



# Plan and Policy for Energy Efficiency and Conservation Development

**PRESENTED BY**

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Nay Pyi Taw , Myanmar

**EECD**

6<sup>th</sup> June, 2018



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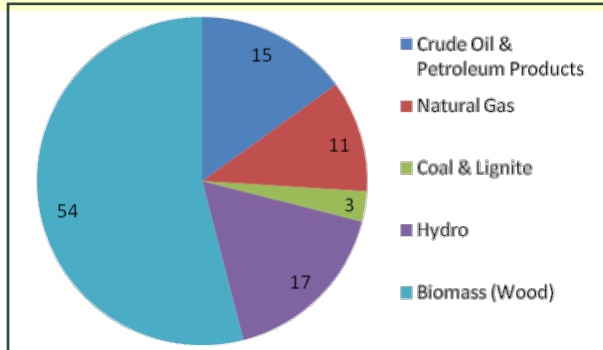
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- Background; Energy Situation in Myanmar
- National Energy Efficiency Policy
- Energy Saving Potentials by each sector
- Scope of Energy Efficiency Policy
- Summary of Activities
- Regulation in EE



# Background: Energy Situation in Myanmar

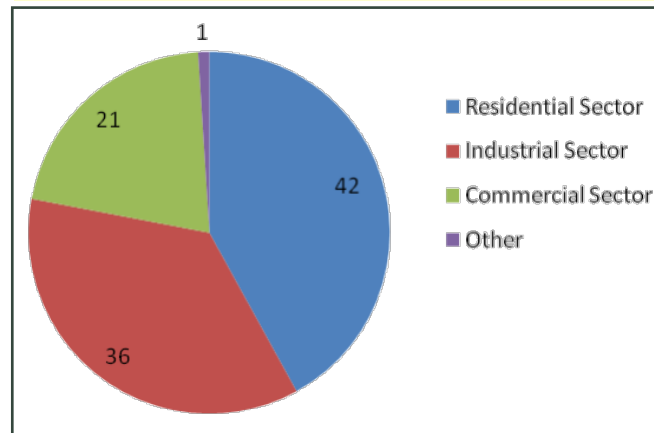
## Composition of Primary Energy Supply



## Self Sufficiency Rate of Energy Supply

50% meets domestic demand for Oil & Natural Gas

