EMBASSY OF THE REPUBLIC OF INDONESIA IN BRASILIA

Biodiesel

Its uses and benefits to the society

Environmental Considerations

2011: Moratorium on deforestation for any use
2018: Moratorium for new palm plantations

2016: Peat Restoration Board was formed

Palm Oil Sustainability Standard Roundtable on Sustainable Palm Oil (RSPO) standard:
51% of Indonesian plantations (2.1 million Ha) are certified.

Indonesia Sustainable Palm Oil (ISPO):
More than 800 plantations (4.5 million Ha) certified.
ISPO Down Stream and Indonesia Bioenergy Standard Indicator are in progress.

International Sustainablity & Carbon Certification (ISCC)

Continue to develop biofuel environmentally - friendly processing technology.

Source: APROBI

Economic Considerations

- Indonesia became net oil importer
  - 2021 Consumption: Around 1.16 million barrels per day
  - 2021 Production: Around 707 thousand barrels per day
- Oil price was approaching $150 per barrel
- Poverty alleviation
- Indonesia became the biggest palm oil producer
- Employment opportunity: 1,392,000 upstream workers
- In 2021, reduces greenhouse gas emissions by 25 million carbon dioxide equivalent
- In 2021, economic value from the implementation of B30 reached more than US$4 billion.

Source: APROBI

Biodiesel Milestones

B2 - B7.5 Implementation

2008 - 2010

2014

B10 Implementation

B15 Implementation

2015

2016

B20 Implementation

B30 Implementation

2020

2022

B40 Road Test

Source: APROBI

B30 Biodiesel Mandatory Implementation until 2025

Sector	April 2015	January 2016	January 2020	January 2025
SMEs, Fisheries, Agriculture, Transporation & Public Services	15%	20%	30%	30%
Private Car / Vehicles	15%	20%	30%	30%
Power Plants	25%	30%	30%	30%
Industry & Commerce	15%	20%	30%	30%

Source:
Bandung Institute of Technology

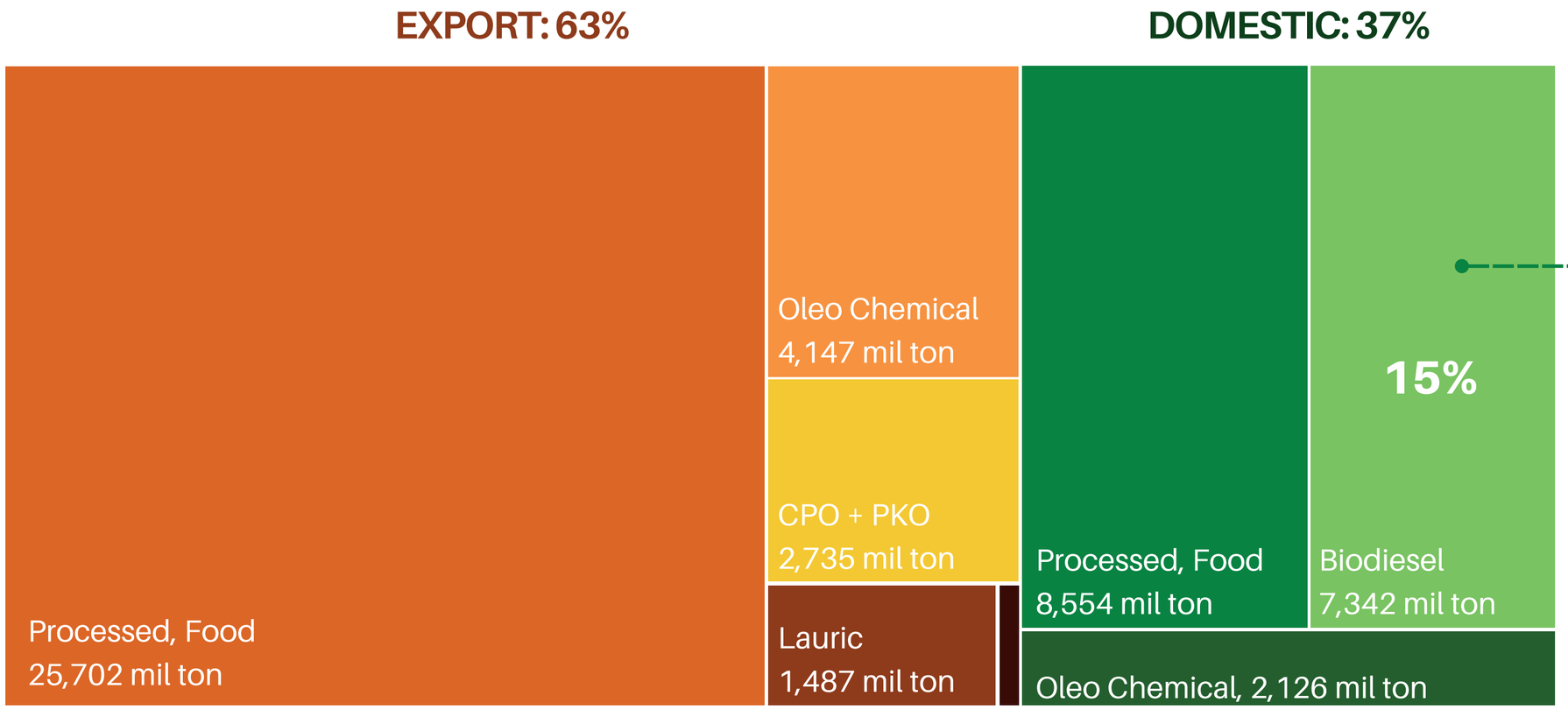
2021 Palm Oil Production & Distribution Map

