



Energy Efficiency and Conservation

Why It Deserves More Attention and Needs Investment

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Learning from Our Heritage

By ‘default” Indonesia is blessed with **ALL** sort of energy resources available on this Planet, deployable for its sustainable development.

However

Decades of **excessive exports** of non-renewable energy, **slow development** of renewable energy, and **late efforts** of massive energy efficiency

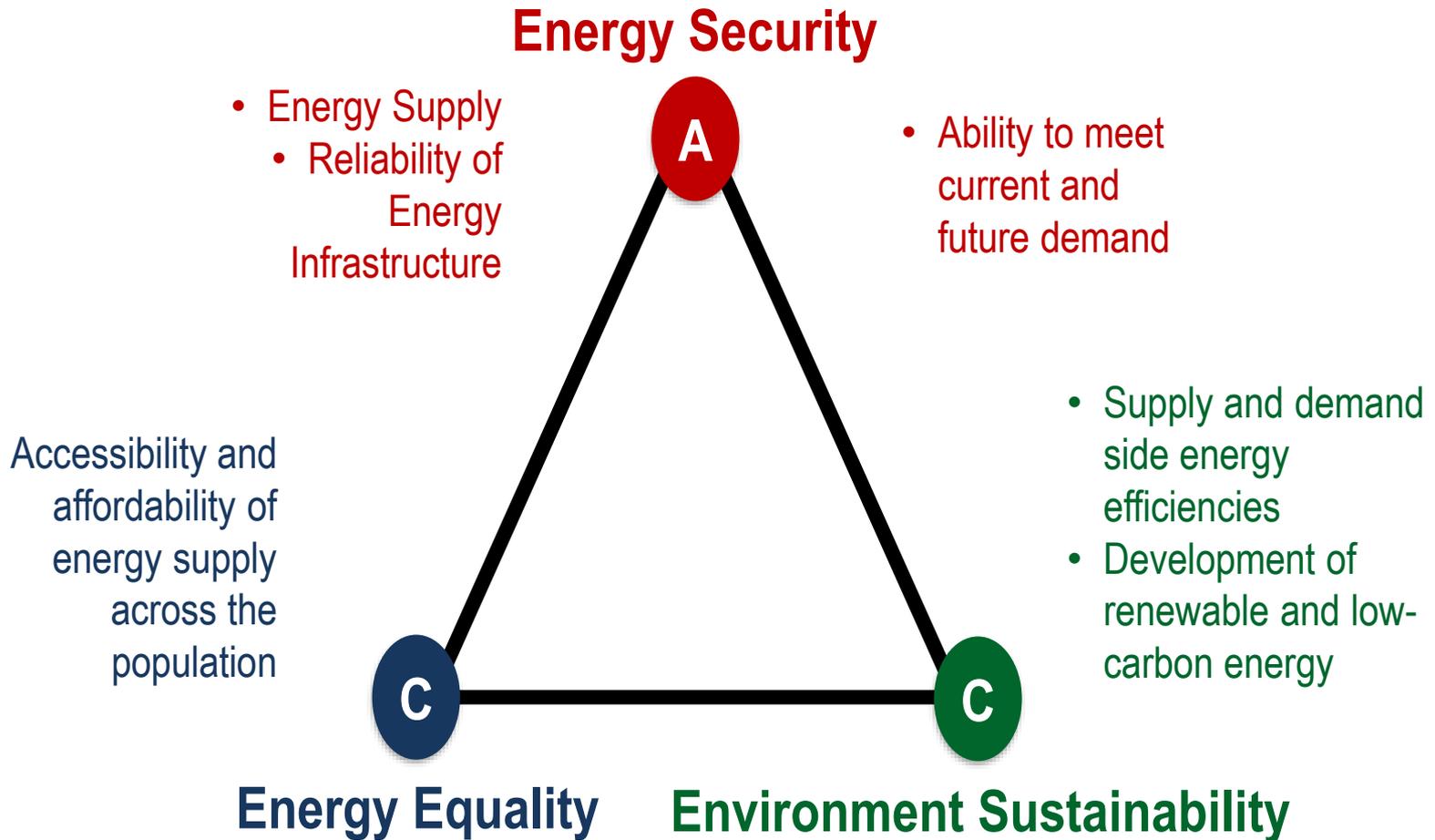
leading to.....

The country’s facing current multi-challenges for sustainable development.

