Indonesia Energy Efficiency and Conservation Efforts

Current Status, Challenges and Opportunities,

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Current National Energy Policy

PP No. 79 Year 2014

Main Policy

- Securing Availability of Energy for National needs
- Prioritized Energy Development
- Optimizing National Energy Resources
- Building National Energy Reserves

Supporting Policy

- Energy Conservation, Energy Efficiency and Diversification
- Environment and Safety
- Energy Prices, Subsidies and Incentives of Energy
- Infrastructure, Energy access, and Energy Industries
- Research, Development and Application of Efficient Energy Technology
- Institutional Funding

Target Energy Mix 2025:

Oil
25%
~ 96 MTOE

Gas
22%
~ 76,75 MTOE

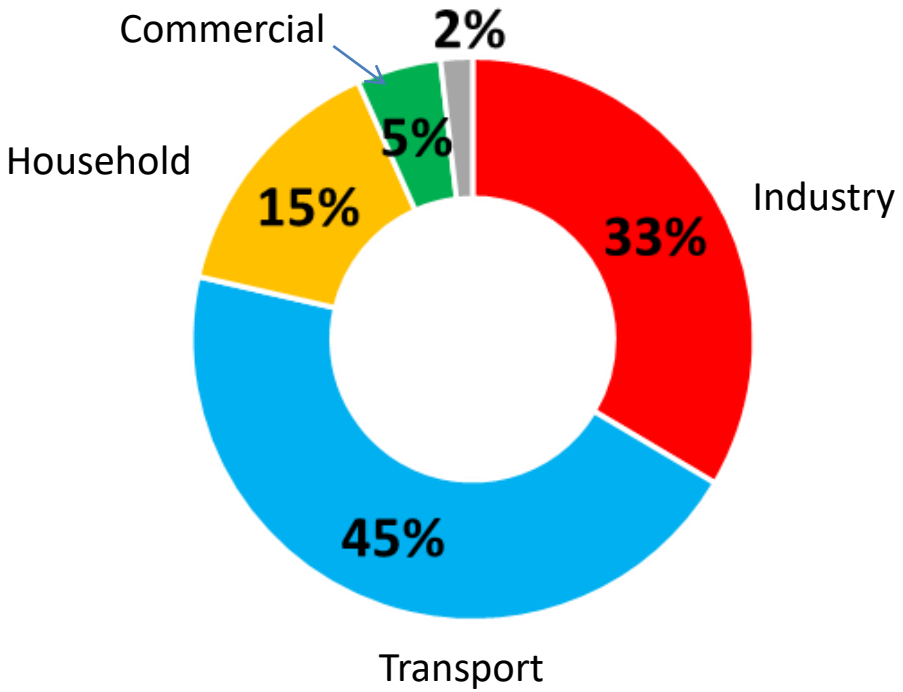
Coal
30%
~ 113,45 MTOE

RE
23%
~ 84,15 MTOE

EE
Elastisity <1
Intensity -1% p.a

Source : EBTKE

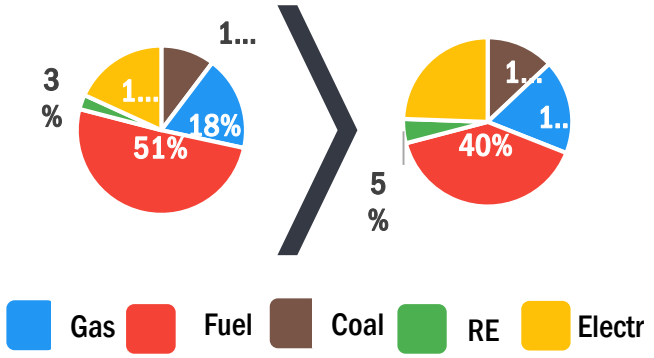
NATIONAL ENERGY CONSUMPTIONS --2018



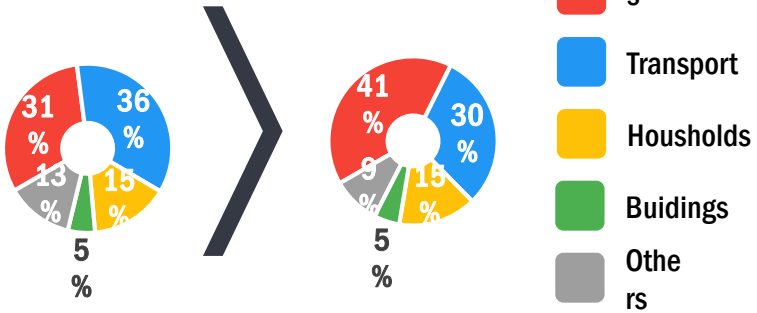
Source : EBTKE

Energy Conservation Target 2025

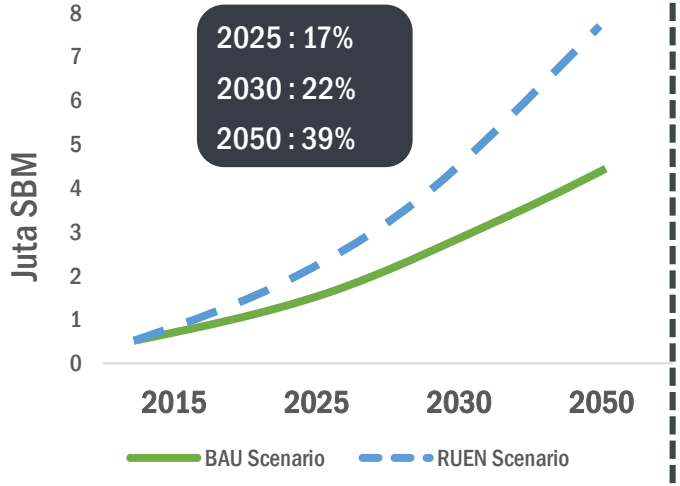
Energy Consumptions MIX



Energy Consumption by SECTOR



Final Energy 2015 - 2050



Strategic Measures

1. EM Obligation ≥ 6.000 TOE/Year
2. MEPS (Household Equipment);
3. Govt Sector Energy Conservation
4. Private Investments
5. Increase Awareness;
6. Capacity Building
7. M & V and Reporting

