

ENERGY TRANSITION IN INDONESIA AND FUTURE MOBILITY

Gigih Udi Atmo

Director of Energy Conservation

Presented at:

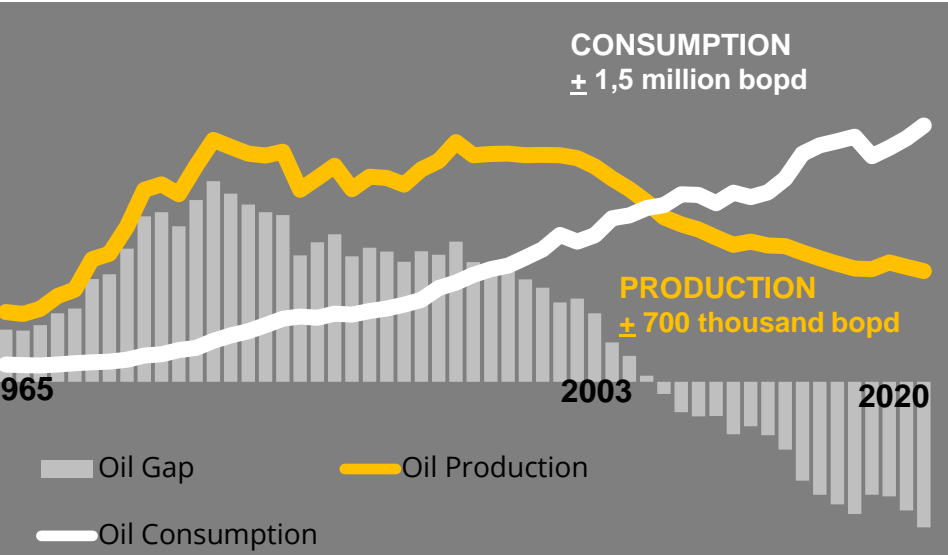
Utilization of Renewable Energy Towards Net Zero Emission in 2060





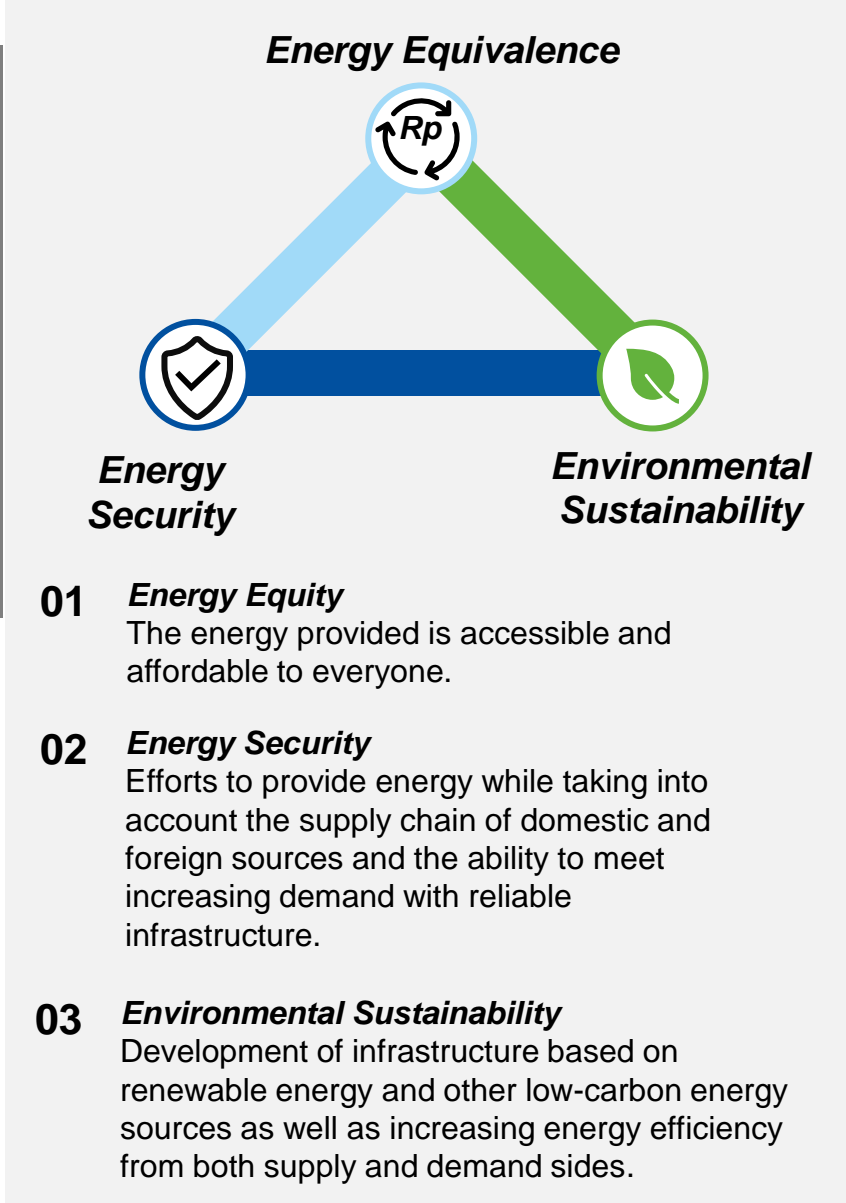
ENERGY SECURITY FACING GLOBAL ENERGY MARKET

OIL CONSUMPTION IS HIGHER THAN PRODUCTION

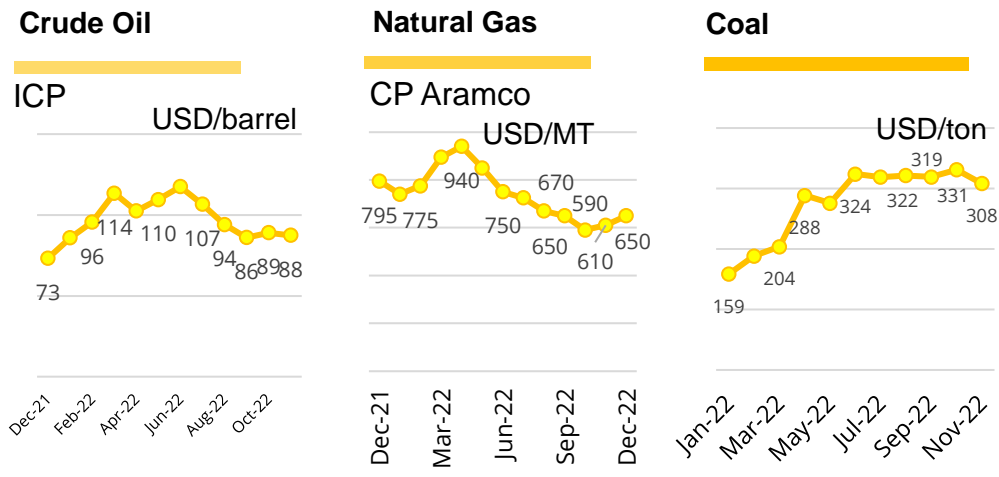


- 01 Oil production continued to decline, while consumption relatively increased. Impact: increased imports and trade balance deficit.
- 02 It is necessary to utilize alternative energy sources to reduce dependency and imports of fuel.

ENERGY TRILEMA



FLUCTUATION OF ENERGY PRICE



- 01 Fossil energy prices fluctuate according to the global energy market
- 02 Energy as national development capital (not a commodity)
- 03 Renewable Energy prices do not follow energy market prices

source: Ditjen Migas; Ditjen Minerba;
<https://3mgas.vn/>

GHG EMISSION REDUCTION ROADMAP IN ENERGY SECTOR

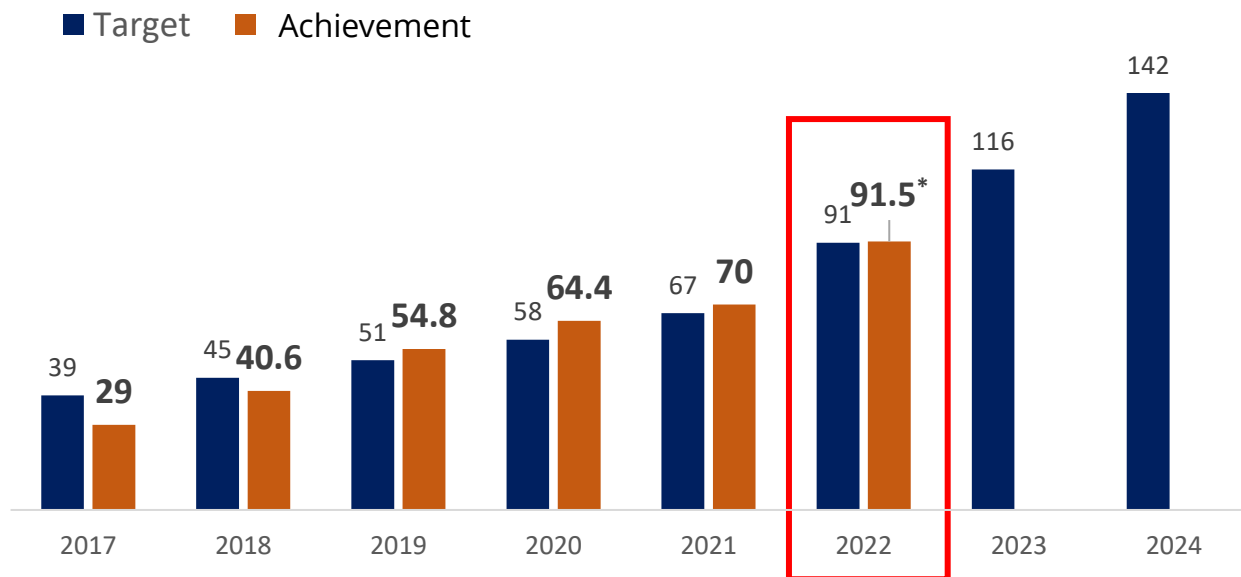


Indonesia continues to take concrete steps in climate mitigation, including reducing GHG emissions by increasing the target to **31.89%** on its own, and **43.20%** with international support.

Enhanced NDC 2030

No	Sector	GHG Emission 2010 (Juta Ton CO ₂ e)	GHG Emission by 2030			Emission Reduction	
			BaU	CM1	CM2	CM1	CM2
1.	Energy	453,2	1.669	1.311	1.223	358	446
2.	Waste	88	296	256	253	40	45,3
3.	IPPU	36	70	63	61	7	9
4.	Agriculture	111	120	110	108	10	12
5.	Forestry	647	714	217	-15	500	729
TOTAL		1.334	2.869	1.953	1.632	915	1.240

Notes:
 CM: Counter Measure; CM1: own-national effort; CM2: International Assistance; IPPU: industrial processes and production use