Facts About (Modern) Energy

- Energy is *not taken for granted*, ----it costs money !
- We are **very much dependent on fossil energy** resources and that they **are non-renewable**.
- But we face great challenges when it comes to *translating such “awareness” into making actions* in reducing our dependence on non-renewables by using it smartly and efficiently toward sustainability.
- The benefits of EE as the *“ low hanging fruits” that should be harvested first before using any other energy*, are not well understood by most stakeholders and
- That Renewable Energy **is the big way to Conserve Energy** (and to mitigate CC), and therefore they must be developed vastly and consistently before the fossil energy runs out.

THE ENERGY “TRILEMMA”



Why Energy Efficiency

1. It saves money
2. Helps the environment clean and livable.
3. EE Technology Provides Comfortable living
4. Creates more jobs
5. Increases property value
6. Protects ourselves from rising energy prices
7. Makes us better prepared for the future
8. Facilitates Healthy and Sustainable economic growth
9. It is a clear form of social responsibility
10. Reduces our dependence on fossil energy.

Why Energy Efficiency is the “FIRST FUEL”

- **It creates “stock” of clean energy**
- **It should be considered FIRST before we plan to use any other sort of energy**
- **It is “low hanging fruit”**
- **It is a cheaper way to meet our energy need**

A Simple Formula for Clean Energy

Energy Conservation is an effort to *generally save energy* by reducing the use of it.

EC = using less energy

Energy Efficiency is using less energy without sacrificing the comfort/output quality of using it. It involves technology to achieve it

EE= Getting More with Less.

ECE+RE = CE

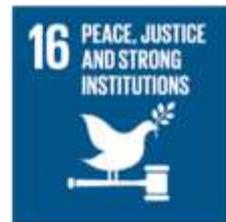
Renewable Energy is CLEAN and is a way to Conserve and Reduce the use of Fossil Energy)

ENERGY EFFICIENCY AND SUSTAINABLE DEVELOPMENT

Energy efficiency is one of the U.N.'s main [Sustainable Development Goals](#) for the next few decades, and it is becoming a top concern for governments, companies and individuals who want to make a change in the world.



SUSTAINABLE DEVELOPMENT GOALS



The Need for Investments in Energy Efficiency

- Energy, in various forms, is vital to global development toward civilization, prosperity and sustainability
- For most businesses known to day, energy is a significant cost component that will directly influence the business sustainability in the 21st century
- Those who can efficiently use energy in their production processes will command a competitive edge over others, and they most likely can beat or adapt into possible disruptions.
- Energy Efficiency will significantly help conserve non-renewable energy sources. The world will still be dependent on fossil fuels for many decades, before it will be replaced entirely by renewables and other clean energy.
- Without energy efficiency and conservation, the world will run into a energy crises that could happen sooner *than* later amidst the challenges of global warming and climate change which is primarily caused by the excessive use of fossil fuels.
- Massive energy efficiency efforts will save multi-billions of USD for the national and global economy and will help avert or mitigate the negative impacts of global warming and climate change

The Roles of Private Sectors in ECE

- **In Industries :**
 - Perform IGA to evaluate need for EE to reduce energy demand and costs
 - Refurbish or replace old equipment with more energy efficient ones
 - Establish EE standards across value and supply chain
- **In Transportation and Mobility**
 - Establish rigorous fuel performance standards (better than or in compliance with the government standards) and apply technology to control the performance
 - Develop programs to reduce fuel consumption across the value change– develop EV and new (digital) technology for efficient mobility

The Roles of Private Sectors in ECE

- **In Building Sector**

- Follow Green Building Codes established by the government – primarily for new buildings, and retrofit existing building where possible.
- Establish industry standards for energy consumption performance
- Apply and promote “Smart Buildings/Smart Homes” (digital) technologies

- **In Consumer Sector**

- Campaign for use of energy saving technology for home appliances (MEPS)
- Change of societal attitude is needed to embrace ECE efforts . (By EE, *saving energy DOES NOT mean Reducing the normal standard of comfort*)

- **In Financial Sector**

- Build a green finance portfolio to provide competitive finance for EE efforts
- Capacity building to understand the merits and value of ECE
- Provide guideline for ECE bankability (OJK Road Map toward Sustainable Finance)
- Develop an energy saving insurance to support bankability

The Roles of Utilities

- Utilities provide power services to their consumers based on their needs, but ideally the needs must be based on rationality and efficiency principle.
- The current **digital technology** enables consumers to determine their economically rational and controllable needs of power.
- The emerging and vast deployment of **Renewable Energy (especially VRE)** compels utilities to adapt into new technology which enabling them to absorb variable/intermittent source of energy in their generating and transmitting operations.
- Utilities must not only adaptive to the new technologies but it must be proactively taking strategic actions anticipating the consumers' behavior and changes in government energy policies.
- In all respects / overall, healthy business sense will force utilities to make their energy uses as efficient as possible.
- **In case of a monopolistic (even protected) and heavily regulated power business environment in Indonesia, will PLN compel itself to take efficiency measure in all its business processes??**