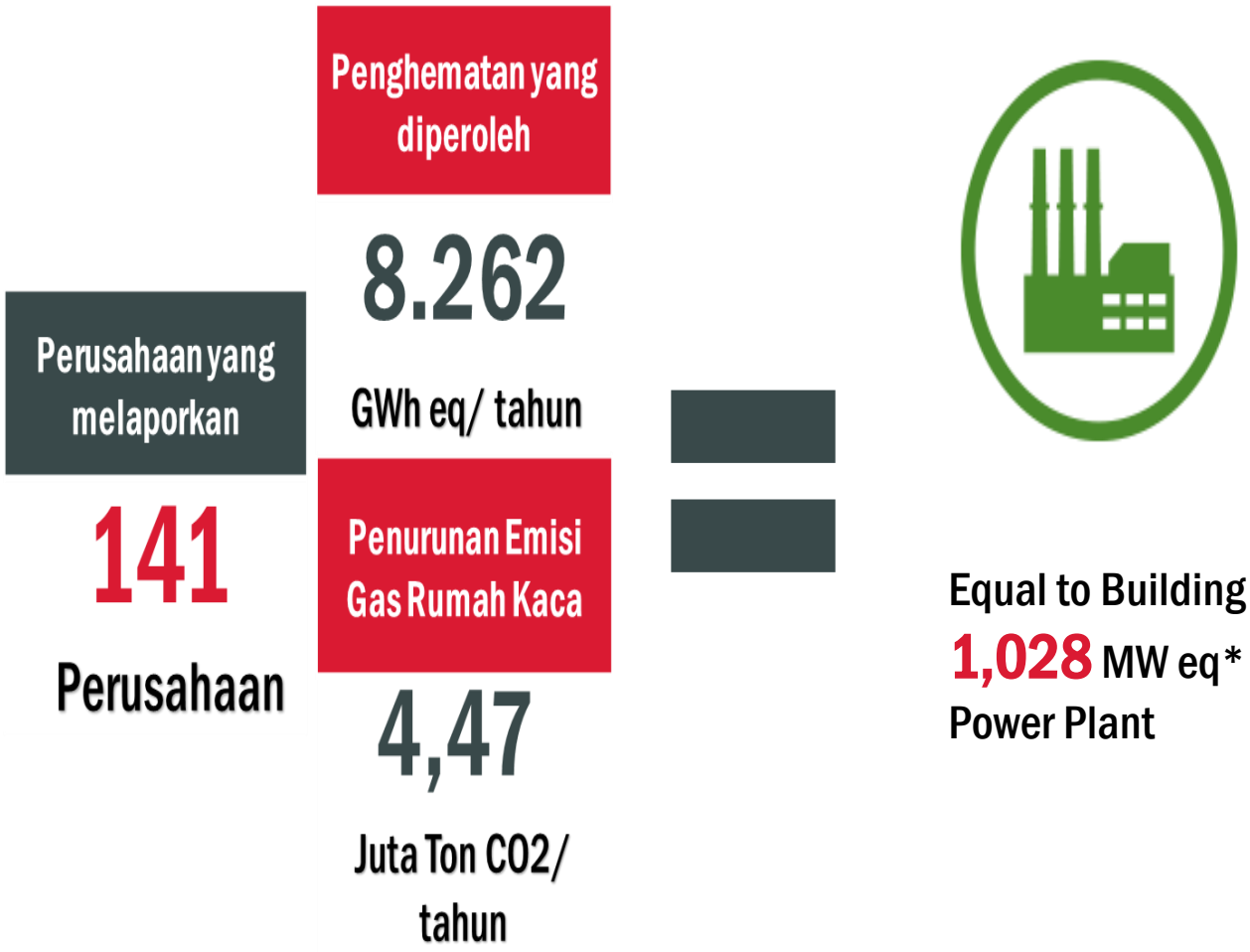
2025

- Annual 1% EI
- < 1 Elasticity
- Saved 17%

Source: Handbook of Energy & Economic Statistics of Indonesia 2017 MEMR

Energy Saving and the Emission Reduction

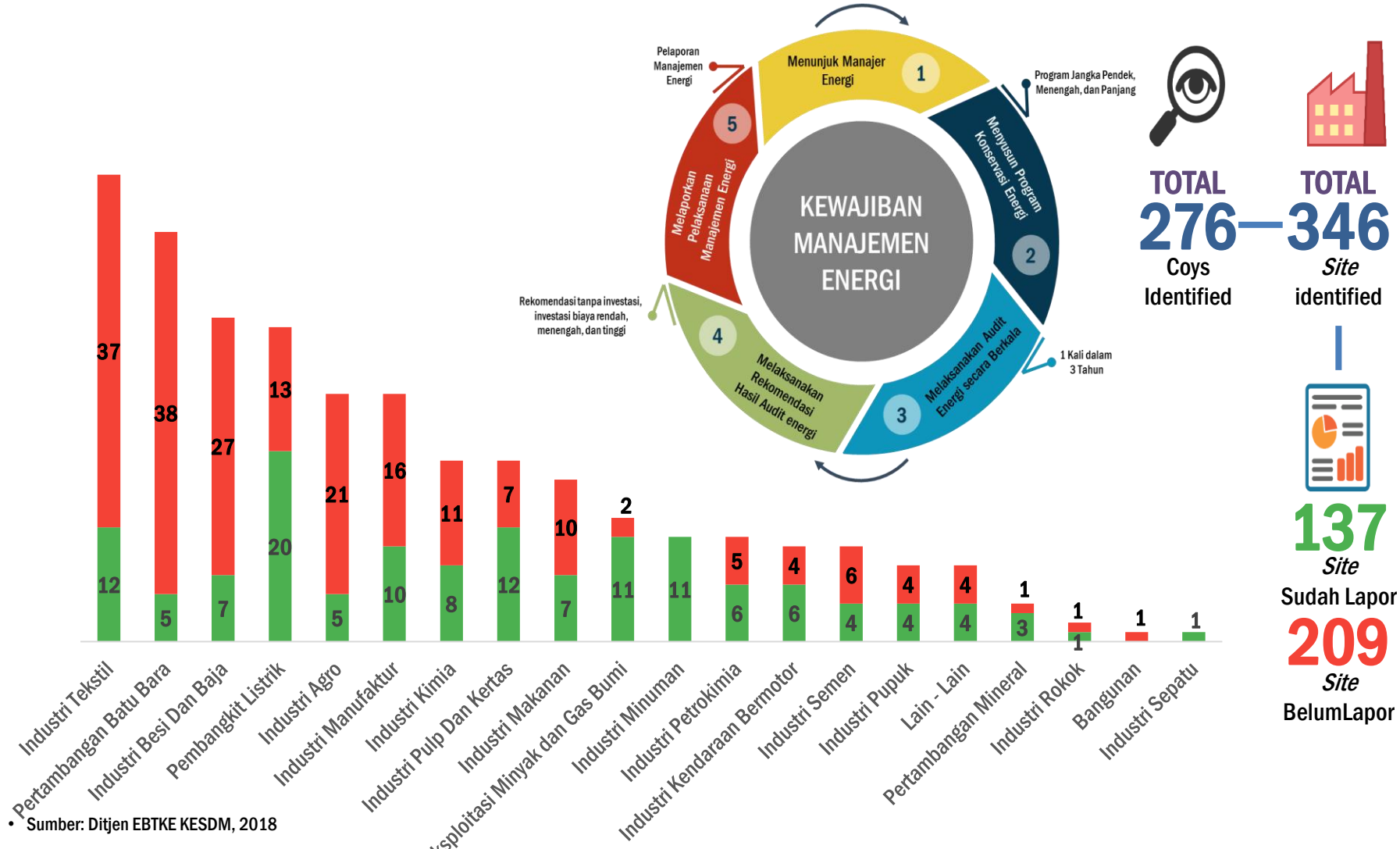
Efforts Based on Current Regulation



Source : EBTKE, 2018

Keterangan : *jam operasional pembangkit 8040 jam per tahu

Mandatory Energy Management Under Current Regulation



TOTAL
276 Coys Identified

TOTAL
346 *Site* identified

137 *Site* Sudah Lapor

209 *Site* BelumLapor

- Sumber: Ditjen EBTKE KESDM, 2018

MEPS CURRENTLY ESTABLISHED AND IN PROGRESS

1. Compact Fluorescent Lamp (CFL)
2. Air Conditioner
3. Refrigerators
4. Electr Motor
5. Rice Cooker
6. Air Fan
7. Washing Mach
8. Water Pumps
9. LED
10. TV Sets
11. Industr Boiler
12. Blender

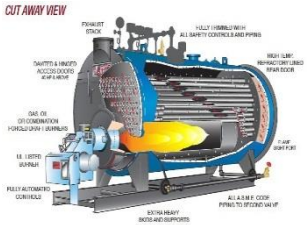












SOURCE : EBTKE

Optimizing Use of Energy (UNIDO Project)

	Energy Operators	Energy Managers	*Pilot Company*
Optimasi Sistem Boiler	125	18	20
Optimasi Sistem Pompa	102	5	5
Optimasi Sistem Kompresor	69	23	25

Savings:

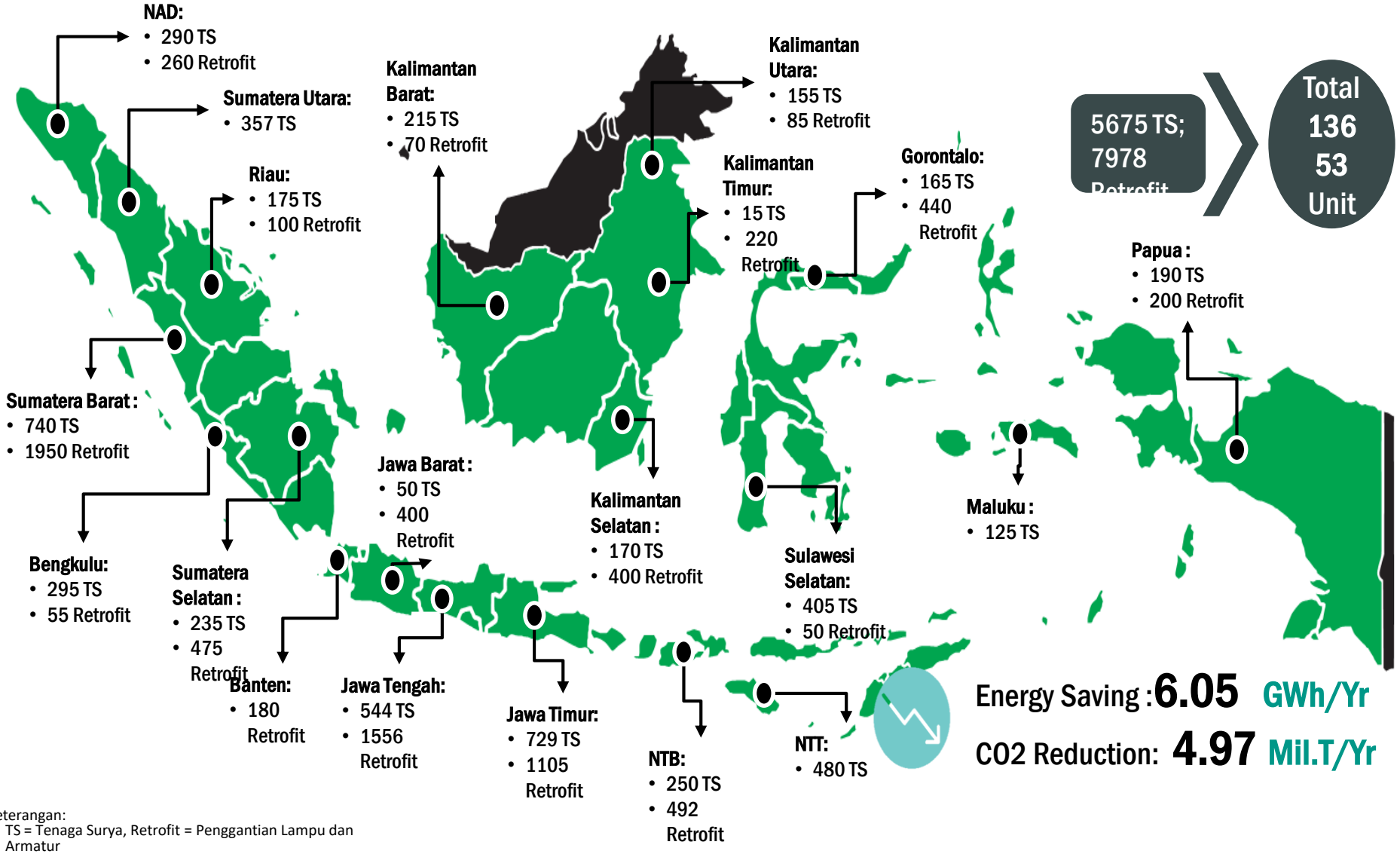
1,686 GWh

815,000 Ton CO2

39.4 Mil. USD

- Sumber: Ditjen EBTKE KESDM, 2018

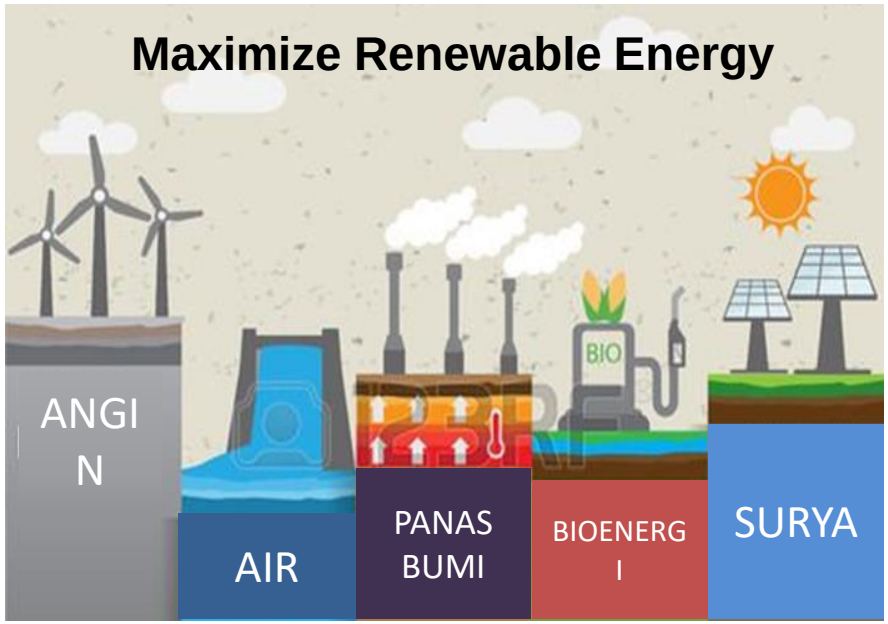
Energy Efficient Street Lamps

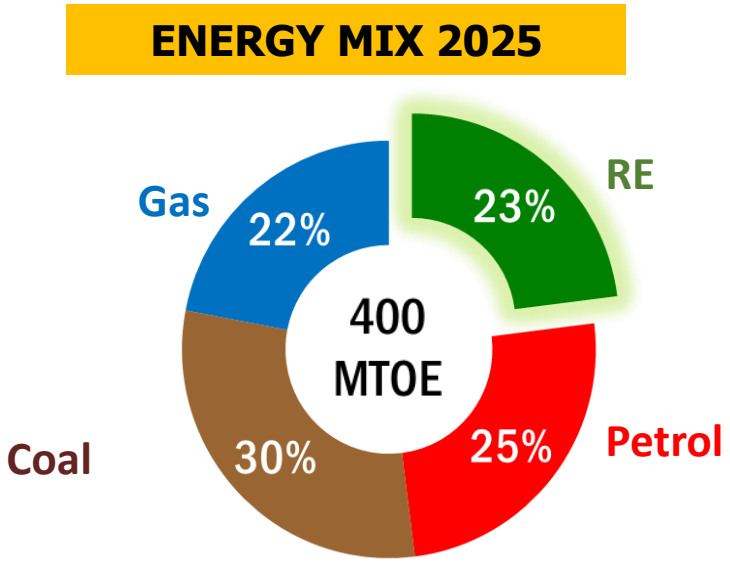


Keterangan:
- TS = Tenaga Surya, Retrofit = Penggantian Lampu dan Armatur

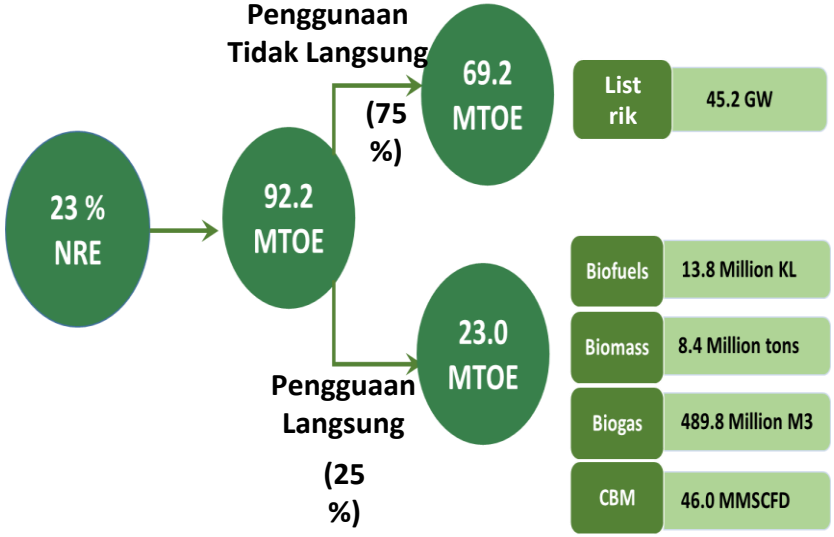
Sumber: Ditjen EBTKE KESDM, 2016

National Renewable Energy Target





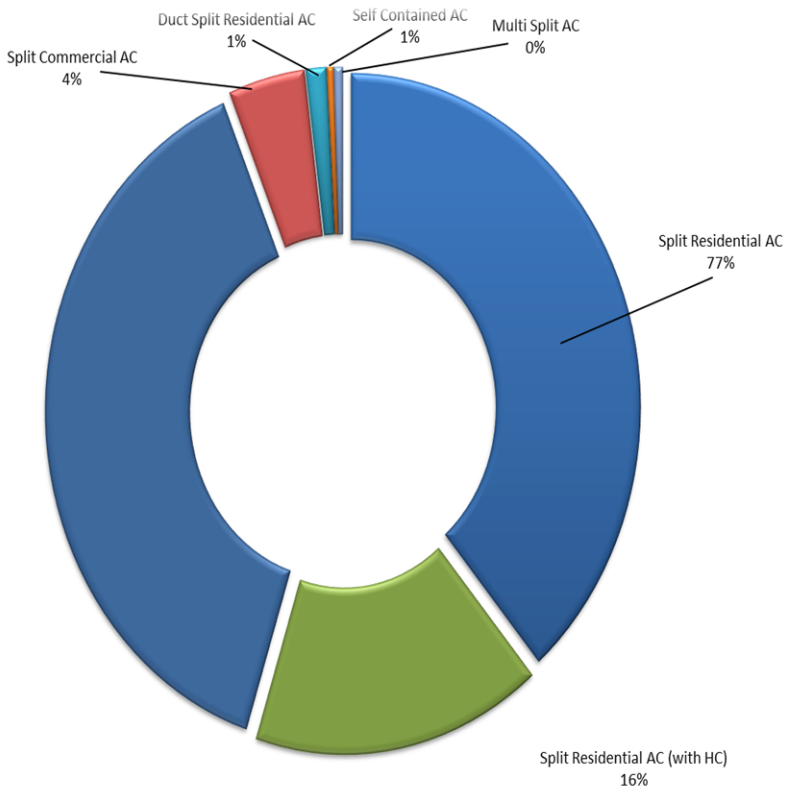
Regulations:
- **PP 79/2014 Tentang KEN**
- **Perpres 22/2017 Tentang RUEN**



1. GT, 7,2 GW
2. HYD, 17,9 GW
3. SHYd, 3 GW
4. BioM, 5,5 GW
5. PV, 6,5 GW
6. Wind, 1,8 GW
7. Other 3,1 GW

Source : EBTKE

Indonesia Green Cooling Program (IGCP) *



- 2016 Aircon was the largest contributor to CO2 émission, where 'split system' account for 60% of total
- Inverter technology represents lower than 5% and R-22 and R-410a refregerants are stil dominant