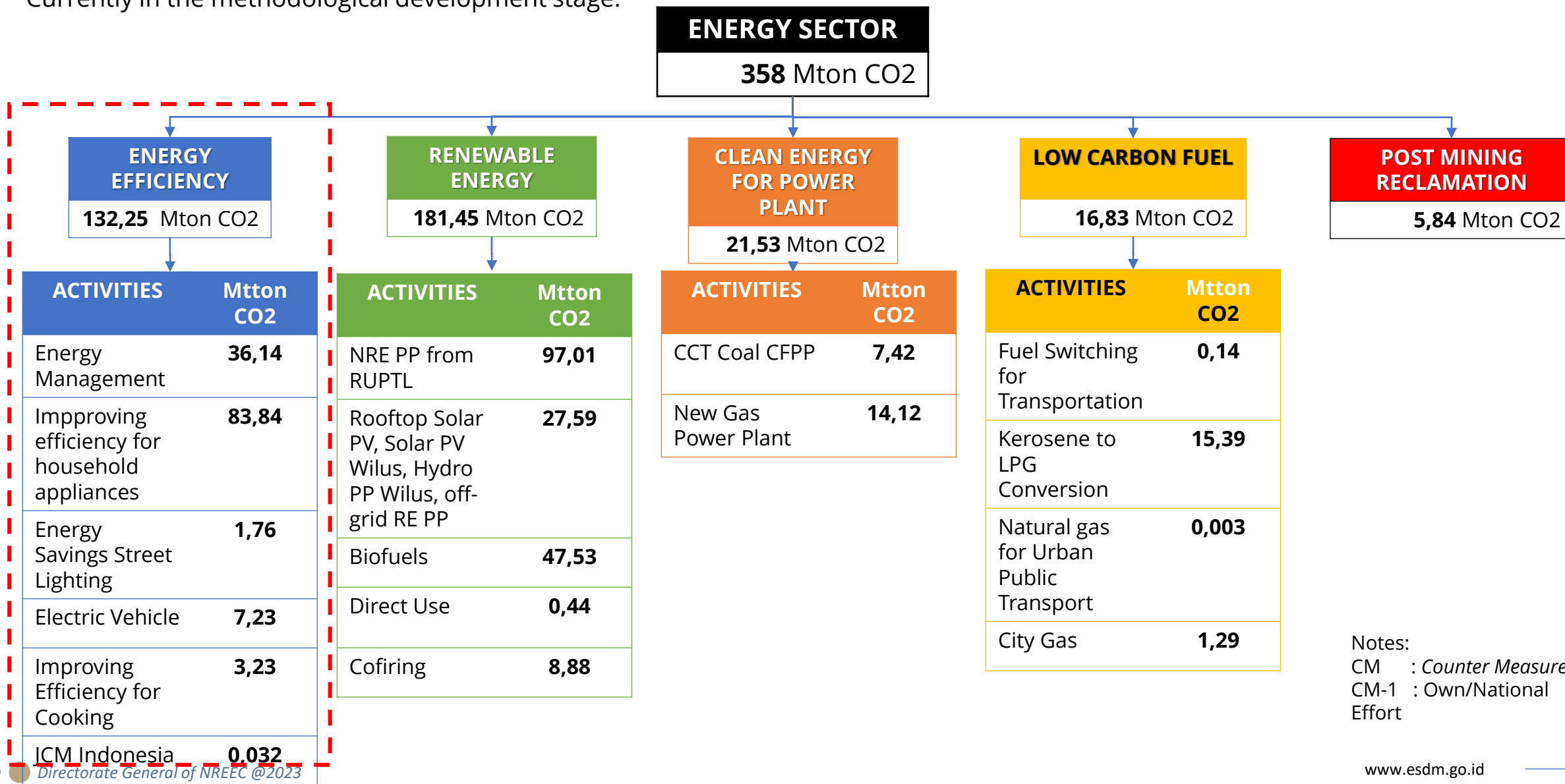
*) 2022 achievement verified by Ministry of Environment and Forestry
 *) Target according RENSTRA KESDM 2019 - 2024

“ Energy sector mitigation actions include:
 NRE development, energy efficiency implementation, low carbon fuel (natural gas), clean power plant technology and other activities.

ENERGY SECTOR COMMITMENT FOR ACHIEVING E-NDC (CM-1) 2030



- Mitigation activities in the energy sector must be fulfilled from their own efforts and not to be traded abroad.
- Other potential activities outside the E-NDC include: CCS/CCUS, Gas Flare, and PLTU Early Retirement have not been taken into account. Currently in the methodological development stage.

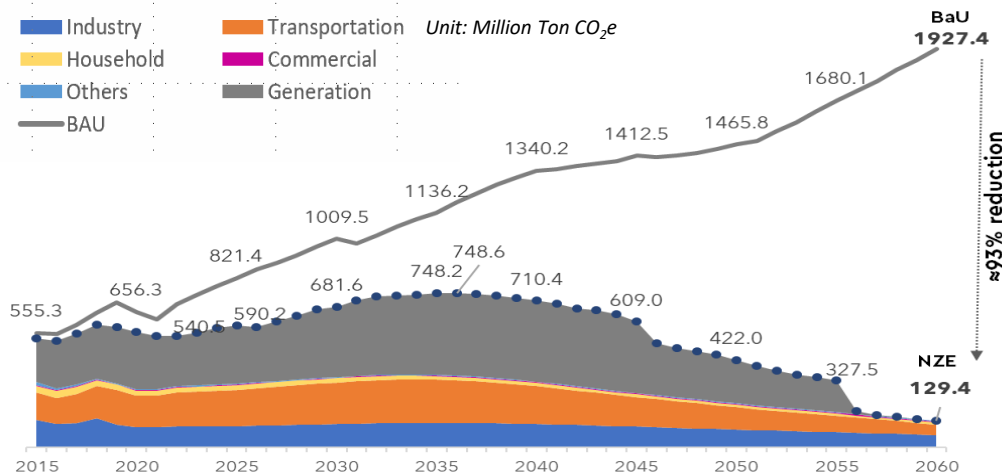


INDONESIA'S ENERGY SECTOR ROADMAP TOWARDS NET ZERO EMISSION 2060



COP 26, 2 NOVEMBER 2021

- Indonesia will be able to contribute faster to the global Net-Zero Emissions.
- The MEMR along with other stakeholders created the Energy Sector Roadmap towards Indonesia NZE 2060.



NZE Strategies

- Electrification** (EV, induction stove, electrifying agriculture, etc)
- NRE Development** (offgrid, ongrid, biofuel)
- CFPP Moratorium & early retirement** of existing CFPPs
- New energy sources** (hydrogen and ammonia)
- CCS/CCUS**
- Energy efficiency application**

Energy Sector Roadmap for NZE 2060 or sooner

Supply:

NRE Development based on RUPTL 2021-2030, cofiring on CFPP

Demand:

Induction stove, gas network, DME, B35 mandatory, EV.

2021-2025

2026-2030

Supply:

NRE Development based on RUPTL 2021-2030, pump storage starts by 2025

Demand:

Induction stove, gas network, B40 mandatory, EV, energy management.

Supply:

Green Hydrogen utilization begin in 2031 for transportation sector, BESS in 2034

Demand:

Induction stove, gas network, B40 mandatory, EV, energy management, & hydrogen for transportation sector

2031-2035

2036-2040

Supply:

Nuclear PP starting 2039, massive Solar PV development, along with onshore and offshore wind PP.

Demand:

Induction stove, gas network, B40 mandatory, EV, and CCS for cement and steel industry

Supply:

Green Hydrogen utilization begin to substitute natural gas, NRE dominate the energy mix

Demand:

Induction stove, gas network, B40 mandatory, EV, & hydrogen for industry.

2041-2050

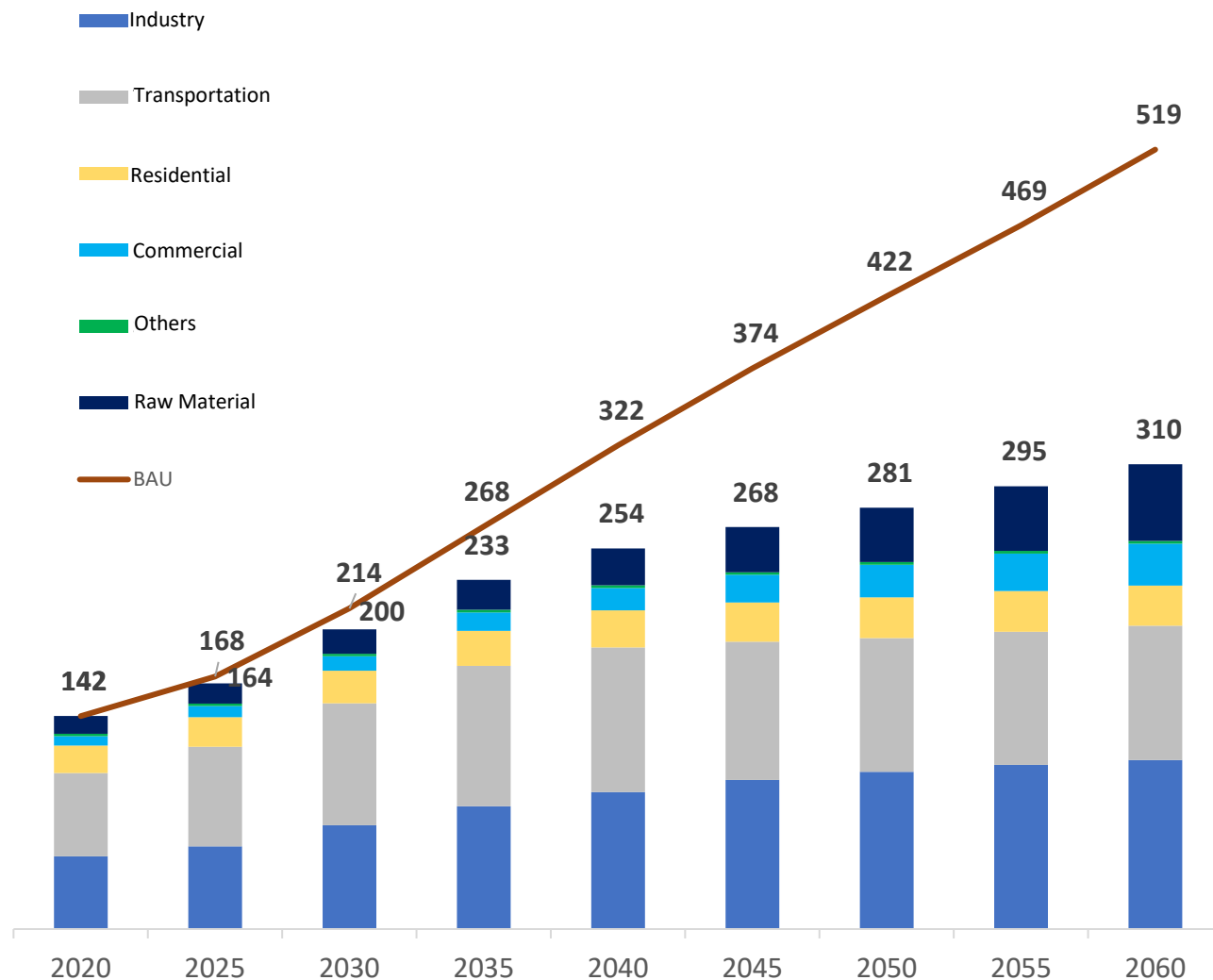
2051-2060

Supply:

All electricity are generated by NRE PP. Remaining GHG emission level: 129 million tons CO₂.

Demand:

Induction stove, gas network, EV, and CCS for industry



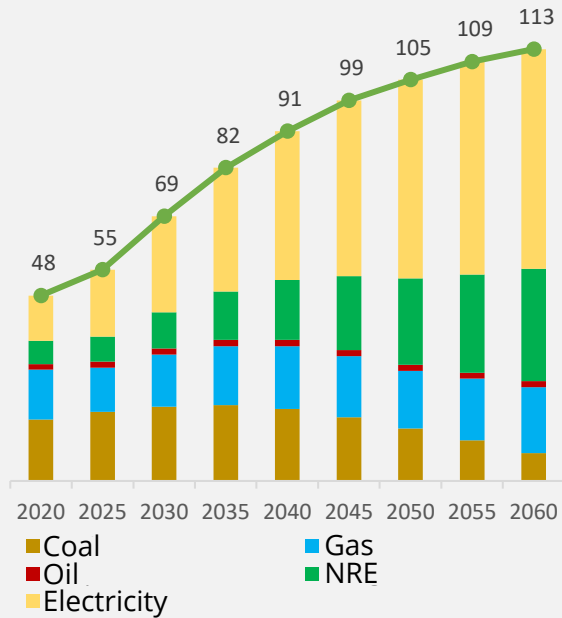
TOTAL PROJECTION OF DEMAND NZE 2060

- The energy demand growth rate is projected to rise by **1.8% per year**. Energy demand is expected to increase from **142 MTOE in 2020 to 519 MTOE (BaU) in 2060**.
- Through mitigation actions and energy conservation activities, it is estimated that there will be a decrease in energy demand by **209 MTOE (40%)**, so that energy consumption will be **310 MTOE in 2060**.
- According to IEA report, nearly **300 billion USD** was allocated for energy efficiency in 2021, illustrating high potential value for energy conservation globally.