2021

TOTAL PRODUCTION
48,094 mil ton

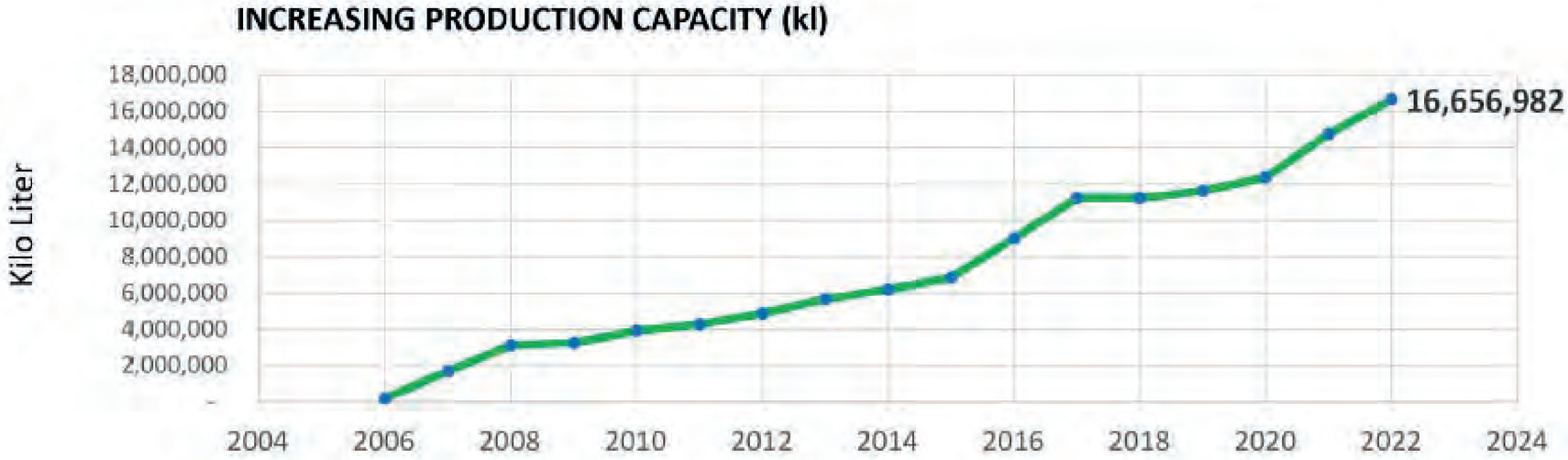
EXPORT
30,072 mil ton

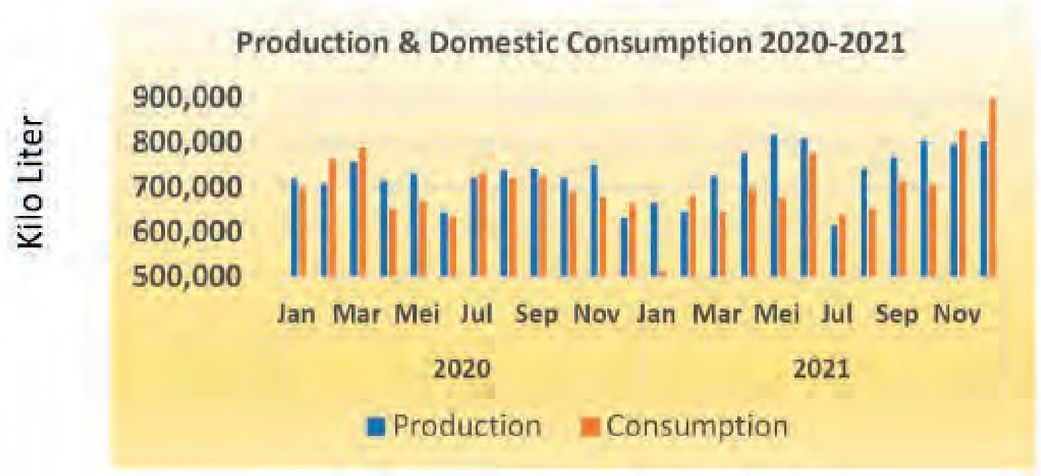
DOMESTIC
18,022 mil ton



Source: APROBI

Current Status





2020 B30
- Production **8,591,368 kl**
- Domestic **8,426,152 kl**

2021 B30
- Production **8,979,523 kl**
- Domestic **8,438,550 kl**

Source: APROBI

Product Development

Biodiesel

- Projection in 2022: Production of 10.1 million kl and export of 1 million kl
- B40 test in progress for implementation in 2022/2023
- Diesel fuels consumption: 30-31 million kl per year