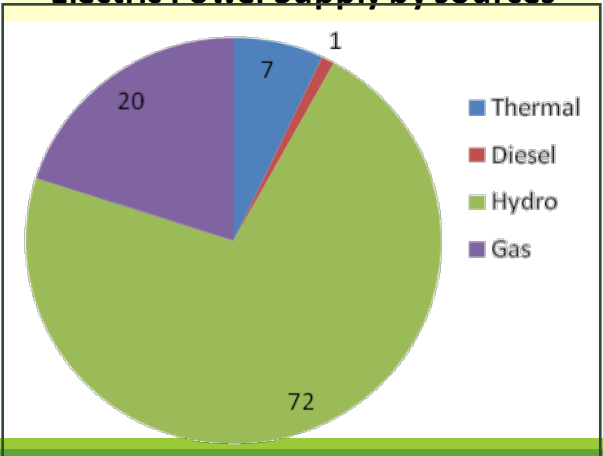
## Electricity Consumption per sector



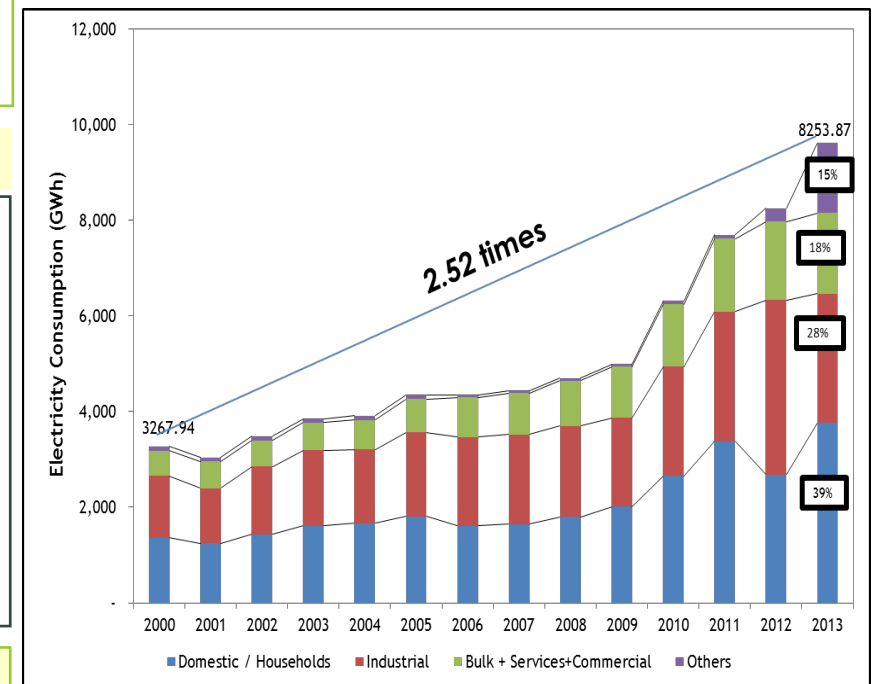
## Coverage ratio of electrification

34% est. of total Population

## Electric Power Supply by sources



## Transition in Electricity Consumption



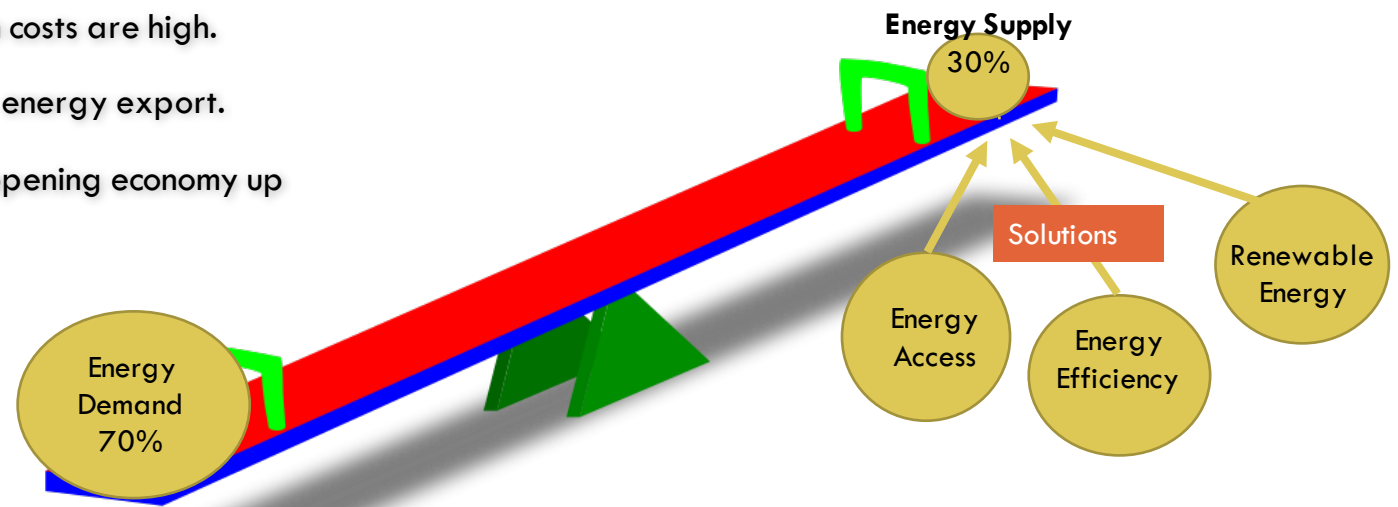
Source: Ministry of Electricity and Energy, 2013



# Major Challenges related to Energy Security

## Major Challenges

- Fossil Fuels resources are limited. Extracting technologies are old and machines and equipment are obsolete.
- Generation and distribution costs are high.
- Foreign incomes depend on energy export.
- Increasing population and opening economy up





