel in Brazil is used as a fuel both in its pure state and mixed with common diesel**. The mixture index on diesel was recently raised from 10% to 14%.

- **RenovaBio** is a Brazilian State program in place since 2017, seeking to **adequately promote the expansion of biofuels in the country's energy matrix**. It **establishes annual decarbonization goals** in Brazil, that is, it **encourages the reduction in the use of fossil fuels by an increase in the production of biofuels**, which gain greater prominence when **replacing traditional energy sources**.
- In addition to the goals, the program also has two other strategic axes: **certification of biofuel production** and the so-called “**decarbonization credit**” (**Cbios**). **Cbios** are issued based on **invoices for the purchase and sale of biofuels, as well as the tons of carbon reduced by the company responsible**. The **certification focuses on registering importers and producers of biofuels**, highlighting their contributions to the use of clean and renewable energy.

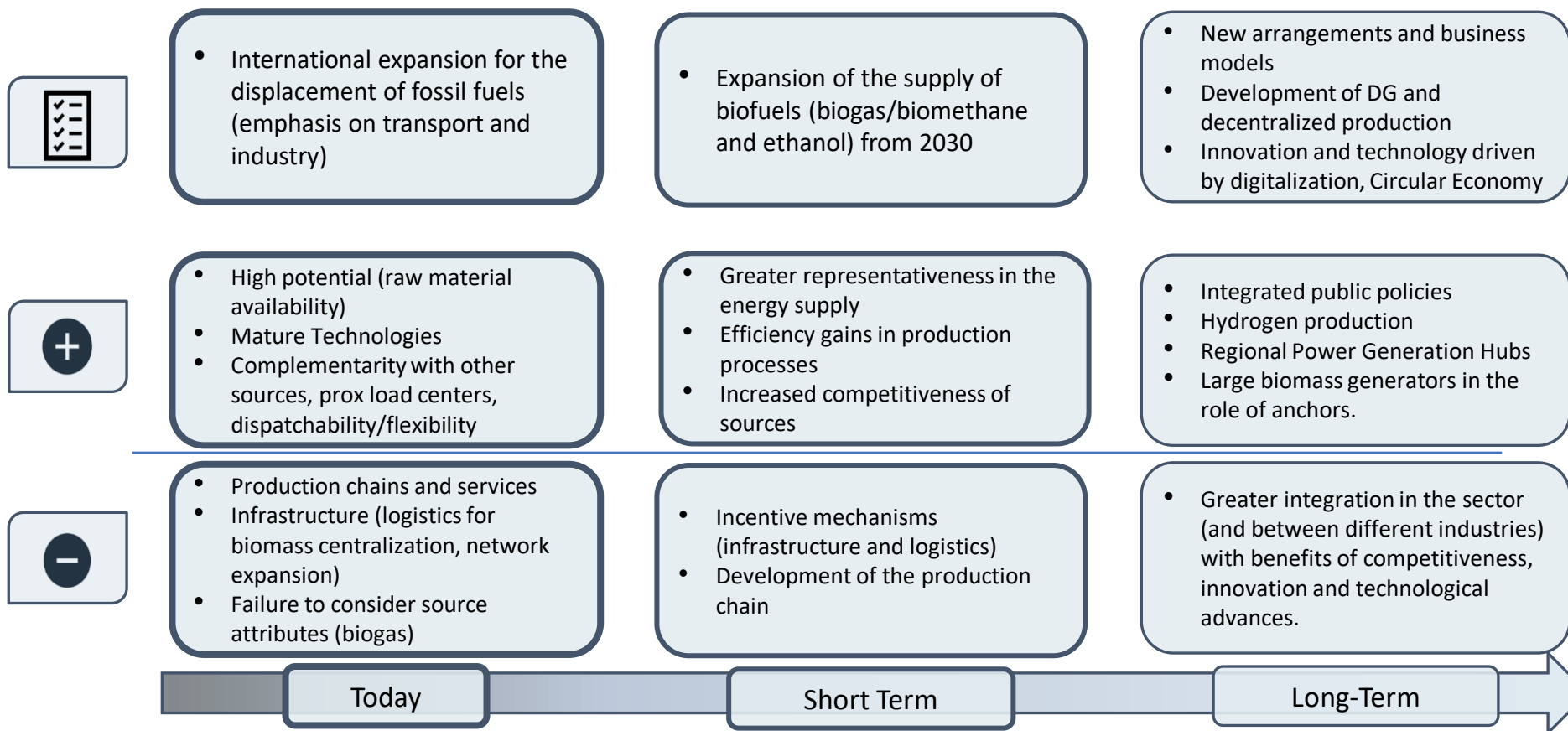
Brazil and India jointly recently played important roles on the creation of a global agency that concentrates efforts to promote the adoption of these renewable fuels in the global energy matrix – **The Global Biofuels Alliance**. The meeting was held in Davos, Switzerland, during the World Economic Forum, in January 2024. The main focus is next generation Biofuels.