Energy demands sectors will have higher shares of NRE due to the implementation of key policies in both NRE and fossil fuel subsector



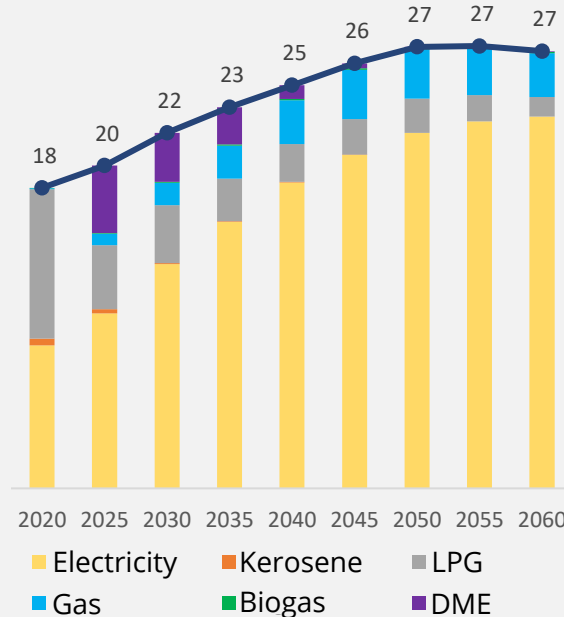
Industry (MTOE)



Strategy

1. Fuel Switching
2. Electrification
3. Hydrogen as Gas Substitute
4. Biomass Substitution and Carbon Capture & Storage (CCS)

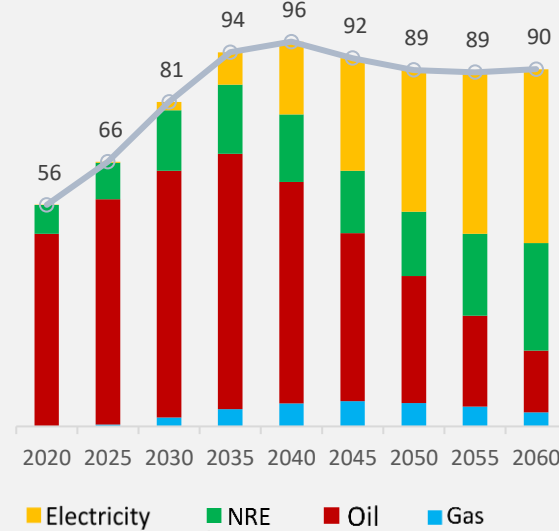
Household (MTOE)



Strategy

1. Utilization of Electric / Induction Stoves;
2. Jaringan Gas (Jargas) / City gas;
3. Gradual reduction of LPG imports
4. Energy Efficiency Program

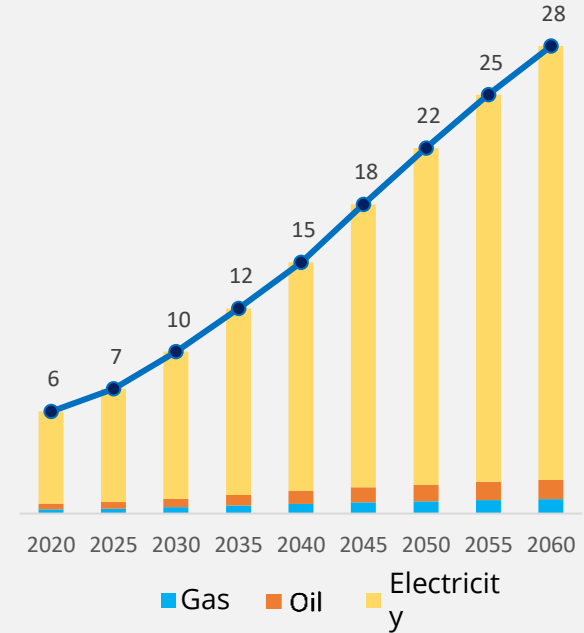
Transportation (MTOE)



Strategy

1. Biofuel Utilization
2. Electric Vehicles
3. Hydrogen for trucks
4. Low carbon and Eco-friendly fuel for shipping & aviation
5. Electrification
6. Gradual reduction of oil imports
7. Technology for Efficiency

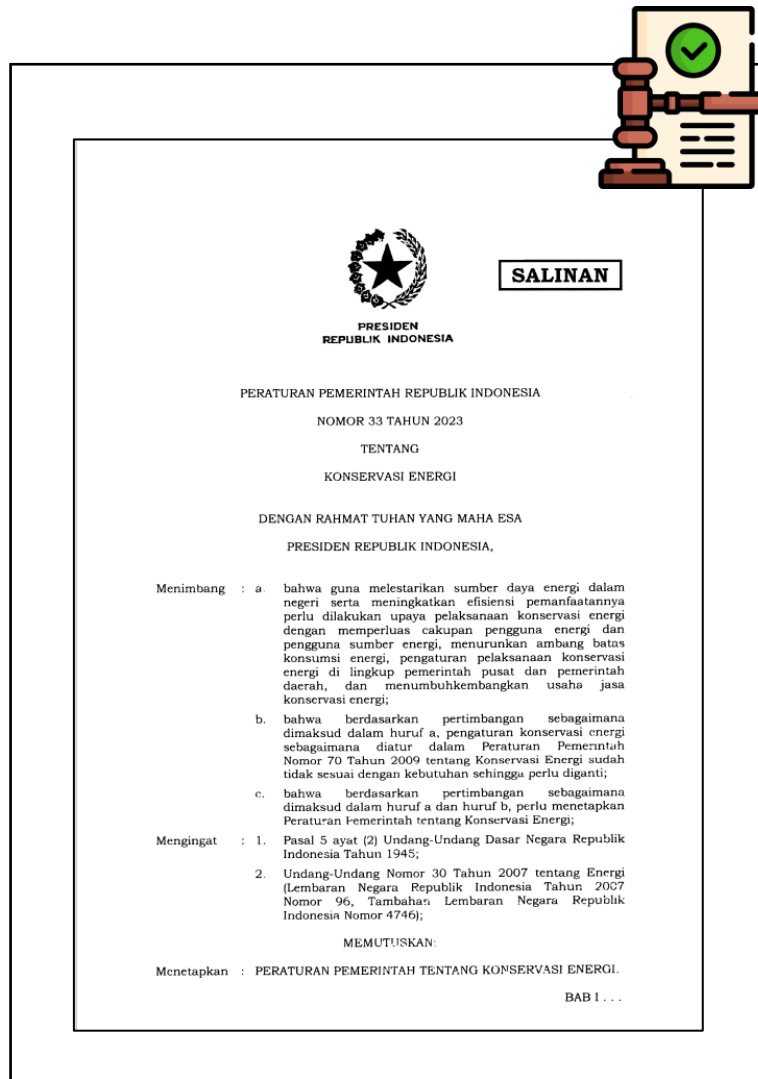
Commercial (MTOE)



Strategy

1. Utilization of Electric / Induction Stoves;
2. Jaringan Gas (Jargas) / City gas;
3. Gradual reduction of LPG imports
4. Energy Efficiency Program

As the revision on government regulation no. 70/2009



The direction of Arrangement

1. Implementation of energy conservation:
 - energy supply side (ESDM sector)
 - energy utilization side (transportation, industry, buildings and household sectors)
2. Mandatory to implement energy conservation through energy management for Energy Users whose energy consumption is \geq the determined mandatory threshold
3. Implementation of energy conservation by Ministries / Agencies and Local Government
4. Minimum Energy Performance Standards (MEPS) and Energy Saving Labels on energy user equipment
5. Guidance and supervision
6. Incentives and disincentives
7. Energy conservation services business (ESCO)
8. Financing
9. Human resource capacity building
10. Data and Information

ENERGY CONSERVATION REGULATION



Government and Local Government Responsibilities

Gov. Reg on Energy Conservation No 70/2009

Do the activities according to the scope of the area

Gov. Reg on Energy Conservation No 33/2023

Describe the subject, implementation, budgeting, and reporting



Scope of Sectoral Obligations

Not detailed per sector, only mentions users of energy sources and/energy

The scope of energy conservation is more detailed with obligations for each sector including energy providers



Funding and Reporting

Very limited and no thorough

Covers the use of budgets, PPP schemes, as well as tiered reporting, monitoring evaluation and rating



Incentives and Disincentives

Lack of incentives and disincentives implementative

Incentive and disincentive schemes are clarified according to authority



Data-Information, Guidance and Supervision

Data and information do not exist; binwas not specified

Manage access, distribution and exchange of data/information; supervision object and the formation of JFT

ENERGY CONSERVATION TARGET



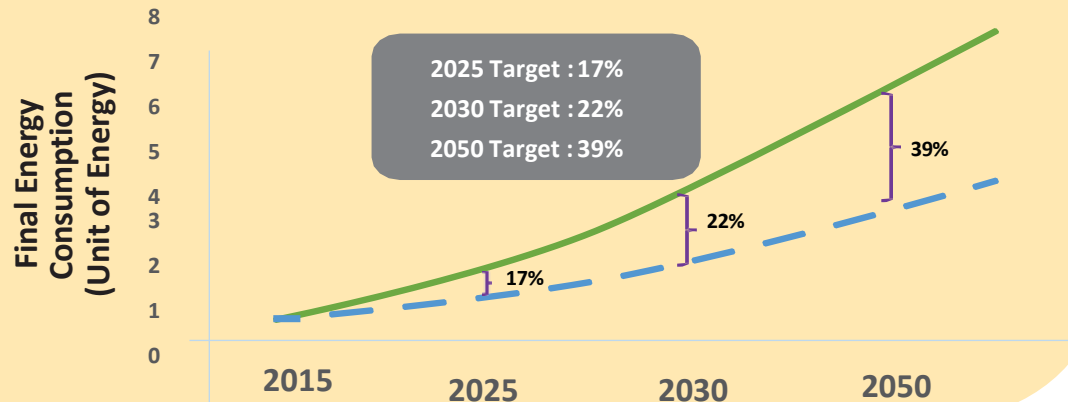
2025 TARGET

National Energy Policy
Government Regulation No 79/2014

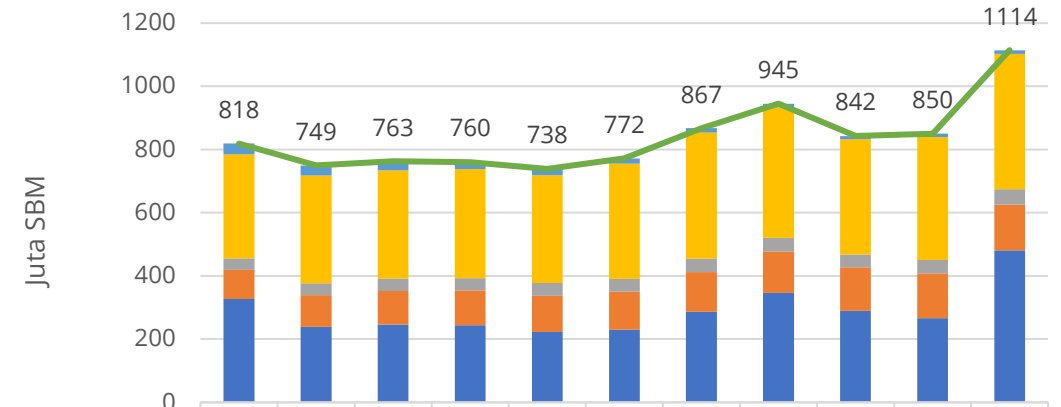
- 01** Final Energy Intensity Reduction **1%** per year
- 02** Final Energy Consumption Reduction **17%** from BAU



Final Energy Scenario 2015-2050



Final Energy Consumption



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Other	34	31	29	22	20	17	14	11	10	11	11
Transportation	330	341	343	346	341	364	400	413	364	388	429
Commercial	36	38	39	38	40	41	42	44	41	43	48
Households	92	100	106	111	115	120	125	131	138	142	144
Industrial	327	239	246	244	222	230	287	346	290	266	481
Total	818	749	763	760	738	772	867	945	842	850	1114