Product Development

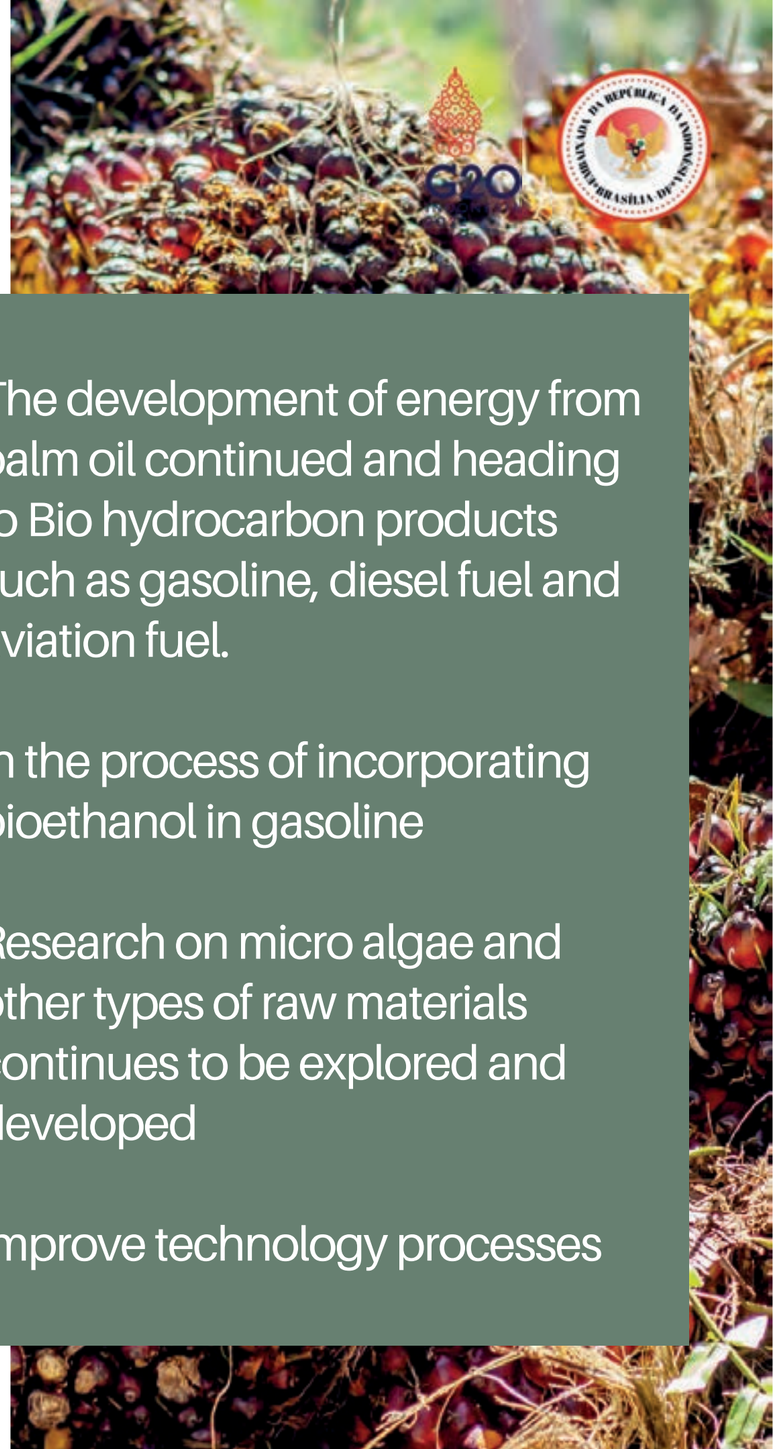
- Bioethanol for Pertamax, Bio-hydrocarbon fuels, HVO
- Green Diesel, Green Gasoline, Bio Avtur
- Gasoline fuels consumtion: Around 28 million kl per year

Feedstock

- Cellulose, hemicellulose or lignin
- Micro algae
- Biomass, crop residue

Technology

- Unique techologies and processes that transform a wide range of plant, waste and cellulosic molecules into hydrocarbon molecules like those produced at conventional refineries



- The development of energy from palm oil continued and heading to Bio hydrocarbon products such as gasoline, diesel fuel and aviation fuel.
- In the process of incorporating bioethanol in gasoline
- Research on micro algae and other types of raw materials continues to be explored and developed
- Improve technology processes