DIAGNOSIS AND VISION OF THE FUTURE - BIOFUELS



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Source: PEE – 2050 – São Paulo State Government Plan to Race to Zero

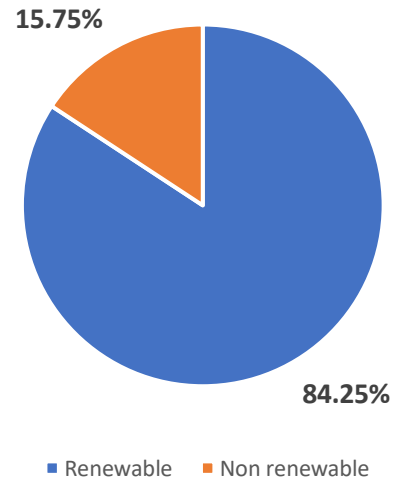
BRAZILIAN ELECTRICITY MATRIX AND BIOMASS



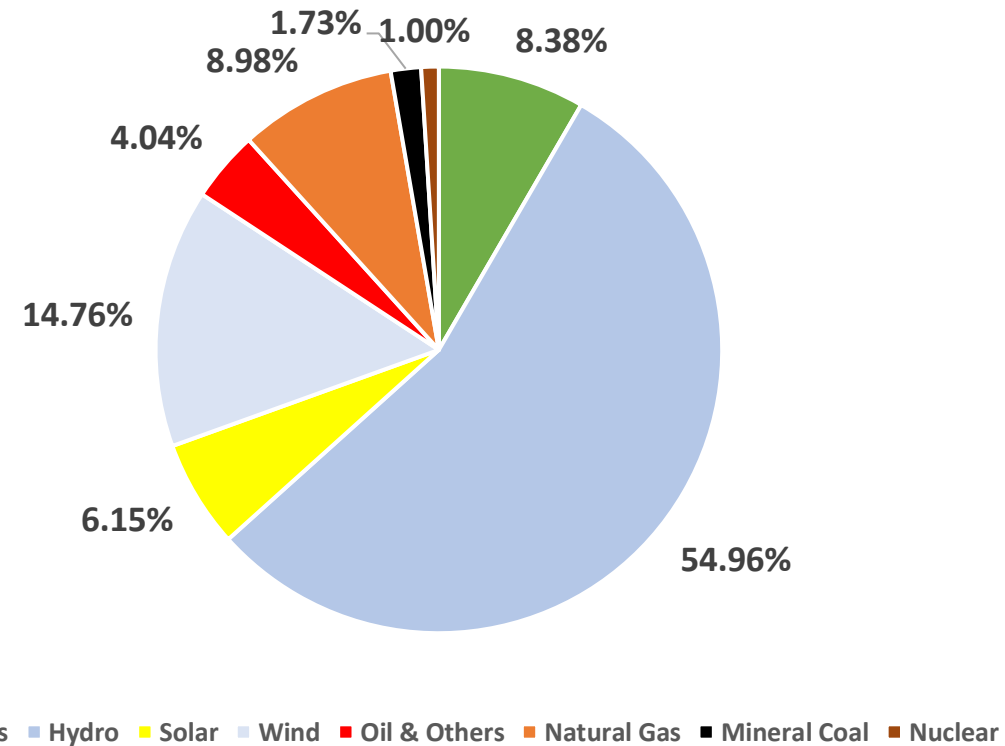
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Brazilian Electricity Matrix



Brazilian Electricity Matrix



Source: Aneel

BIOMASS ELECTRICITY PRODUCTION IN BRAZIL



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16TH EDITION

Final fuel	Number of Plants	Capacity kW	% Capacity
Sugarcane bagasse	442	12.410.650,20	96,87%
Biogas	6	32.846,20	0,26%
elephant grass	3	49.636,00	0,39%
Rice husk	15	59.458,60	0,46%
ethanol	1	320,00	0,00%
Vegetable Oils	5	17.180,40	0,13%
Animal waste biogas	19	7.272,20	0,06%
Urban waste biogas	26	201.887,60	1,58%
charcoal from urban waste	3	8.250,00	0,06%
urban waste from municipal waste	8	24.413,00	0,19%
Total	528	12.811.914,20	100,00%

Source: Aneel

THANK YOU

*For discussions/suggestions/queries email: isuw@isuw.in
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