- 01** Transportation Sector : Fuel Oil (99.9%), Gas (0.02%) and Electricity (0.05%)
- 01** Industrial Sector : Coal (62.2%), Gas (15.3%) dan Electricity (14.5%)
- 01** Commercial Sector : Electricity (87.3%), Fuel Oil (5.1%) dan LPG (4.0%)
- 01** Household Sector : LPG (48.5%), Electricity (49.4%) and Kerosene (1.8%)
- 02** Most Final energy consumption comes from **industrial sector followed by transportation sector**. Both sectors dominates energy use in Indonesia

ENERGY SAVINGS POTENTIAL



INDUSTRY

Consumption 2021: **288 MBOE**
Energy savings potential
10-30 %



Implementation:

- Energy Audit/ IGA/ ESCO
- Energy Management/ ISO 50001
- Online Reporting System
- Energi Manager and auditor certificate
- Public awareness improvement
- *Pilot Project*

COMMERCIAL

Consumption 2021: **42 MBOE**
Energy savings potential
10-30 %



Implementation:

- Energi Audit/ IGA/ ESCO
- Pilot Project
- Energy efficiency standard
- Online Reporting System (Buildings)

TRANSPORTATION

Consumption 2021: **388 MBOE**
Energy savings potential
15-35 %



Implementation:

- Mass transportation (BRT/ MRT/ LRT)
- *Fuel Switching* (BBM/fuel to Gas & Biodiesel)
- Transportation Management System

HOUSEHOLD

Consumption 2021: **143 MBOE**
Energy savings potential
15-30 %



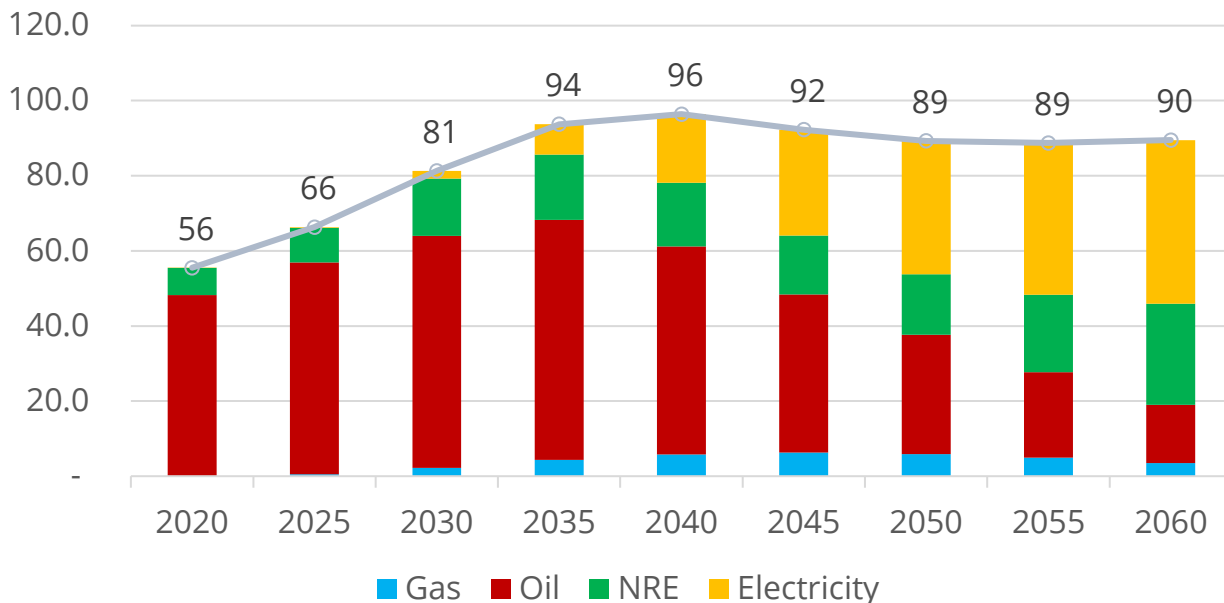
Implementation:

- EE Standard (Label/ MEPS)
- Public Awareness improvement

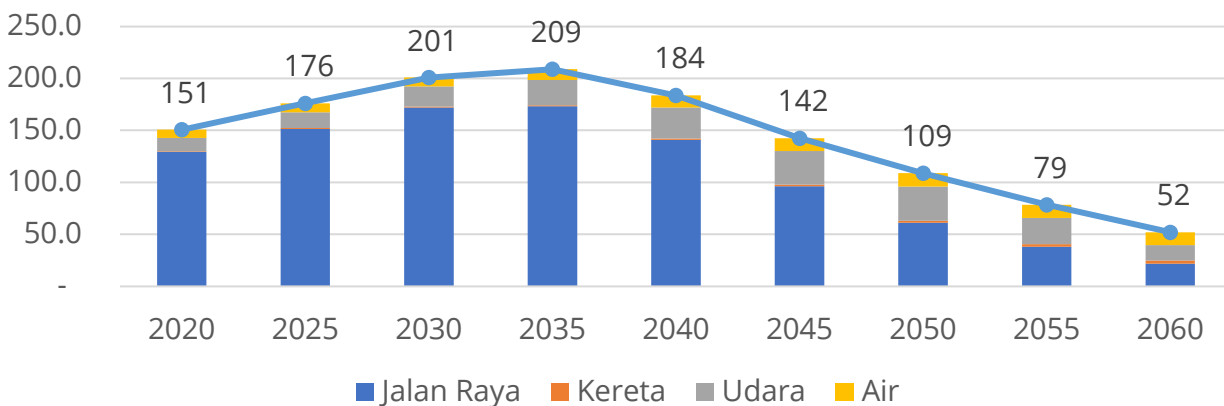
TRANSPORTATION POLICIES TOWARD NET ZERO



ENERGY PROJECTION (MTOE)



EMISSION PROJECTION (Mton CO2)



Policies and Actions

1. **Stop Impor fuel 2030;**
2. **Biofuel implementation 40% (B-40);**
3. **Electric Vehicle** in transport sector by accelerating sales of electric motorcycle 100% in 2035 and electric car in 2040;
4. **Hydrogen for truck.** Sales penetration for hydrogen trucks 5% in 2040 and 20% in 2060;
5. **Eco-fuels (Environmentally friendly/low carbon fuel for aviation)** starting in 2040 and reaching 45% in 2060;
6. **Low-carbon fuel for shipping** starting in 2036 with a blend of e-ammonia, hydrogen and biofuel;
7. **E-fuel** (derived from biosyngas and green hydrogen) for vehicles.
8. **Electrification** at ports or electric vessels for shorter distances and/or hybrid vessels.
9. **Technology efficiency** in the transportation sector is projected to be 20-25% in 2060.

BIOFUELS DEVELOPMENT PLAN (2021-2040)



Unit : Million KL	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Biodiesel	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	10.2	10.5	10.8	11.1	11.3	11.5	11.5	11.6	11.6	11.6	11.7	11.7
Co-processing Green Diesel	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Standalone Green Diesel	0.0	0.2	0.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Co-processing Green Gasoline	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Standalone Green Gasoline	0.0	0.0	0.1	0.3	0.5	0.8	1.1	1.4	1.7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Total Biofuels	9.2	9.7	10.0	11.3	11.6	12.0	12.4	12.8	13.4	14.0	14.3	14.6	14.8	15.0	15.0	15.1	15.1	15.1	15.2	15.2

PREPARATION FOR B40 IMPLEMENTATION

B40 Technical Study And Test

Launching Road Test

Road Test

1. Fuel used in Road Test B40:

- B30D10 >> 30% Biodiesel (B100*) + 10% Biodiesel/Biohydrocarbon Diesel/HVO (D100) + 60% Diesel (B0)
- B40 >> 40% Biodiesel (B100*) + 60% Diesel (B0)

2. The road test distance is 50,000 km for ≤ 3.5 ton automotive and 40,000 km for > 3.5 ton automotive

B40 Road Test Activity Timeline



NATIONAL PRIORITY PROGRAM: GREEN FUELS – 1
"MERAH PUTIH" CATALYST FACTORY, WEST JAVA

NATIONAL PRIORITY PROGRAM: GREEN FUELS – 2
GREEN REFINERY PLAJU, SOUTH SULAWESI

NATIONAL PRIORITY PROGRAM: GREEN FUELS – 3
GREEN REFINERY CILACAP UNIT TDHT (REVAMPING)

NATIONAL PRIORITY PROGRAM: GREEN FUELS – 4
HIDROGENASI CPO AT RU IV CILACAP

IVO DEVELOPMENT
DEMOPLANT AT MUSI BANYUASIN

PALM OIL GASOLINE DEVELOPMENT
DEMOPLANT AT KUDUS, CENTRAL JAVA

BIOAVTUR DEVELOPMENT
DEVELOPMENT OF BIOAVTUR J2,4

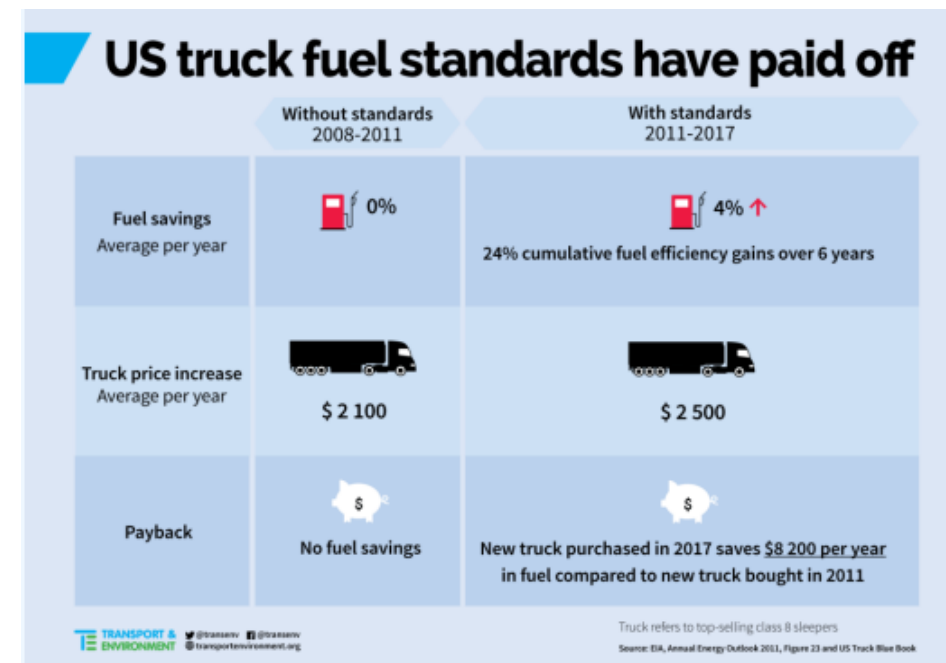
UCO FOR GREENFUELS
MoU PERTAMINA AND APJETI

- 1) Since 2020, Mandatory B30 has been implemented in all sectors/users.
- 2) Development of Co-Processing Green Diesel at Pertamina RU II Dumai is targeted to start commercial production in 2023.
- 3) Development of Stand Alone Green Diesel by PT Pertamina.
Revamping phase I @ RU IV Cilacap in 2022; Revamping phase II @ RU IV Cilacap in 2023; RU III Plaju standalone green refinery in 2024.
- 4) Green Gasoline Development
 - Non Pertamina stand alone green gasoline
 - 1) Musi Banyuasin (development of community-based palm oil gasoline projects by involving cooperatives).
 - 2) Replicate the development of community-based palm oil gasoline projects in palm oil plantation in North Sumatera, Riau, South Sumatera, West Kalimantan, East Kalimantan Timur and Papua.
 - Co-processing green gasoline project at Pertamina RU III Plaju.
- 5) Production of Merah Putih Catalyst.