- The use of hydrocarbon based AC is targeted at 16% of the total national market by 2030.
- The IGCP Project is aiming at cumulative energy saving of 8 TWh, and will reduce CO2 emission about 8,65 million ton by 2030.

*This Proposed Project is still under discussion with Coordinating Ministry of Maritime And the Ministry of Energy and Mineral Resources

ESCO Support by IGA Program

	2014	2015	2016	2017	TOTAL
Participants					
Industries	1	9	2	3	**15**
Commercia Blds	-	-	3	4	**7**
Potential Saving					
GWh	32,58	90,39	62,4	20,73	206,08
Billions of Rp	39,09	106,97	31,1	22,71	199,86
Kiloton CO_2	28,21	90,27	50,6	41,06	210,18
Potential Investment					
Billions Rp	142,1	143,95	55,3	52,38	393,74

Implementation

	2016	2017	TOTAL
Saving (GWh/year)	2,99	51,7	54,7
Cost (Billions Rp)	3,36	12,78	16,14
Investment (Billions Rp)	7,64	10,24	17,88

Sumber : Ditjen EBTKE, 2018

Energy Conservation Regulations

ENERGY CONSERVATION REGULATIONS

- **1982** ⇨ Presidential Instruction No. 9 Year 1982 on Energy Conservation
- **1991** ⇨ Presidential Decree No. 43 Year 1991 on Energy Conservation
- **1995** ⇨ National Master Plan of Energy Conservation 2005
- **2002** ⇨ Law No. 28 Year 2002 on Building
- **2005** ⇨ Presidential Instruction No. 10 Year 2005 on Energy Efficiency, Ministerial of Energy and Mineral Resources Regulation No. 0031 Year 2005 on Procedure of Energy Efficiency Implementation
- **2006** ⇨ Presidential Regulation No. 5 Year 2006 on National Energy Policy
- **2007** ⇨ Law No. 30 Year 2007 on Energy
- **2008** ⇨ Inpres No. 12/2008 on Energy and Water Conservation
- **2009** ⇨ Government Regulation No.70/2009 on Energy Conservation (UR)*
- **2015** ⇨ Government Regulation No. 79/2014 The National Energy Plan *
- **2014** ⇨ Energy Efficiency Master Plan 2016 -2025 (in process)