PROPOSED STRATEGIC ECE EFFORTS

- ❑ Reducing and gradually **eliminating energy subsidies** for fuel and electricity;
- ❑ Formulating effective ECE policies and regulations that will drive:
 - Energy efficiency standards for Industries (Energy performance labeling)
 - Energy efficiency standards for commercial building (Building Energy Code);
 - **Energy efficiency standards for Transportation and Mobility (fuel performance standards,**
 - **Develop HEV PHEV, BEV and beyond, reducing ICE vehicles**
 - **Clear Incentives and disincentives scheme for EE efforts in all sectors.**
 - Effective Energy Management
 - Energy Efficiency Guidelines;
- ❑ Establishing Effective Funding Mechanism for EE Projects and efforts
 - **Facilitate and support ESCO Business Models**
 - Energy Audit and *Investment Grade Audit* as basis for funding consideration
 - **Create standards for M&V**
 - **Create Insurance Program for Energy Saving Performance**
 - **Create Energy Saving Certification (Tradable)**
- ❑ Capacity Building:
 - **Capacity building and training for policy makers, financial institution;**
 - Capacity building and technical training for professionals leading to Competency Certification (Energy Auditors, Managers, and Engineers)
 - **Capacity building for ESCO startups**

Continuous innovations required !

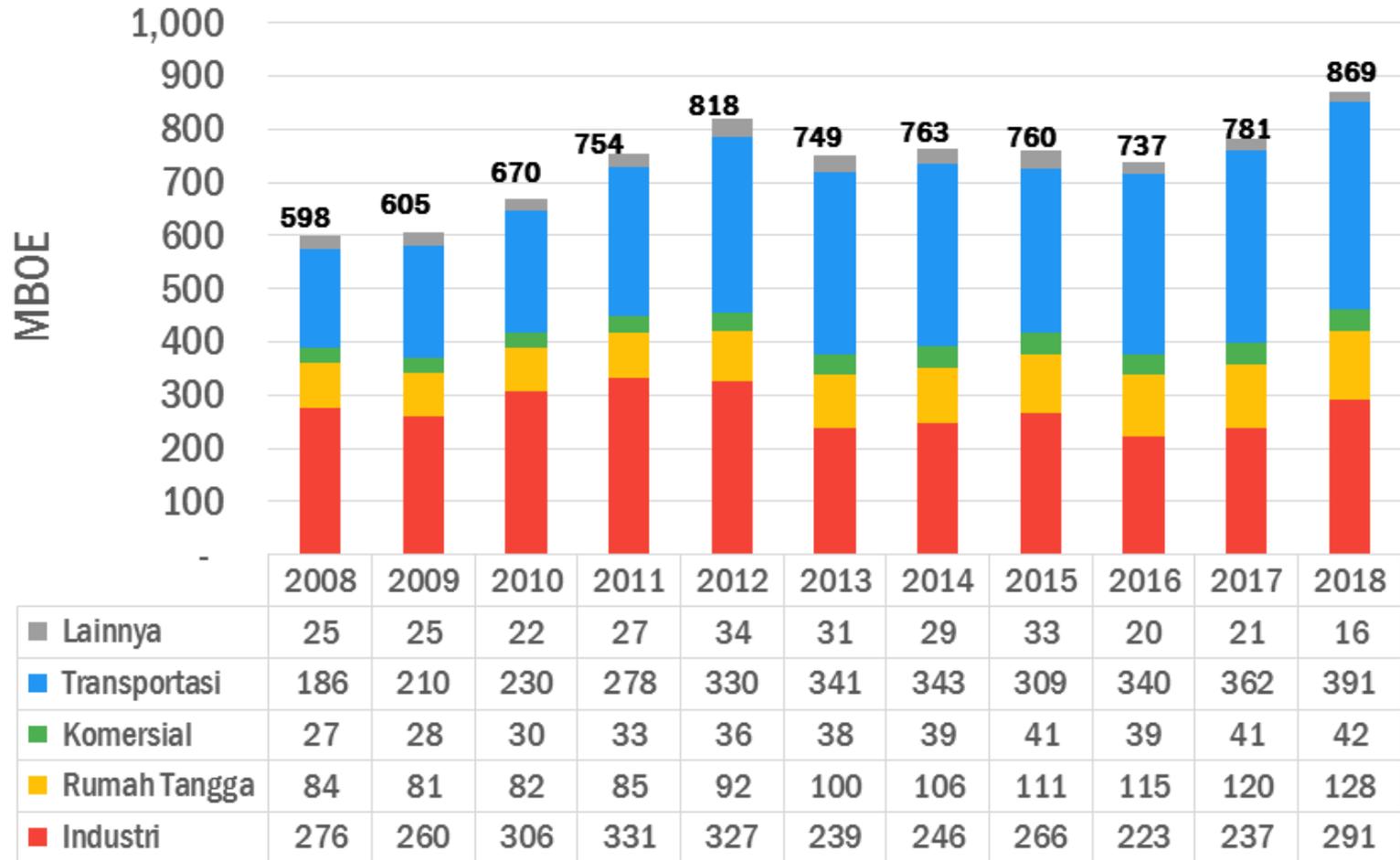
Some Conclusions

- EE is essential and strategic efforts toward **energy sustainability** and in combating runaway **global warming**
- EE is the **First Energy** to be considered before using any other source of energy
- EE Investment need **broad awareness** among stakeholders of the strategic merits and benefits of energy efficiency and conservation.
- It needs **better government supports** by establishing effective and mandatory regulations governing stakeholders' efforts toward energy efficiency and conservation, with clear and workable incentives and disincentives mechanism
- Successful EE efforts /investments require **prudent supports from the financial institutions**. However, to get these supports, it needs clear market definition particularly in terms of successfulness and risks.
- To better define investment opportunities , each Sector must establish its **specific target for reducing the energy demand** (in comply with the national target), with clear and unambiguous energy saving metrics
- It needs specific **capacity building** for the stakeholders in all sectors to develop and implement energy efficiency projects successfully.
- To protect the national interests, the government must provide clear/non-ambiguous guidelines on which technology, products and services must be reasonably produced or delivered by **domestic industries, without throwing unnecessary barriers to global technological progresses**.
- Energy Efficiency Programs must likely be implemented **in tandem with renewable energy** development projects to get the greatest impact toward achieving the target of CLEAN AND AFFORDABLE ENERGY FOR ALL (#7 SDG)