URGENCY OF DETERMINING FUEL ECONOMY STANDARDS (FES)



- The fuel economy/ CO2 emission standards are the main policy instruments that will enable Indonesia to achieve the level of increased energy efficiency and electrification needed to achieve Net Zero in the transportation sector. The preparation of FES has also been mandated in the National Energy General Planning (RUEN).
- Standards are also an important driving factor for the adoption of EVs in Indonesia.
- In the transportation sector, implementing fuel economy standards in 2025 and accelerating vehicle electrification can save energy consumption equivalent to 8.4 million toe in 2030. By 2050, savings can reach 62 million toe. At current oil prices, these savings equate to cost savings of USD 4.9 billion and USD 36.3 billion, respectively.
- Standards have an important role to play in driving improvements in the fuel economy



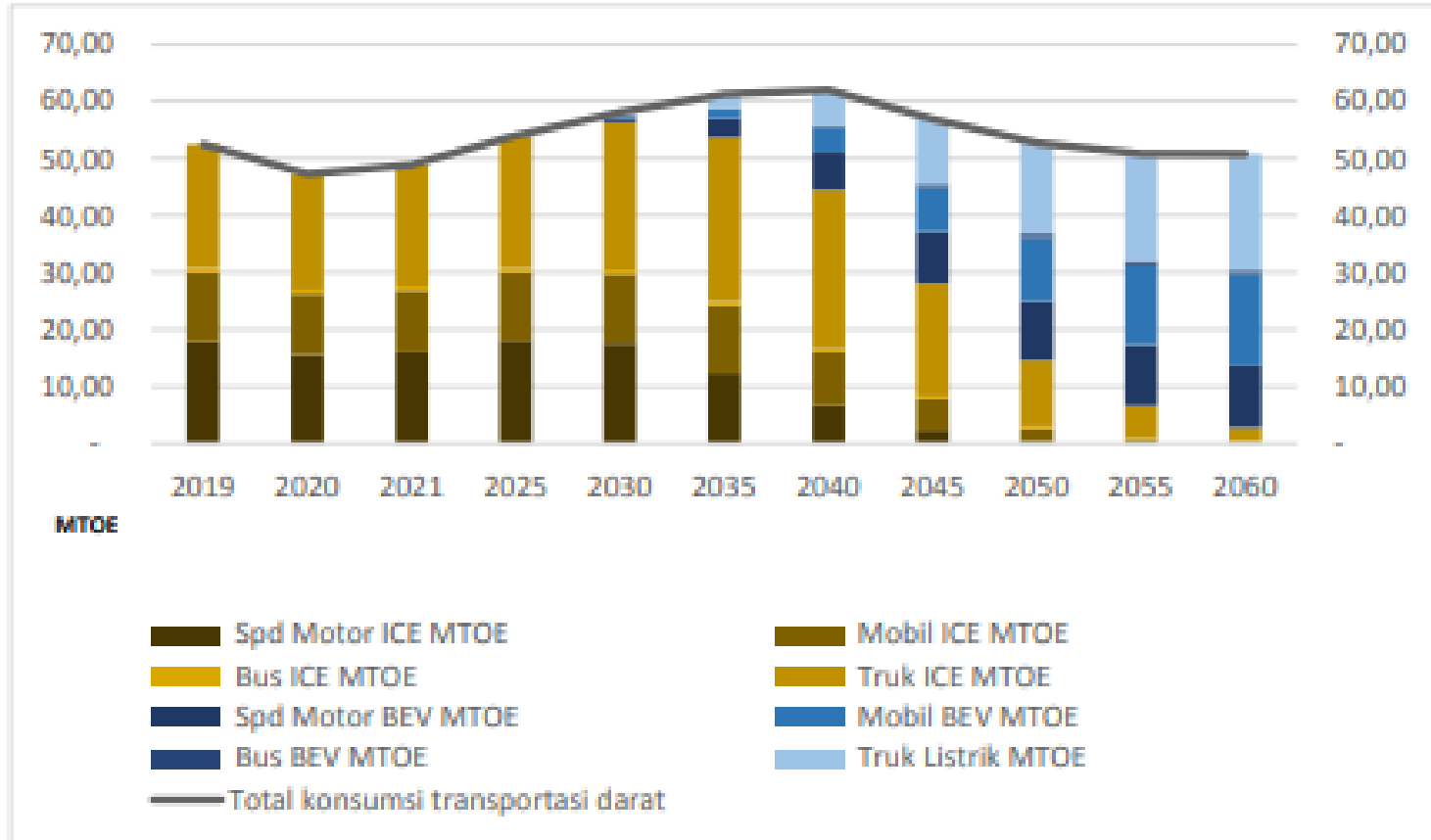
Sumber: [Transport and the Environment 2021](#)

- Di US, standar untuk truk diperkenalkan pada 2011 yang memastikan penerapan teknologi hemat energi serta memberikan *energy efficiency gain* sebesar 24% dari tahun 2011 - 2017

DEVELOPMENT OF FUEL ECONOMY STANDARD WILL BE FOCUS ON TRUCKS



Energy demand projection per mode transport 2020 – 2060



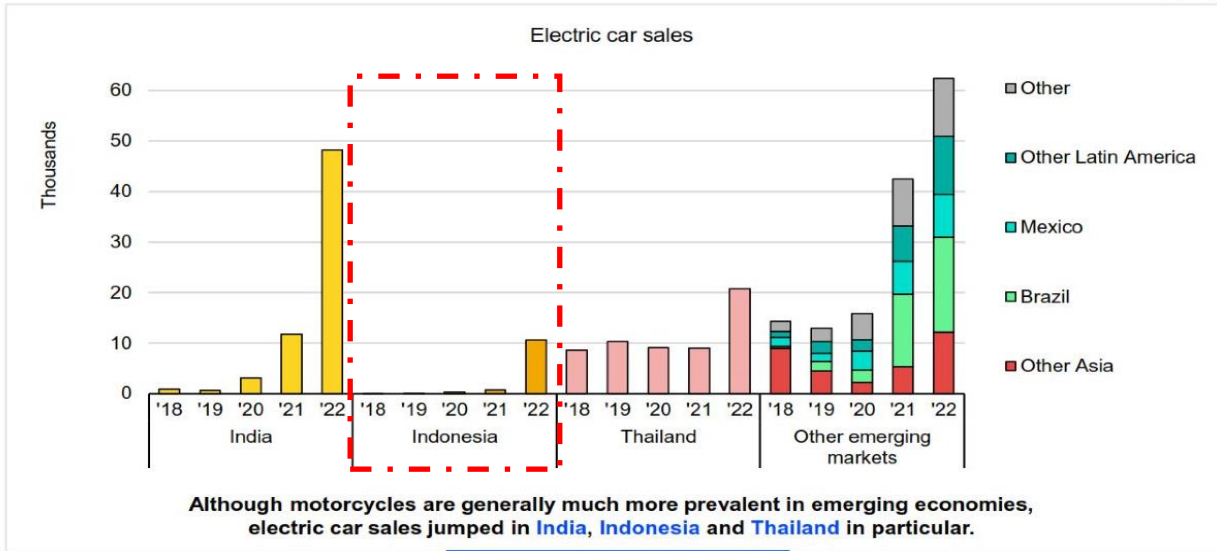
- Trucks are the **largest energy user** in the road transportation subsector.
- Trucks with internal combustion engine (ICE) technology **will still dominate energy use** in the future and are a major source of air pollution, so improving truck efficiency is important.

Source: Draft Net Zero Emission Roadmap in Indonesia

GLOBAL TRENDS ON EV



Electric cars are beginning to sell in emerging economies



CHARGING INFRASTRUCTURE

- The global stock of public chargers reached 2.7 billion**
Availability of public charging points has kept pace with electric car deployment, with the stock increasing 55% in 2022.
- Globally there is a ratio of 10 EVs per public charging point.**

BATTERY

- Battery material prices increase in 2022**
The average price of EV batteries increased for the first time in 2022, though the impact varied across different battery chemistries.
- Alternative battery chemistries on the rise**
LFP batteries rely less on expensive metals like cobalt and nickel, leading to their recent increase in market share

SALES

- Electric cars sales exceed 10 million in 2022.**
Sales of electric cars were up 55% in 2022, led by China, Europe, and the United States
- Electric cars are reaching mass-market adoption in many cases.**
Electric cars account for more than 20% of total sales in China and more than 10 countries
- Electric cars are beginning to sell in emerging economies**
Although motorcycles are generally much more prevalent in emerging economies, electric cars jumped in India, Indonesia and Thailand
- Large models and SUVs dominate car sales**
Large cars and SUV's made up over 45% of electric car sales in 2022
- Sustained policy support underpins EV growth**
Global total spending on electric cars reached USD 425 billion in 2022, with the share of government support in total spending around 10%.

Source: IEA, 2022

ELECTRIC VEHICLE ROADMAP



Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Number of Electric Car (commulatif)	500	93.875	187.250	280.625	374.000	738.200	1.102.400	1.466.600	1.830.800	2.195.000
Number of electric motorcycle (commulative)	200.000	3.098.250	5.996.500	8.894.750	11.793.000	12.034.800	12.276.600	12.518.400	12.760.200	13.002.000
Energy savings (MBOE)	0,25	4,37	8,49	12,62	16,74	19,35	21,96	24,57	27,18	29,79
Emission Reduction (MtonCO2-e)	0,1	1,2	2,3	3,4	4,5	5,1	5,6	6,1	6,7	7,2

Electric Cars Roadmap	Notes
	units
Mileage 1 tahun	18.000 km
Total vehicles by 2030	2.195.000 unit
Energy Savings 2030	13,96 MBOE
Emission Reduction 2030	2,79 Mton CO2

Electric Motorcycle Roadmap	Notes
	Units
Mileage 1 tahun	8.000 km
Total vehicles by 2030	13.002.000 unit
Energy Savings 2030	15,83 MBOE
Emission Reduction 2030	4,44 Mton CO2

Efficiency Comparison for Electric Cars and Motorcycles vs Conventional / Internal Combustion Engine (ICE)



Electric Cars



Conventional Cars



Electric Motorcycle



Conventional Motor Cycle

2030

- Total energy savings: **29,79 MBOE**
- Total emission reduction : **7,23 million ton CO2-e**

	Electric Cars	Conventional Cars	Electric Motorcycle	Conventional Motor Cycle
Energy Consumption	0,123 kWh/km	0,083 liter/km	0,033 kWh/km	0,033 liter/km
	0,44 MJ/km	2,46 MJ/km	0,12 MJ/km	0,99 MJ/km
Cost of Energy	178 Rp/km	747 Rp/km	48 Rp/km	300 Rp/km
Emission	108 gram CO2/km	178 gram CO2/km	29 gram CO2/km	72 gram CO2/km

Source: Direktorat Energy Conservation, DGNREEC 2020

Notes:

- Sources: GSEN-KESDM target, National Energy Council, and BPPT.
- Assumptions: NCV Pertamina: 29,65 MJ/liter, Emission Factor: Pertamina: 2,15 kg CO2/liter, Emission Factor Electricity : 0,877 ton CO2/MWh,
- The Average Electrical Consumption of electric vehicles refers to the results of studies in India for city driving ranges, namely 123 Wh/km for electric cars and 33 Wh/km for electric scooters (source: KBLBB-KESDM).
- The average mileage per year for cars is 18 thousand km and motorcycles is 8 thousand km.
- Fuel cost (pertamax): Rp 9000/liter and Electricity tariff: Rp 1444,7/kWh

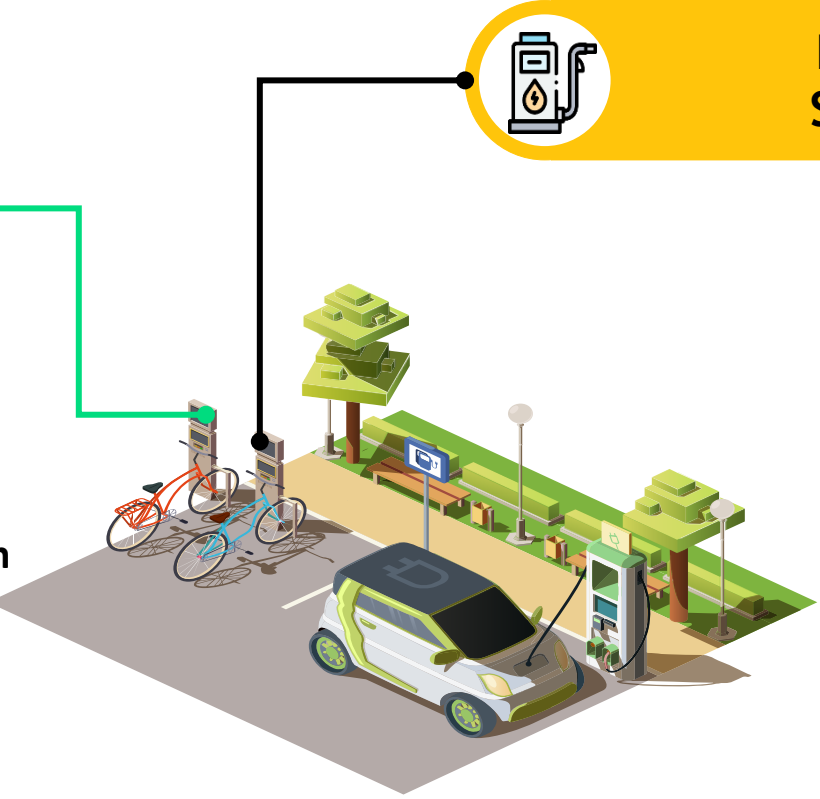
MEMR REGULATION 1/2023 ON PROVISION OF EV CHARGING STATION (EVCS) INFRASTRUCTURE

STANDARD & SAFETY



- EVCS must comply to Electricity Safety Standards;
- EVCS' Certificate of Operation Worthiness (SLO) is issued by Technical Inspection Agency;
- EVCS' standards conformity is issued by Product Certification Agency (BSN and MEMR).