* *Currently being revised*

Improvements in the New Regulation

1. The new regulation covers the whole process of Energy Production and Consumptions, including supply and demand for energy in transportation, industry, commercial buildings and household sectors

2. Mandatory energy efficiency efforts by energy management systems for **energy provides** using **6,000** TOE ; **energy users** in *Industry* and *Transportation* Sectors using **4,000** TOE; *Commercial Buildings* Sector using **500** MTOE

3. Fiscal and non-fiscal incentive for those who have succeeded in energy efficiency and conservation efforts in the mandated criteria

4. Redefined dis-incentives measures to avoid counter productive results.

New Features in the New Regulation

1. PPP Scheme for Energy Efficiency Project for Government Assets with ESCO Models

2. Qualified Public Service Units (BLU) can perform Energy Efficiency Projects

3. Energy Efficiency and Conservation Projects on Government (Central or Regional) owned facilities to be performed by a government body or SOE

4. Monitoring and Verification (M&V) on Conservation and Efficiency Energy projects

5. Societal Awareness, Capacity Building, R&D efforts must be included in the regulation

6. Standardization, management and system development for national scale EE efforts.

7. Standard National Reporting Procedure for Energy Efficiency and Conservation efforts

The Challenges

1. Coordination among Government Branches
2. Consistency in Law Enforcement
3. Determining Standards for measurements in Each Sector.
4. Identification of participants and data base buildings for EE efforts.
5. Monitoring and Measurement Procedures
6. Determining effective incentives and dis-incentives measure
7. Standard National Reporting System to be followed by all stakeholders
8. Building R&D and Innovation Centers

The Opportunities

- Continuous EE efforts must be made by all economic stakeholders to improve and build up global competitiveness as well resiliency in the national energy systems.
- EE efforts in Indonesia are still sporadic and not well coordinated as well as missing attention by financial sector, hence big and massive efforts are still yet to come
- Indonesia has virtually all type of Renewable Energy resources, and developing and deploying them massively *in-tandem* with EE efforts are still wide open opportunities.
- There are growing awareness and commitment by policy makers and private sectors in tapping into Clean Energy resources (EE+RE) to meet the Climate Challenges and achieve SDG.
- Opportunities for providing innovative energy saving technologies are wide open

The Way Forward

- Reduce and gradually eliminate **energy subsidies** for fuel and electricity;
- **Improve the current or create new policies and regulations that give support to**
  - Establishing more Energy efficiency standards for *Industries* (Energy performance labeling)
  - Implementing nation-wide Energy efficiency standards for *Commercial Buildings* (Building Energy Code);
  - Establishing Energy efficiency standards for *Transportation* and Mobility (fuel performance standards for ICE vehicles),
  - Developing HEV PHEV, BEV and beyond (Hydrogen EV) , reducing and gradually retiring all ICE vehicles to significantly reduce carbon emission, and to reduce overcome challenges in the country balance of trade.
  - Conducting professional Energy Management by Skilled Professional
  - Establishing National Energy Efficiency Roadmap and Guidelines
  - Making bigger EE efforts in the area of energy providers /producers (the supply side)
  - Better implementation (of the regulations
- **Create Funding Mechanism, Incentives and Dis-incentives for EE Projects and Efforts**
  - Establish Funding mechanism based on national financial system and utilizing international sources (GCF, Bi-lateral Scheme, International Funders and Facilitate ESCO Business Models
  - Create standards for effective M&V mechanism
  - Create de-risking measures and facilities (Insurance Program for Energy Saving; Tradable Domestic Energy Saving Certification, Carbon Tax or Excise for fossil fuels)
  - Capacity building and training for policy makers, financial institution;
  - Capacity building and technical training for professionals leading to Competency Certification (Energy Auditors and IGA, Energy Managers, and Engineers)
  - Capacity building for ESCO startups
  - Continuous R&D and innovations in EE and EC

Thank You