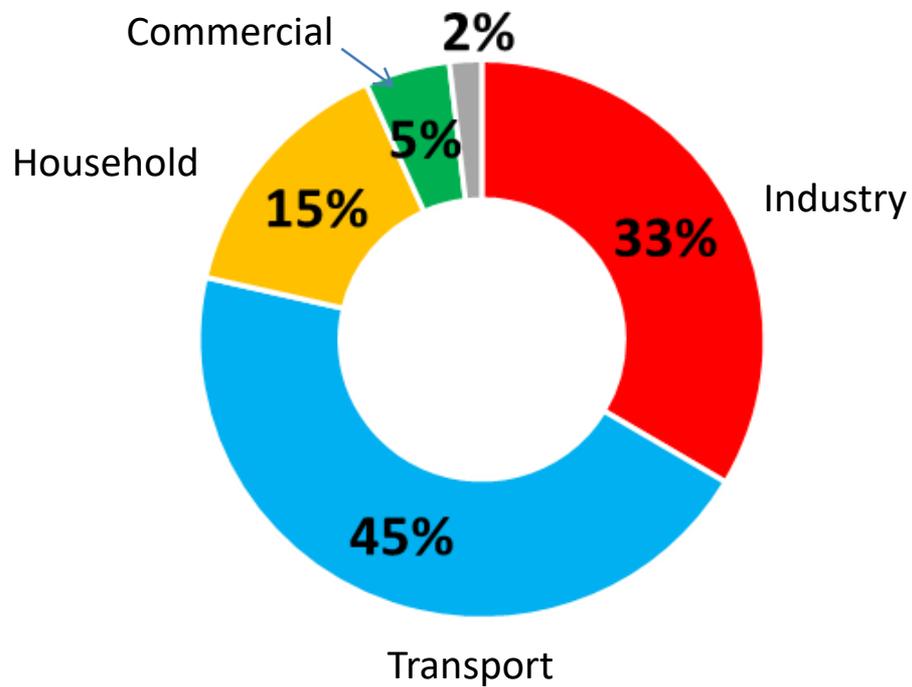
Thank You

National Energy Consumptions



Source : EBTKE

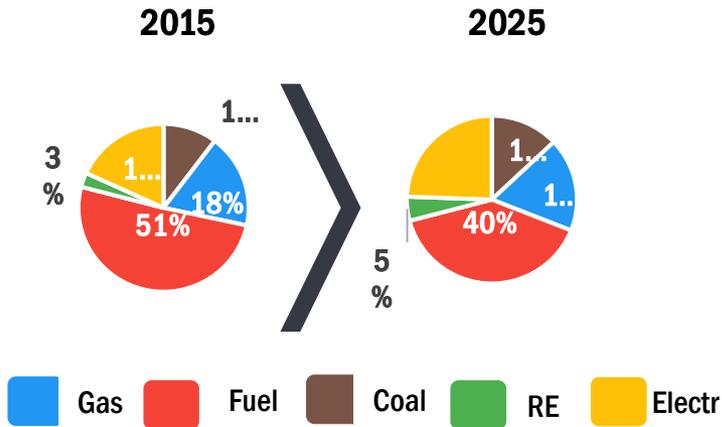
NATIONAL ENERGY CONSUMPTIONS --2018



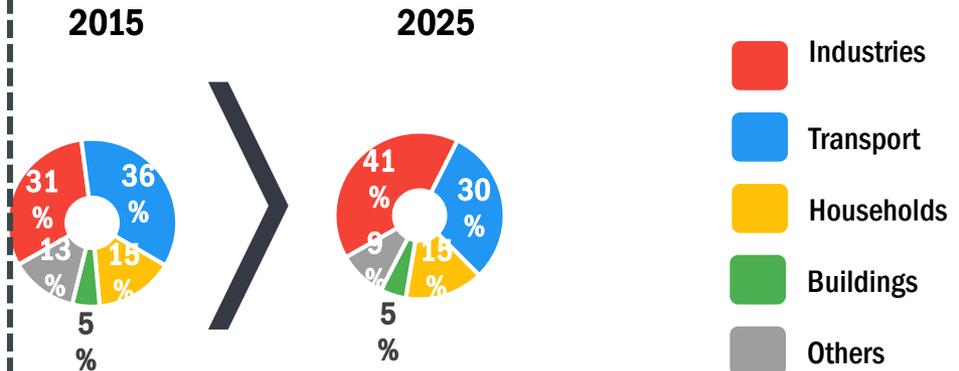
Source : EBTKE

Energy Conservation Target 2025

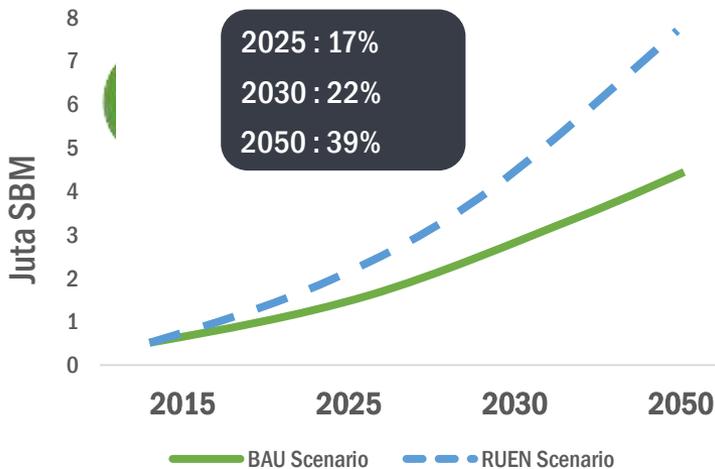
Energy Consumptions MIX



Energy Consumption by SECTOR



Final Energy 2015 - 2050



Strategic Measures

1. EM Obligation ≥ 6.000
 2. TOE/Year *)
 3. MEPS (Household Equipment);
 4. Govt Sector Energy Conservation
 5. Private Investments
 6. Develop EV's
 7. Increase Awareness;
 8. Capacity Building
 9. M & V and Reporting
- *) *will change into lower limit*