- EV Charging Station;
- Battery Swap Station.



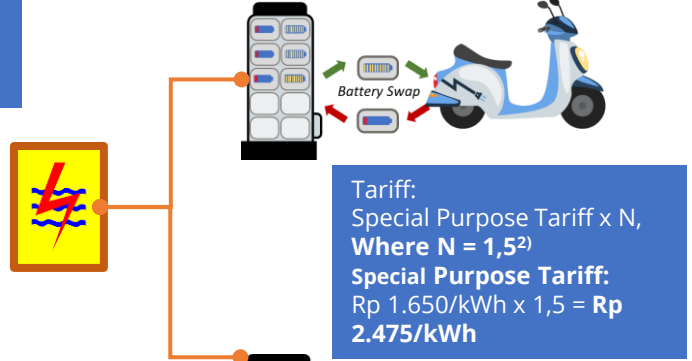
ELECTRICITY STIPULATION

- Gas Stations
 - Office Complex
 - Dept. Store
 - Parking Area
- Public Use Electricity Provision Business License (IUPTLU) and Business Area;
 - State Owned Energy Company or Private Company;
 - First assignment is assigned to PLN;
 - PLN can cooperate with another State-Owned Company or Private Sector.

Tariff¹⁾

Tariff: Bulk Tariff x Q, where Q = 1,01²⁾
Bulk Tariff:
 Rp707/kWh x 1,01 = Rp 714,07/kWh

Battery Lease Cost: Charging Cost + Swap Station Investment



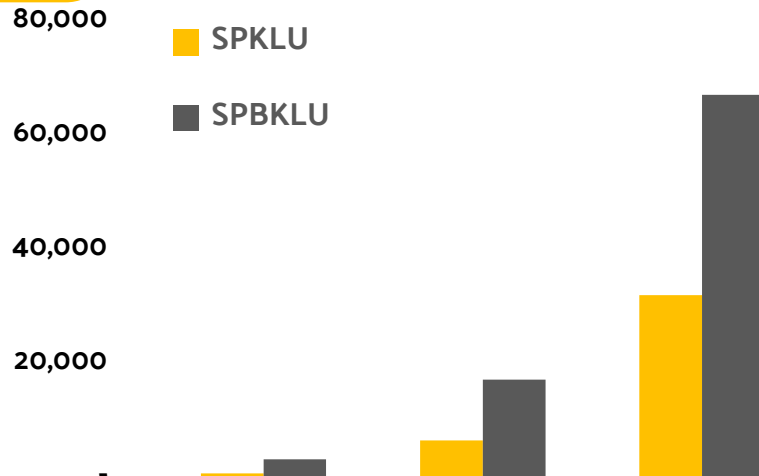
1) MEMR Regulation Number 28 Year 2016
 2) Q and N values are set by PLN

INFRASTRUCTURE SUPPORT FOR EV CHARGING STATION



Public Electric Vehicle Charging Station (SPKLU) & Public Electric Vehicle Battery Swap Station (SPBKLU) 2020-2030

SPKLU & SPBKLU Roadmap by GSEN

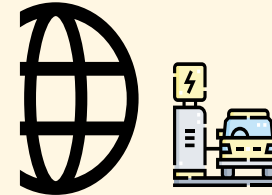


	Unit	2021	2025	2030
SPKLU	Unit	572	6,318	31,859
SPBKLU	Unit	3,000	17,000	67,000

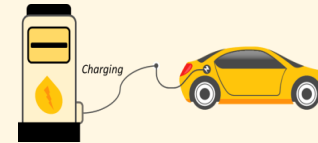
CHARGING STATIONS PROVISIONS

- Electricity Supply Business License (IUPTL) and Business Area;
- State owned energy company and/or other business entities;
- Initial assignment for PLN;
- PLN can cooperate with BUMN and/or other business entities.

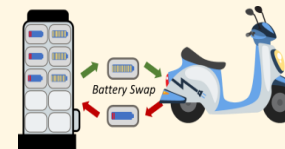
Private Electric Installation




EV Charging Station





EV Battery Swap Station



Incentives in the form of Facilitation:

 Installation cost; and/or

 Electricity subscription guarantee; also

 Minimum Account Exemption for the first two years

 Discount on electricity tariff for charging BEV battery at 22:00 to 04:00 the following day.

EV UNITS AND ITS INFRASTRUCTURE DEVELOPMENT



1. Number of EV (Unit)

(status December 2022)

Passenger Car	3 Wheel Vehicle	Motorcycle	Bu s	Box Car	Total
9.636	288	28.808	74	6	38.812

Information:

- KBLBB = Electric Vehicle
- SUT = Type Test Certificate
- SRUT = Type Test Registration Certificate
- SPKLU = EVCS
- SPBKLU = BSS

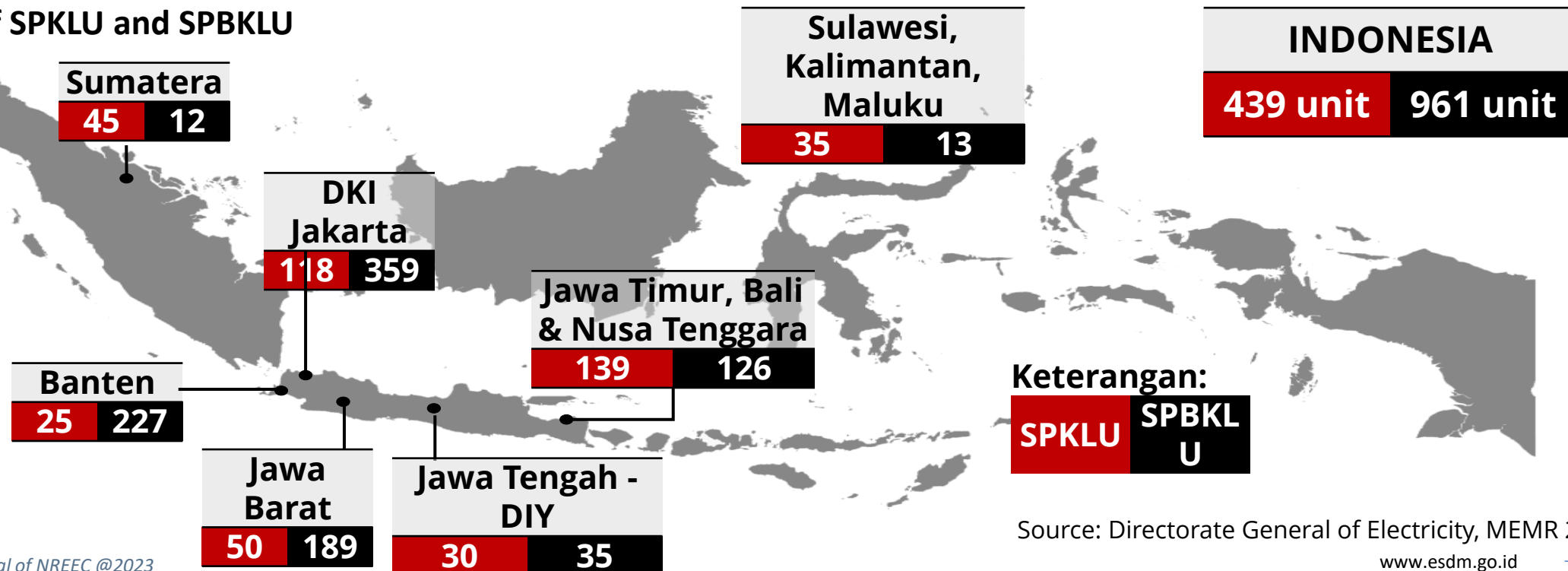
2. Motorcycle Conversion Program Data (unit)

(status September 8th 2022)

NUMBER of SPU	TEST RESUME	DRAFT PROCESS	APPROVED	SUT	SRUT
123	109	0	1	108	108

Source: Ministry of Transportation

3. Number of SPKLU and SPBKLU



Source: Directorate General of Electricity, MEMR 2023

A. BATTERY-BASED ELECTRIC VEHICLES (KBLBB) PROGRAMS



DEVELOPMENT ROADMAP (2030)

Energy savings up to **29.79 MBOE**
 Total GHG emission reductions up to **7,23 Million ton CO₂e**

Badan Penelitian dan Pengembangan Energi dan Sumber Daya Mineral



Uji Jalan Motor Listrik
(Hasil Modifikasi Motor Bensin)

Kecepatan rata-rata	= 30km/jam
Lama uji jalan	= ±15 menit
Kondisi jalan	= naik-turun-rata
Beban motor	= 1 pengendara (65kg)
Baterai 100%	= 84V
Baterai Cut-off	= 69V
Δ Battery	= 15V

TWO-WHEELERS
13 million unit
67.000 SPBKLU*

SPBKLU: General Electric Vehicle Battery Exchange Station



FOUR-WHEELERS/More
2 Million unit
32.000 SPKLU*

SPKLU: General Electric Vehicle Charging Station

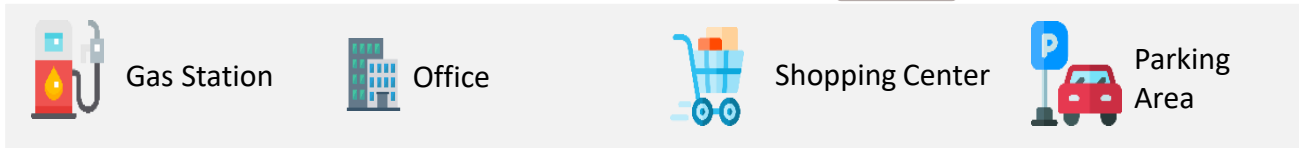


KBLBB will be used as a delegation vehicle at the G20 summit



TOTAL SPKLU & SPBKLU

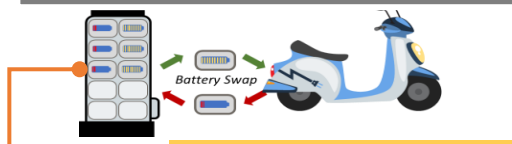
As of **April 2023**, **488 units of SPKLU** have been built in **488 locations** and **1331 units of SPBKLU** in **1282 locations**.



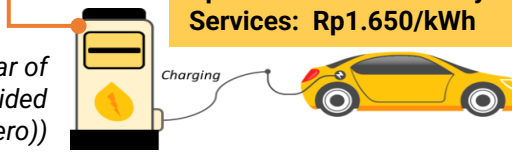
ELECTRICITY RATES

Rates:
 Bulk Electricity Rates x Q,
 where
 $0,8 \leq Q \leq 2$
 Bulk Electricity Rates:
 Rp707/kWh

Battery rental fee:
 Refill fee + SPBKLU investment



Rates:
 Special service Electricity Rates x N, where $N \leq 1,5$
Special service Electricity Services: Rp1.650/kWh



(Ministry Decree of MEMR No. 28 year of 2016 regarding Electricity rates provided by PT PLN (Persero))



B. ELECTRIC MOTORCYCLE CONVERSION PROGRAM



Electric Motor Conversion Program



The Ministry of Energy and Mineral Resources has conducted trials on converting BBM motors into electric motors to obtain certification at the Ministry of Transportation for a total of **127 units**. A total of **22 units** of them have received documents in the form of STNK from the National Police Traffic Corps (until November 2022).

