

# Tantangan, Peluang dan Strategi Implementasi Konservasi Energi di Indonesia

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**Jon Respati**

Ketua Umum Masyarakat Konservasi & Efisiensi Energi  
Indonesia ( MASKEEI)



## Tantangan Utama Konservasi Energi

- Kebijakan Energi Nasional lebih fokus pada pengadaan (supply) energi.
- Kebijakan di bidang Pemanfaatan Energi telah dikeluarkan sejak 20 tahun terakhir, tetapi pelaksanaannya tidak konsisten dan berkelanjutan
- Lemahnya kesadaran masyarakat tentang peran strategi Konservasi dan Efisiensi Energi di sektor-sektor ekonomi (Industri, Transportasi, Gedung dan Rumah Tangga)
- Kapasitas SDM dalam bidang KEE masih relatif rendah
- Kesulitan untuk mendapatkan pendanaan atas program-program KEE di sektor-sektor riil.



# Konservasi dan Efisiensi Energi

**Konservasi Energi ( KE)** adalah upaya pada umumnya untuk mengurangi konsumsi energi dengan tujuan memelihara ketersediaan energi di masa yang akan datang

***KE → Saving Energy for the Future***

**Efisiensi Energi ( EE)** adalah upaya untuk mengurangi jumlah pemakaian energi tanpa harus mengurangi output /kinerja unit pemakai energi itu sendiri ( menghasilkan peningkatan produktivitas energi)

***EE → Getting Same /More With Less***

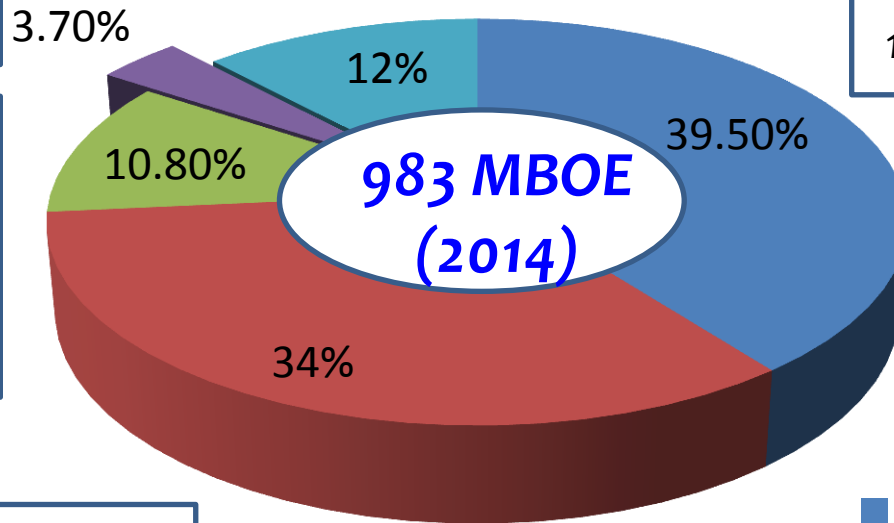
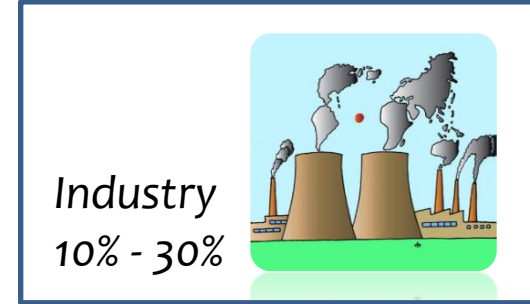
EE sebagai “ Sumber Energi Utama “ (“**The First Energy/Fuel**”

Dikombinasikan dengan pemanfaatan **Energi Terbarukan ( ET)** menghasilkan pemanfaatan **Energi Bersih dan Berkelanjutan**

$$EE + ET = EBB$$

# Energy Saving Potential

## Final Energy Consumption



- Industry
- Transportation
- Household
- Commercial
- Other

# ENERGY SAVING POTENTIALS BY SECTORS

Sector	Energy Consumption by Sector Year 2013* (Million BOE)	Energy Saving Potential	Energy Saving Target by Sector (2025)
Industry	355 (42%)	10 – 30%	17%
Transportation	324 (39%)	15 – 35%	20%
Household	100 (12%)	15 – 30%	15%
Comercial Building	36 (4%)	10 – 30%	15%
Other	23 (3%)	25%	-

**Optimizing EE Efforts will save the economy USD 60 billions by 2025 ( McKinsey Study 2014)**



High Potential Savings on:

- Air Conditioning Systems
- Lightings
- Industrial Process & Equipm
- Electrical Appliances
- Transportation and Logistics
- Power Smart Grid Systems

At:

- No Cost
- Low Cost
- Medium Cost
- High Cost

**Over USD 800 mill worth of savings based on Energy Audit on around 500 mixed objects ( 2009-2014)**



# Policies and Measures Priorities

- ❑ Eliminating subsidy for fuel and electricity;
- ❑ Formulating appropriate CEE policies and regulations that will drive:
  - Energy efficiency standard and label for appliances ( MEP)
  - Energy efficiency standard for commercial building (Building Energy Code);
  - EE incentives and disincentives scheme;
  - Effective Energy Management;
  - Energy Efficiency Guidelines;
- ❑ Establishing Effective Funding mechanism for EE Projects and efforts
  - Capacity building for financial institutions, and SME's
  - Facilitate and support the establishment of ESCO's
  - Provide energy audit and *Investment Grade Audit -IGA* ( by ESCO's)
- ❑ Capacity Building:
  - Capacity building and training for policy makers, financial institution;
  - Capacity building and technical training for professionals leading to Competency Certification (Energy Auditors and IGA, Managers, and Engineers)
  - Capacity building for ESCO startups



# ENERGY CONSERVATION POLICY

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



Presidential Instruction No. 13/2008 on Energy and Water Efficiency

2009



Government Regulation No.70/2009 on Energy Conservation

2015



Government Regulation No. 79/2014 The National Energy Plan \*

2014



Energy Conservation Master Plan 2016 -2025 ( in process)



# EE Opportunities in Industries

- **Low cost and Medium Costs Projects → proper maintenance systems, choosing the right technology, using local materials**
- **Medium and High Cost EE investment → CHP or WHRG (Waste Heat Recovery Generation) in Energy intensive industry, innovations, choosing quality over price**
- **EE process improvement : e.g. high efficiency boilers, chillers, preheaters, etc.**
- **Energy Management and Control Systems**



# Challenges to EE Projects in *Industries*

- **Lack of Knowledge** of how to improve efficiency in operations → *ESCO, IA & IGA, capacity building*
- Poor Fixed Assets **Accounting Practices** (particularly in SME) → *lack of funding and delayed replacement of assets*
- Poor **Energy Use Control Systems** → Limited Information : *Energy Management Systems ( EMS)*
- **Inefficient Procurement Systems** – *least price orientation*- → *poor economics and inferior performance*
- **Lacking Financial Support Infrastructures** : *Project Finance , Dedicated Funds, Supportive Regulation*
- **Structural High Interest Borrowing Rates** → *low market competitiveness.*



# Energy Efficiency In Transportation

- ***Private Vehicle Ownerships*** is continuously rising due to poor services of public transportation systems, which lead to big energy consumptions in transportation sector and grossly wasted in traffic congestions in major cities. → ***ERP, Road and Carbon Tax, Vehicle Number and Operational Life Control, Hybrid and full EV***
- ***The Role of Rail Transportation*** systems have been neglected for years and only recently the government starts to build new lines and refurbish existing services to improve energy efficiency and reduce carbon print the sector → ***In- Major Island Rail Systems for passengers and goods mass transportation***
- The Government is on the right path by making significant efforts to improve ***physical infrastructure*** which will make the transportation and logistic systems contribute to improving the national economic efficiency → ***improving Inter island sea and air connections facilities.***
- ***Clear fuel efficiency / Fuel Performance Policy*** needs to be established to improve the sector's contribution to the energy saving efforts; → ***Euro 4, CAFE, continuous research and innovations***



# Energy Efficiency in Commercial Building Sector

- **New** versus **Existing** Buildings and Facilities Challenges
- Architectural and Technology Approach → Green Building Design and Choice of Materials for Building Envelope, ICT Application → ***Green HVAC, Green Office Space and Equipment, EMS and Smart Buildings***
- Regulatory Measures → ***Mandatory Green Building Codes, ESCO supports***
- Technical Capacity Building → ***Professional Competency Certification,***
- EEC Awareness Campaign → ***LCC, CSR, Social Campaign***



# Energy Saving Potentials In Household Sector

- Smart Home Features ( LED, Sensors, Smart Electricity Metering)
- Energy Efficient Appliances
- Design /Architectural Approach
- Energy Consumers Capacity Building to help Improve awareness that lead to change of behavior and build low carbon society.

# TERIMA KASIH