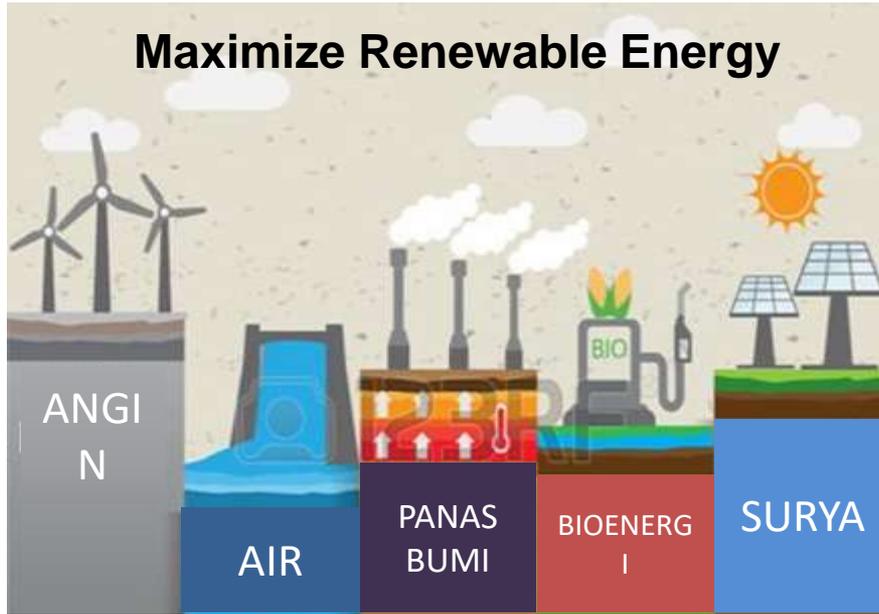


2025

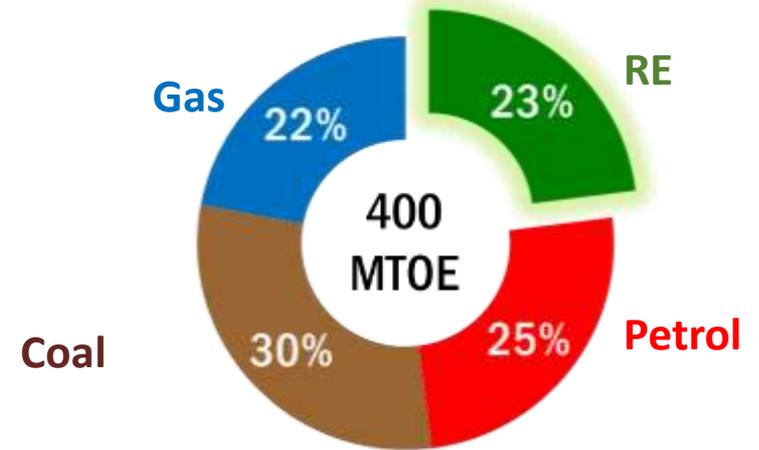
- Annual 1% EI
- < 1 Elasticity
- Saved 17%

National Renewable Energy Target

Maximize Renewable Energy

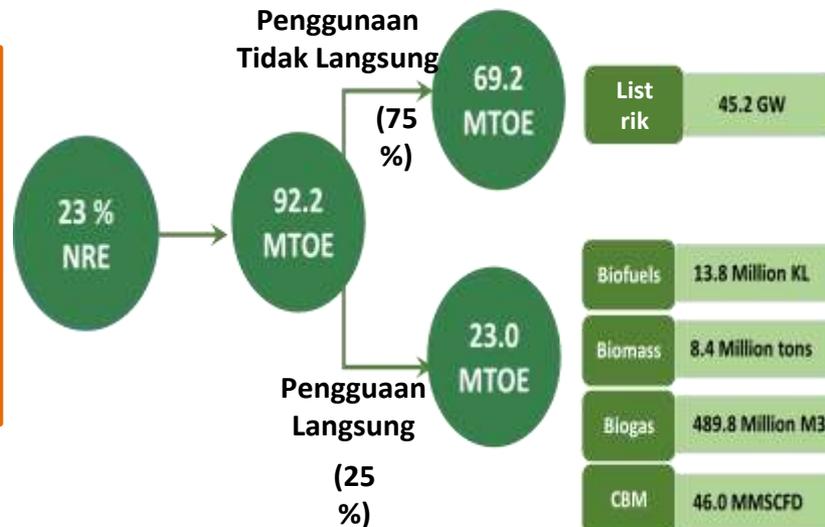


ENERGY MIX 2025



Regulations:

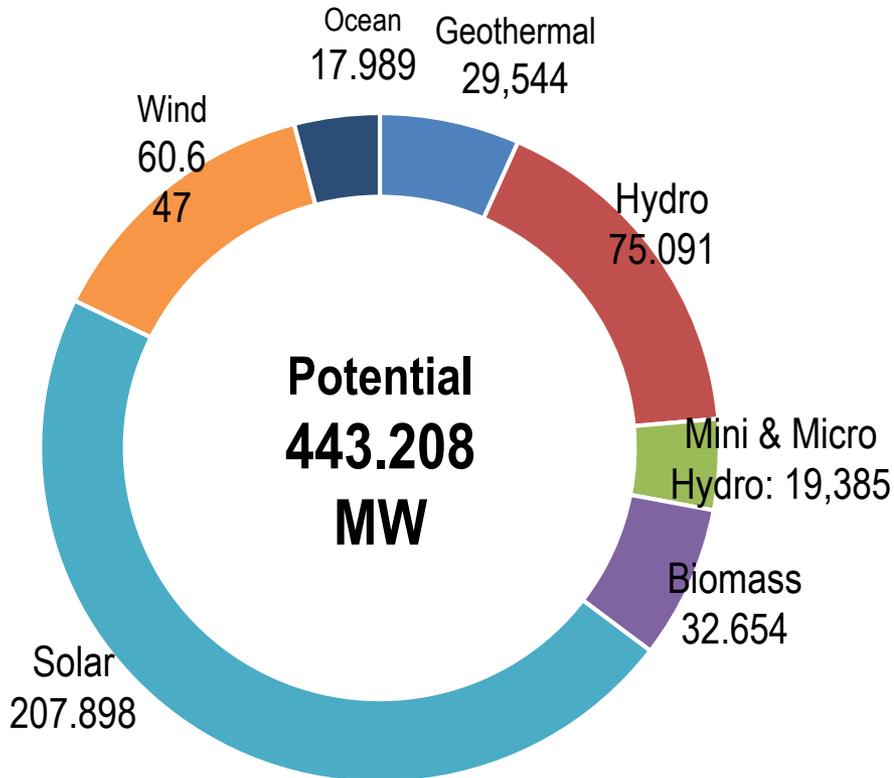
- PP 79/2014 Tentang KEN
- Perpres 22/2017 Tentang RUEN



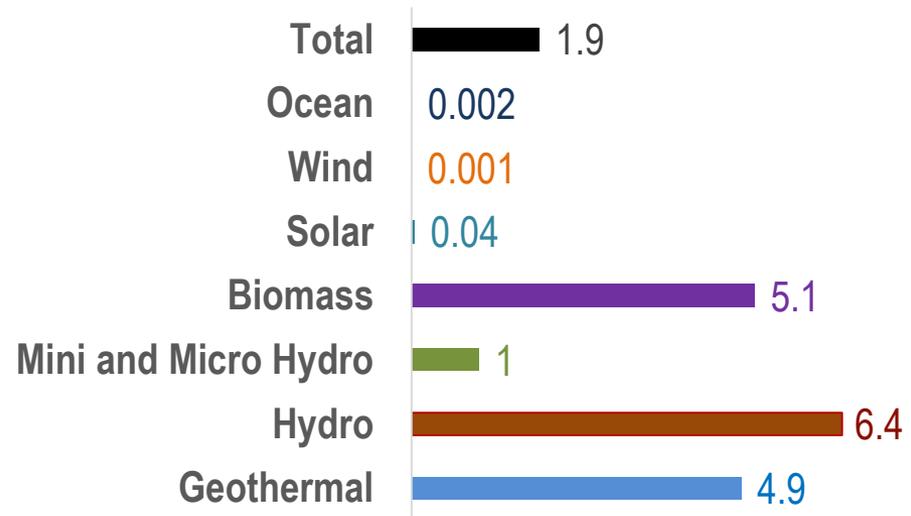
- 1. GT, 7,2 GW
- 2. Hyd, 17,9 GW
- 3. SHyd, 3 GW
- 4. BioM, 5,5 GW
- 5. PV, 6,5 GW
- 6. Wind, 1,8 GW
- 7. Other 3,1 GW

INDONESIA'S POTENTIALS IN RENEWABLE ENERGY

Potentials [MW]

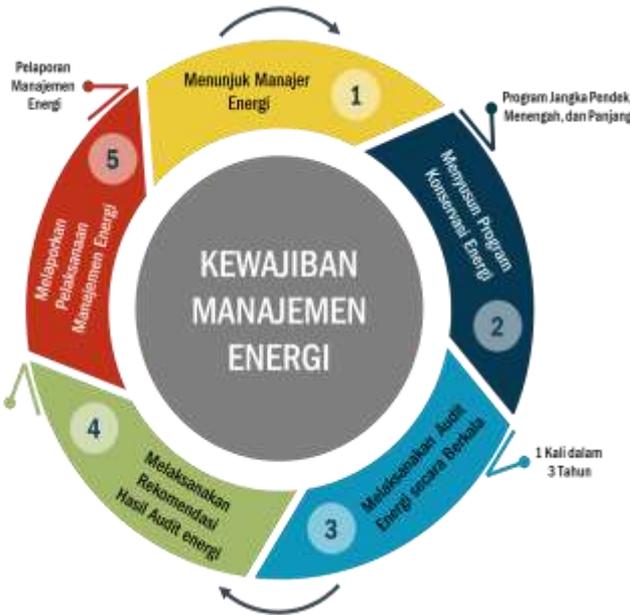


Utilization [%]



NEEDS ALL-OUT COMMITMENT AND STRATEGY TO TAP ON IT !!!