Incentives Policy



Carry out the mandate of **Presidential Regulation 55/2020** concerning the Acceleration of the KBLBB Program and Presidential Instruction 7/2022 concerning the Use of KBLBB as official vehicles for central and regional government agencies



Supporting the achievement of reducing national greenhouse gas emissions.



Reducing fuel oil imports to improve the national trade balance.



Creating an ecosystem for Battery-Based Electric Motorized Vehicles

2023

50,000 units of electric motorbikes conversion

2024

150,000 units of electric motorbikes conversion

Thank You

www.esdm.go.id



Kementerian Energi dan
Sumber Daya Mineral



@kesdm



@KementerianESDM



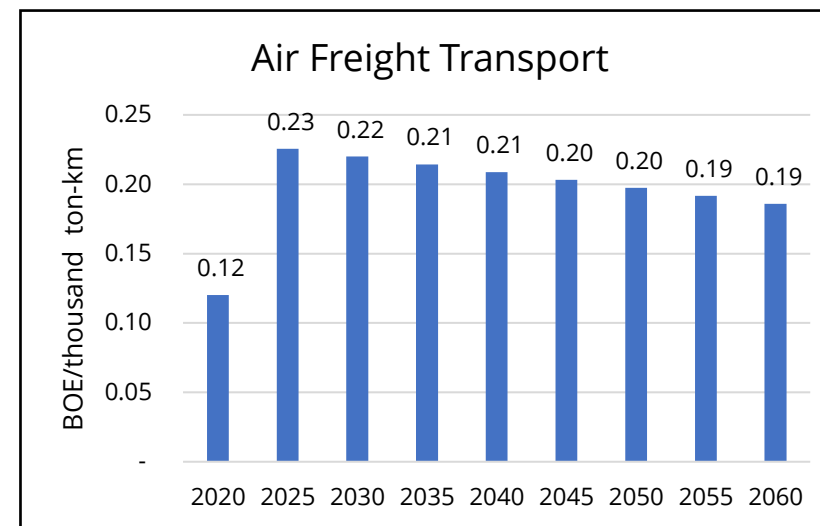
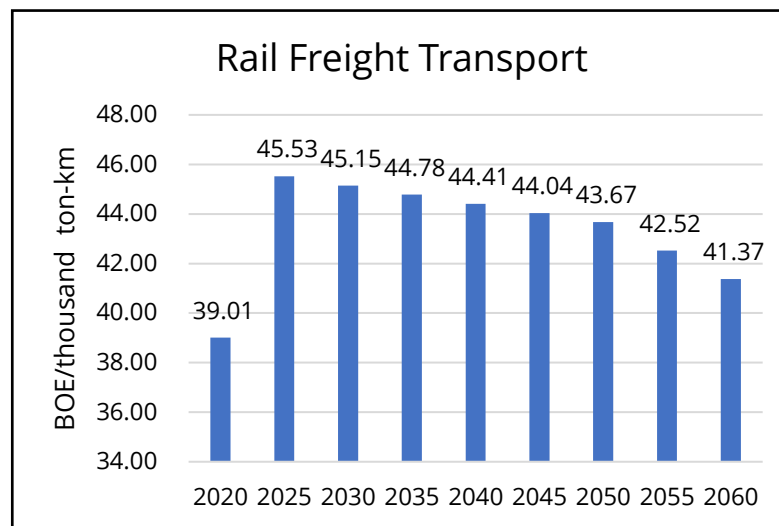
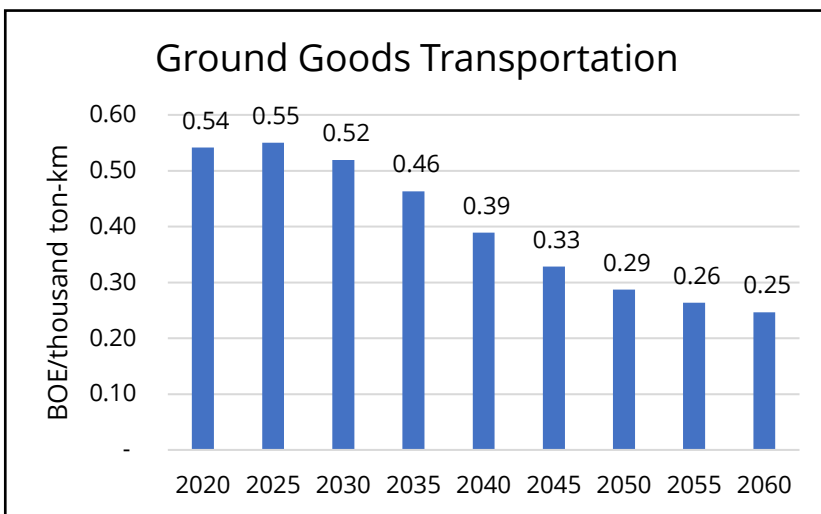
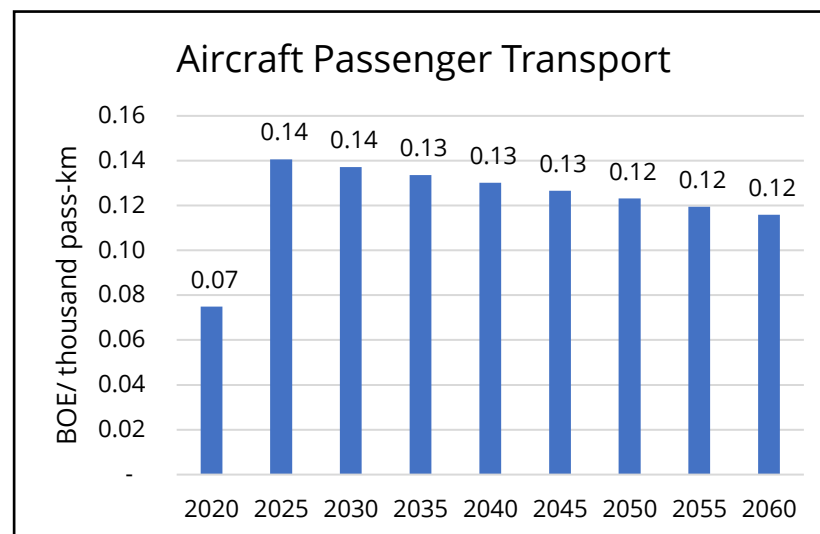
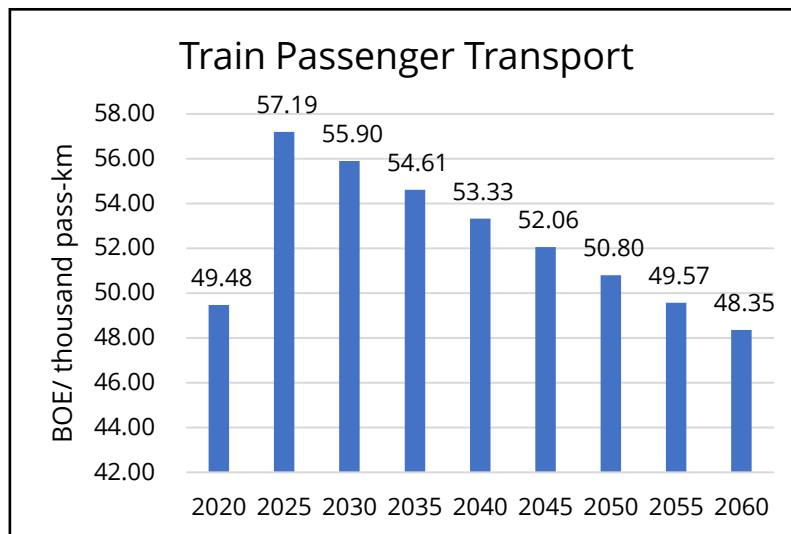
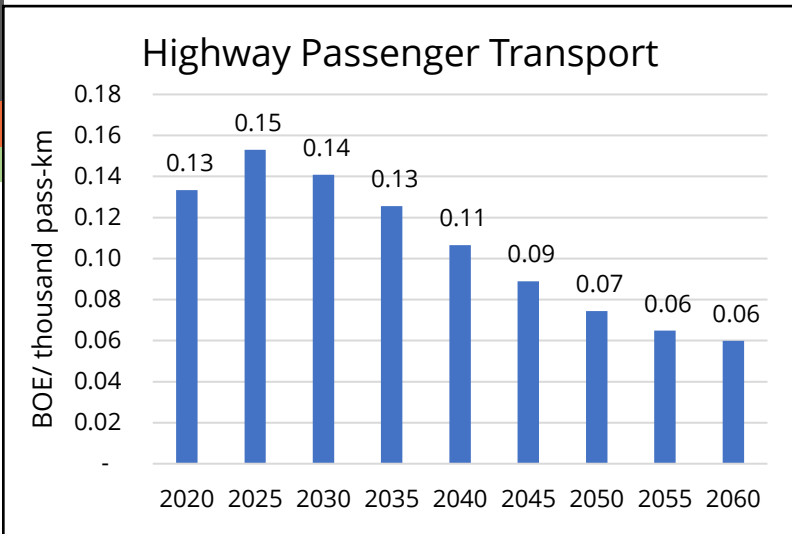
KementerianESDM