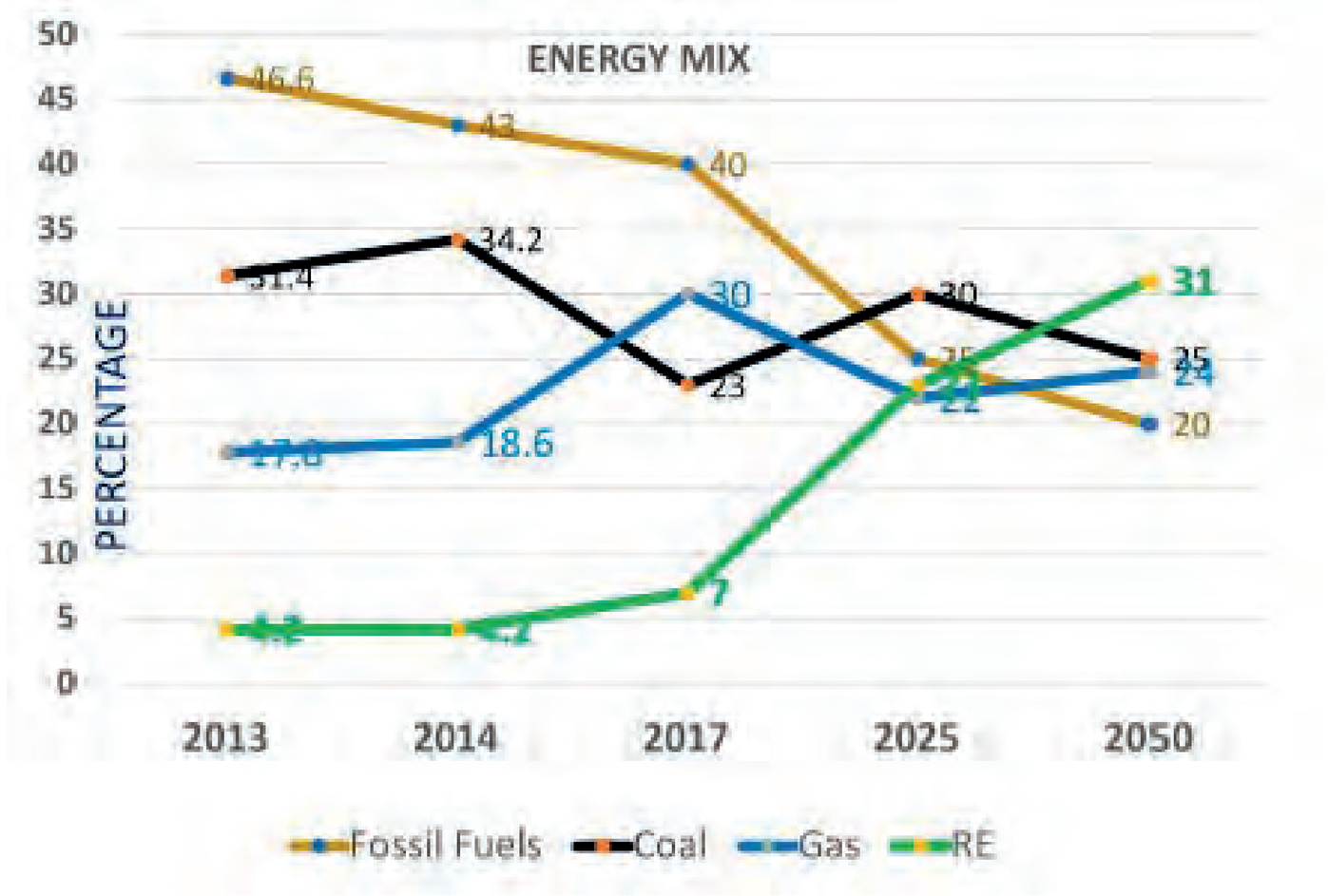
Source: APROBI

Biofuel Research Map

		Liquid	Solid	Gas	Researcher
Palm Oil		B30-B40	Pellet	Methane	Industry, Pertamina, ITB, IPB, Other Universities, Lemigas, BRIN
		Bio hydrocarbon (Diesel/D100, G100, Avtur)			
Non Palm Oil	Sugar Cane	Bioethanol	Pellet	Methane	Industry, PTPN, BRIN
	Cassava	Bioethanol	Pellet	Methane	Industry ,BRIN
	Sagu / Sago	Bioethanol	Pellet		BRIN
	Micro Algae	Biodiesel	Pellet		IPB, UGM
	Cellulose	Bioethanol	Pellet		BRIN
	Aren / Enau / Arenga Pinatta	Bioethanol	Pellet		Private Sector

Source: APROBI

The Role of Biofuel to Achieve Renewable Energy Target of the 2050 Energy Transition



Source: APROBI

- In 2020, renewable energy contributed about 10% of the target of 23% in 2025 and 31% in 2050.
- Biodiesel has reached 30% and should be improving by percentage and volume.
- The use of *other* biofuels (Bioethanol & Bio hydrocarbon) will start immediately and could match the usage of Biofuel to reach 31% in 2050.
- It requires commitment, hard work and synergy among all the stakeholders to achieve our goals.
- The role of private sector is essential in development of energy transition.

Challenges

- Accelerate the energy transition
- Sustainable biofuel
- Technology
- User acceptance
- Affordability
- Cooperation

Source: APROBI

Efforts toward Net Zero Emissions

Increasing the implementation of diesel fuel substitution

Biodiesel mix with distillated Biodiesel, diesel bio hydrocarbons, and co-processing at the oil refinery.