Mandatory Energy Management



TOTAL
276
Coys
Identified

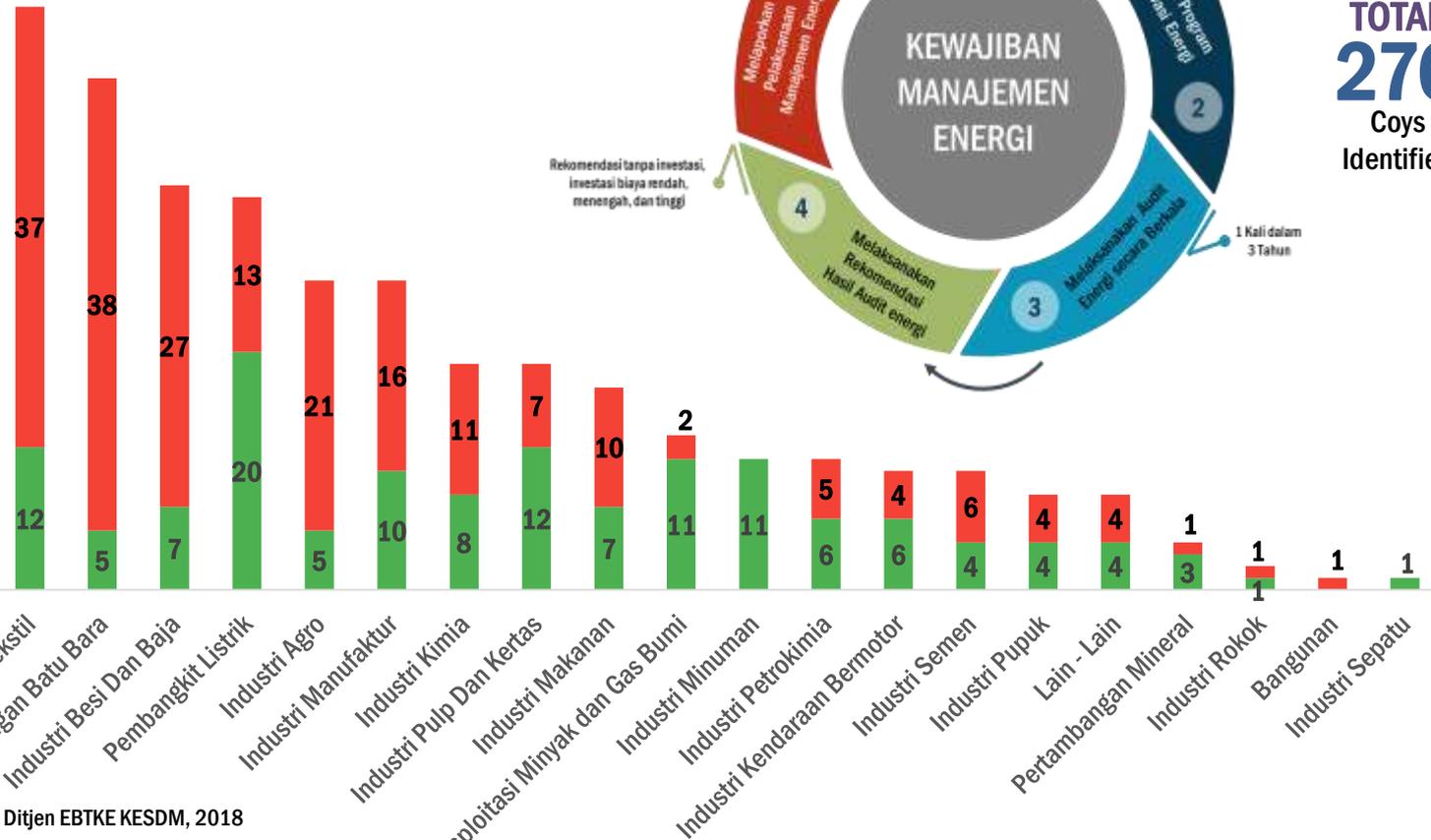


TOTAL
346
Site
identified



137
Site
Sudah Lapor

209
Site
Belum Lapor



Sumber: Ditjen EBTKE KESDM, 2018