Address

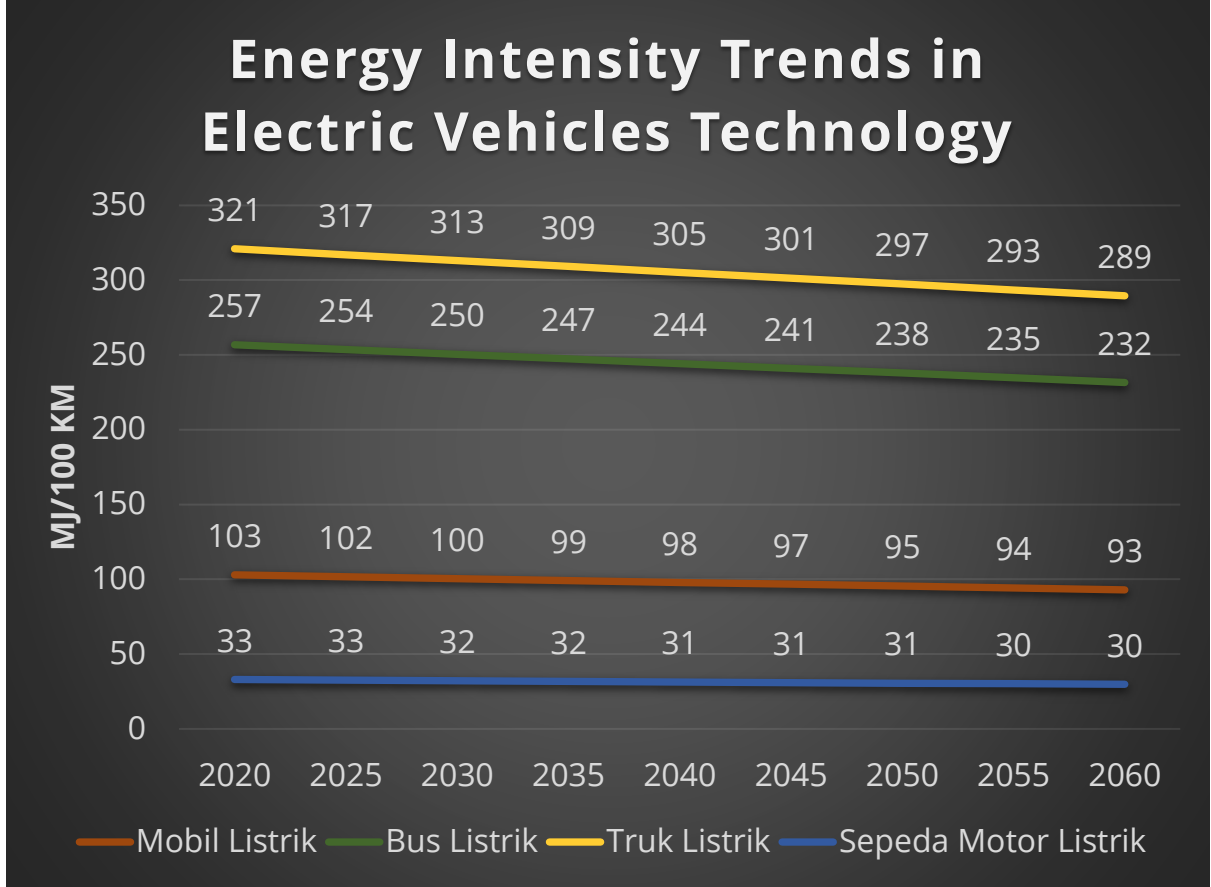
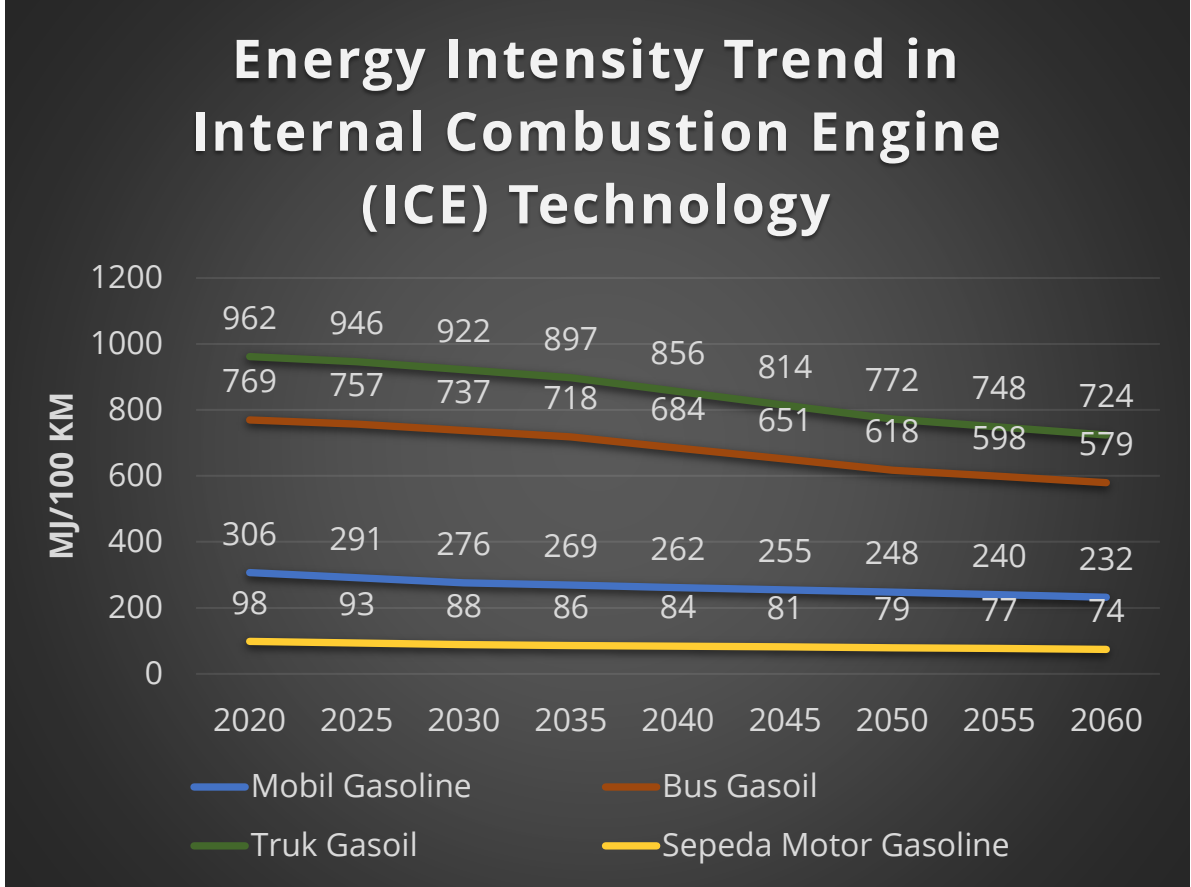
Jl. Pegangsaan Timur No.1,
Cikini, Menteng Jakarta

ENERGY INTENSITY PROJECTION BY TYPE OF TRANSPORTATION SECTOR



Source: MEMR 2021 NZE LEAP Modeling, processed

PROJECTION OF ENERGY INTENSITY (EFFICIENCY TRENDS) BY TYPE OF VEHICLE TECHNOLOGY IN THE TRANSPORTATION SECTOR



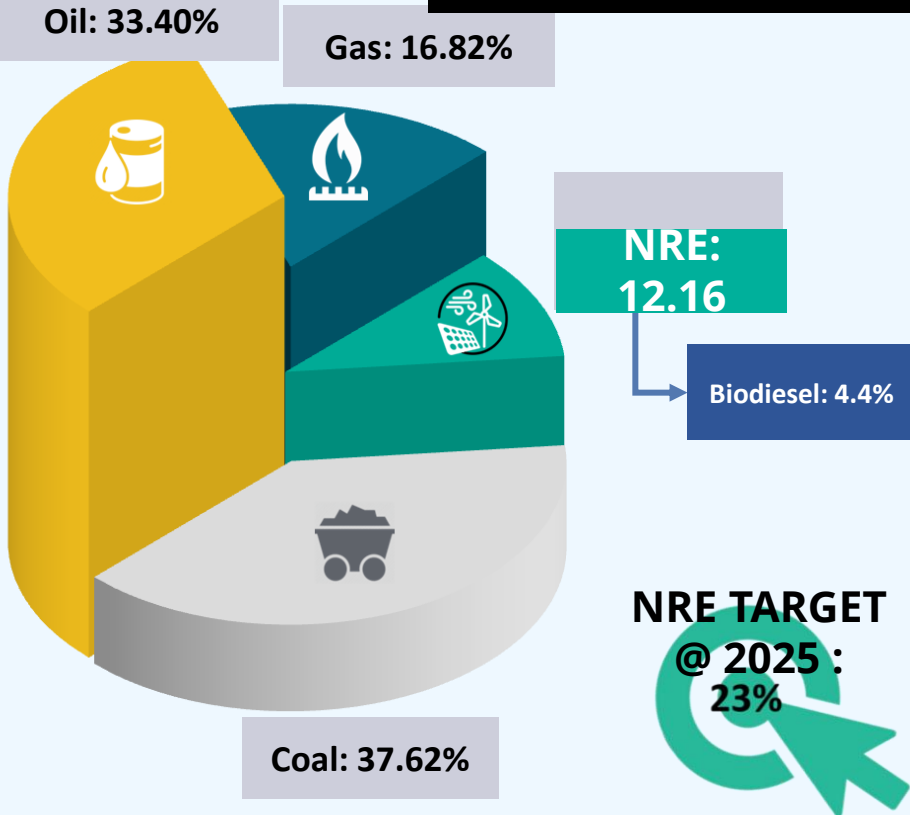
Sumber: Pemodelan LEAP NZE KESDM 2021, diolah

BIODIESEL ACHIEVEMENTS



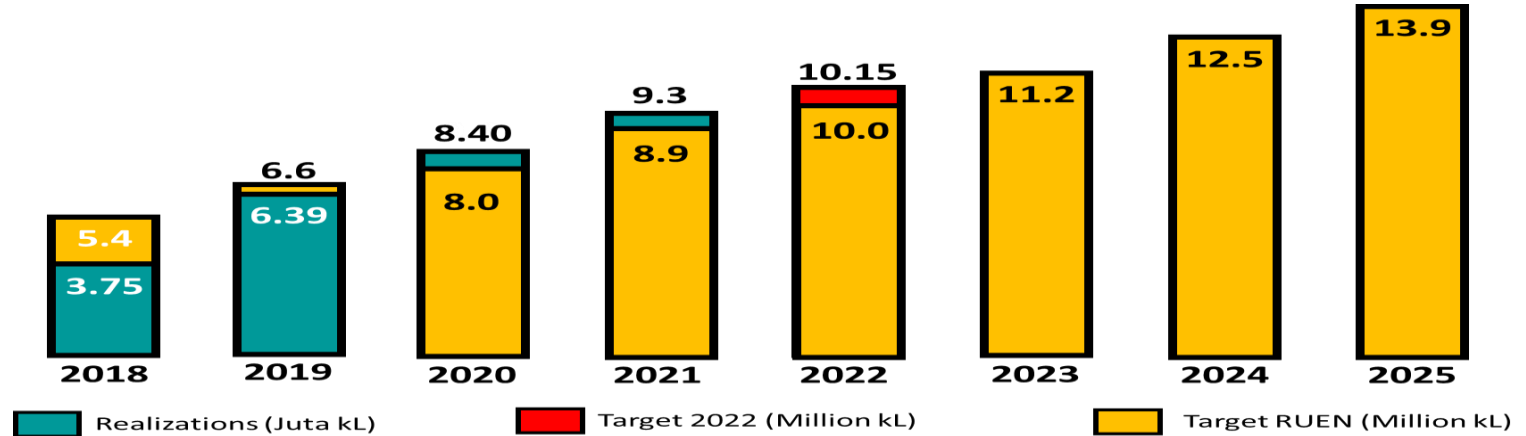
BIOFUELS STRENGTHENING NATIONAL ENERGY RESILIENCE & ENERGY SECURITY

ENERGY MIXED @ 2021



NRE contribution on the Total Primary Energy Mix @2021: 12.16%, of which 36% was from biodiesel utilization (B30)

BIODIESEL IMPLEMENTATION (TARGET & REALIZATION)



BENEFIT OF BIODIESEL MANDATORY PROGRAM

BENEFIT	BENEFIT VALUE			
	B20 IN 2018	B20 IN 2019	B30 IN 2020	B30 IN 2021
Volume	3,75 Million kL = 23,59 Million BPY = 64,62 thousand BPD	6,39 Million kL = 41,68 Million BPY = 114,21 thousand BPD	8,4 Million kL = 52,83 Million BPY = 144,74 thousand BPD	9,3 Million kL = 58,41 Million BPY = 160,03 thousand BPD
Foreign Exchange Savings	USD 1,89 Billion = Rp 26,67 Trillion	USD 3,04 Million = Rp 43,82 Trillion	USD 2,64 Million = Rp 38,04 Trillion	USD 4,62 Million = Rp 66,54 Trillion
Increasing Added Value from CPO to Biodiesel	Rp 5,78 Trillion	Rp 9,54 Trillion	Rp 10,28 Trillion	Rp 11,29 Trillion
Employment	On farm: 478.325 farmers Off farm: 3.609 farmers	On farm: 828.488 farmers Off farm: 6.252 farmers	On farm: 1.071.491 farmers Off farm: 8.085 farmers	On farm: 1.160.889 farmers Off farm: 8.760 farmers
Reduction of GHG Emission	9,96 million ton CO ₂	16,98 million ton CO ₂	22,3 million ton CO ₂	24,6 million ton CO ₂

FUTURE BIOFUELS DEVELOPMENT:

Strengthening The Implementation = Strengthening The Impact



- Abundant feedstock availability and technology support
- Policy support to ensure program sustainability
- Incentive support
- National standards and technical guidelines
- Infrastructure readiness to support blending and distribution
- Implementation of monitoring and evaluation

- Follow sustainable principles
- Community engagement
- Smart partnership
- Blending improvement on biodiesel
- Digital transformation in the palm oil sector
- Massive socialization

- Advance biofuel development
- Implementation on community-based program
- Specifications based on consumer needs
- Utilization by product biodiesel
- Utilization palm oil diversification (non-CPO)

- Capacity Building
- Technology Innovation
- Technical Assistance
- Financial Support
- Study/Pilot Project

Whole-of-Nation Approach

International Support