Gasoline Substitution

Bioethanol (<80% in Brasilia) & gasoline bio hydrocarbon

Avtur Substitution

Bio-Avtur

Developing National Energy Security

Source: Bandung Institute of Technology

Indonesia's 10-Year Plan for Biofuel Production Plants

G20 INDONESIA 2022

TOWARDS NATIONAL ENERGY SOVEREIGNTY

Source: Bandung Institute of Technology

Challenges of Developing Biodiesel

Biodiesel Quality/Standard

To meet the transportation technology demand, we must continously renew & improve our Biodiesel quality standard and keep the technology up to date

Stakeholders' Support

Working with the Renewable Energy Research Centre and universities, Car Manufacture Association, Pertamina and Energy and Mineral Resources Ministry to research and to perform road tests for Biodiesel program

Funding Mechanism

The continuation of the Palm Oil Plantation Fund (POPF) institution must be ensured to support Biodiesel mandatory implementation program

Trade & Non-Trade Barriers

EU RED II, US RFS 2, Subsidy and Anti Dumping cases from EU and US, EU Delegated Regulation on Palm Oil and Biodiesel.

Negative campaigns from NGOs.

Source: APROBI

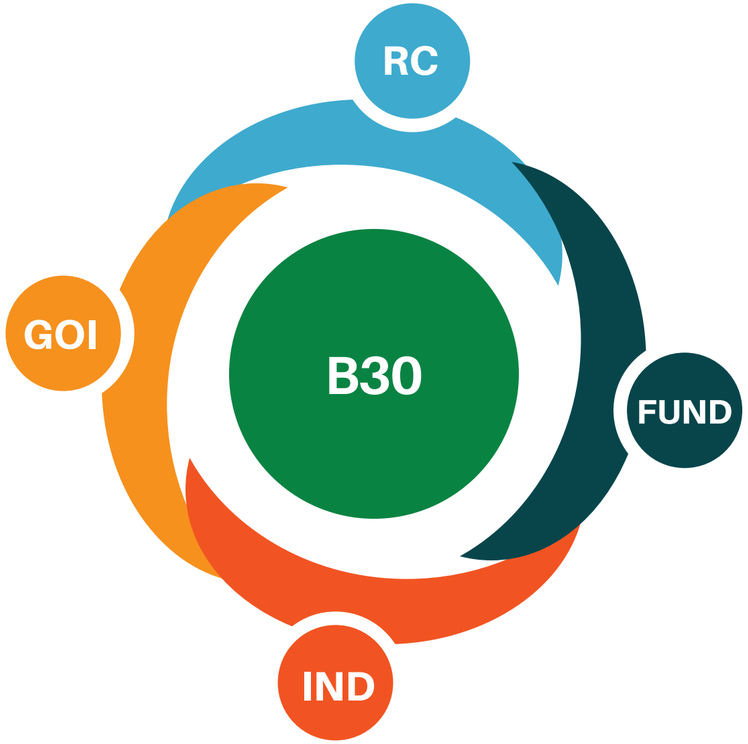
Keyword: SYNERGY

Government

GOI is strongly committed to support the biofuels program.

Industries

Biodiesel industries, oil & gas companies, automative industry, railways, Truck Transport Association, shipping and palm oil Industries work together to implement the Biodiesel program.



Research Centers

Institute for Petroleum and Natural Gas, Agency for Assessment and Application of Technology, The National Standardization Agency of Indonesia, university research centers, and industries R&D, work hand in hand to develop the best quality Biodiesel.

Funding

The Palm Oil Plantation Fund (POPF) must support the R&D and testing of Biodiesel program

Source: APROBI

Way Forward

Indonesia's G20 Presidency

- Supports Brazil's Non-Paper on "Bioenergy Treatment in the Energy Transition"
- Energy transition as the agenda for the next G20 Presidencies

To establish a regular dialogue on bioenergy between Brazil and Indonesia

- Biodiesel, ethanol, other renewable energy sources
- Boost awareness on the importance of clean & green energy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