## Why Energy Efficiency (Hidden Fuel)

Low cost, no cost option compared to energy generation, transmission and distribution

Can be implemented and globally accepted

Connects with economy, social and environment (reduce production cost/ service cost, better life, protect environment)

Trend to sustainability (Resources are limited)(Encourage RE/ linked with RE)

Makes people lives better

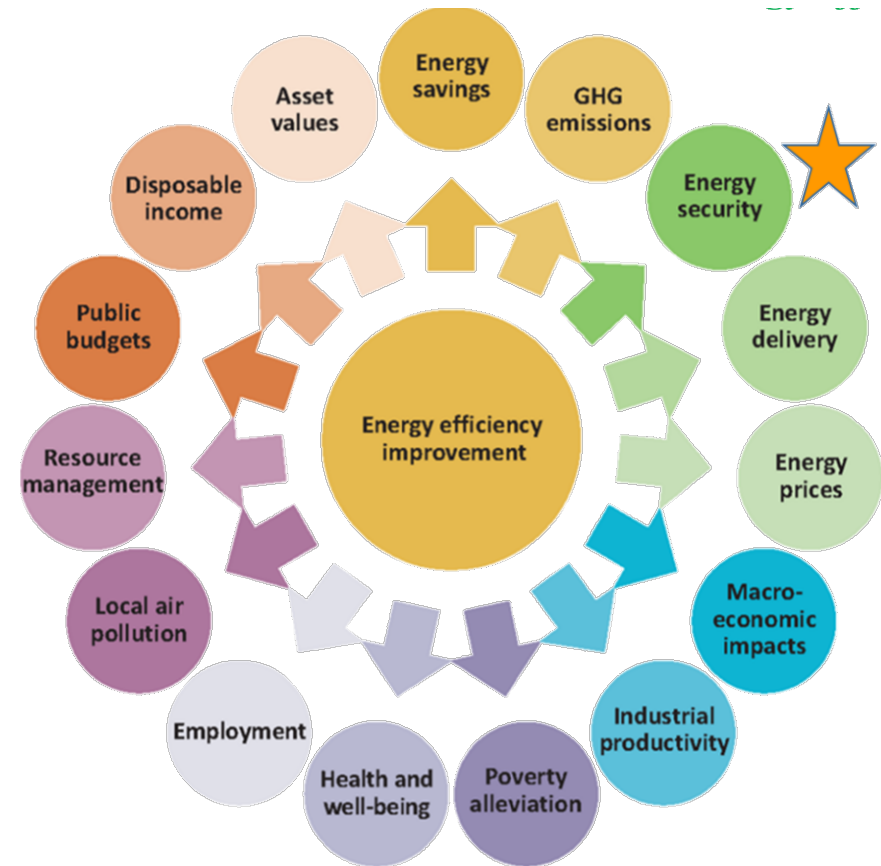


Fig: Multiple benefits of EE



# National Energy Efficiency Policy

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## Vision Statement

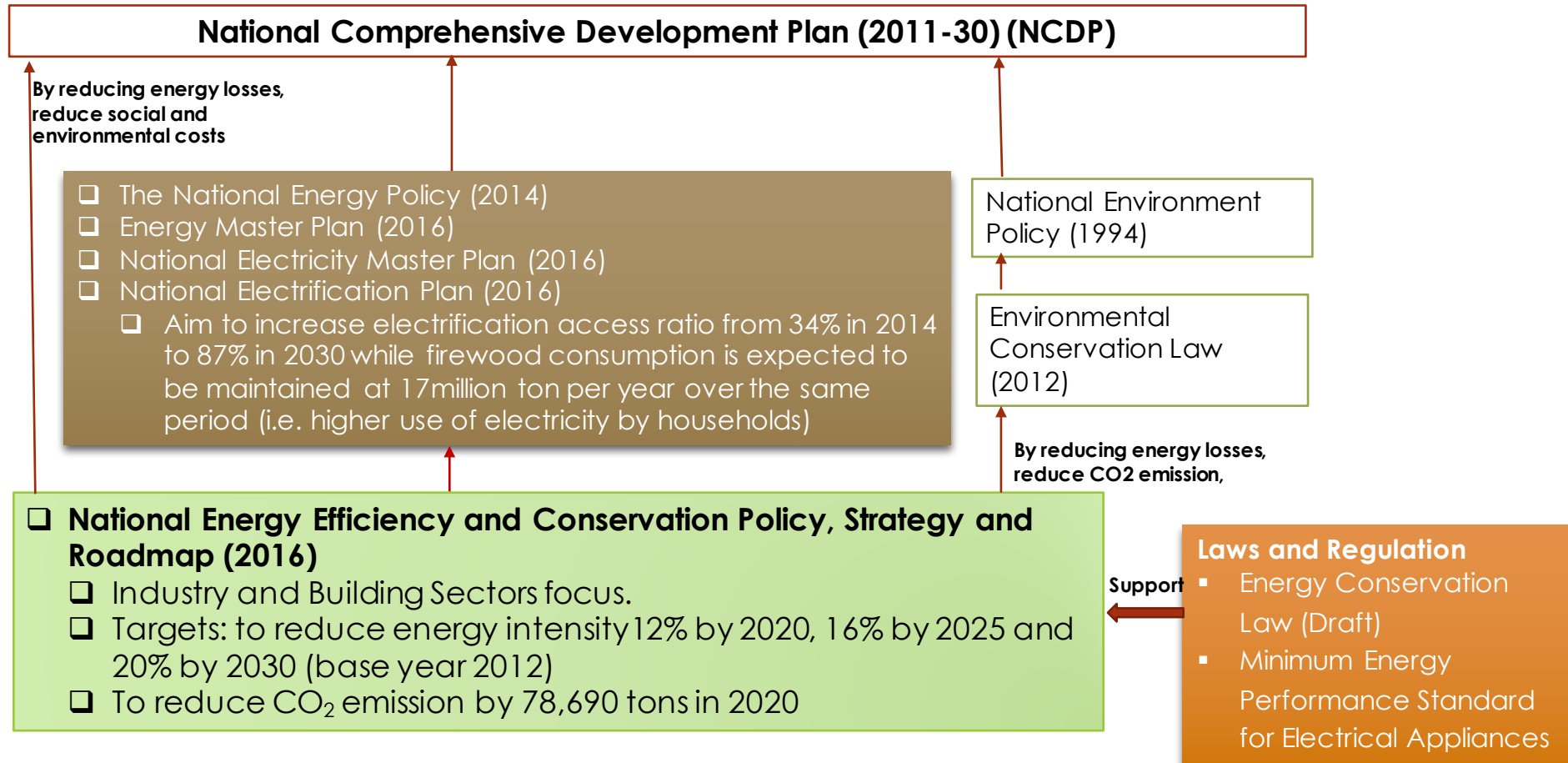
- The Energy Policy outlines the following goals –
- “energy security”, “affordable and reliable energy supply”; poverty reduction”; “increase foreign exchange earnings”
- EE&C can address these goals by:
  - Reducing national energy demand through DSM programs
  - Promoting high efficiency appliances
  - Promoting fuel switching to renewable resources – e.g. electric hot water to solar systems
  - Adoption of efficient cooking methods – fuel efficient stoves, LPG

## Core Values of Energy Efficiency

- **Economic value** – increased competitiveness in Industrial sector through adoption of efficient technologies  
lower production costs    increase turn-over    lower prices for end-users
- **Social Values** – improved living standards of consumers    through the adoption of EE technologies (lighting, refrigeration, cooling, cooking etc)    lower bills    higher disposable income
- **Environmental Values** – reduction in greenhouse gas (GHG) emissions from power plants, industrial processes and biomass in households    preservation of natural forest resources in Myanmar



# Coherence with National Policy and Legal Framework





# Energy Saving Potentials by each sector

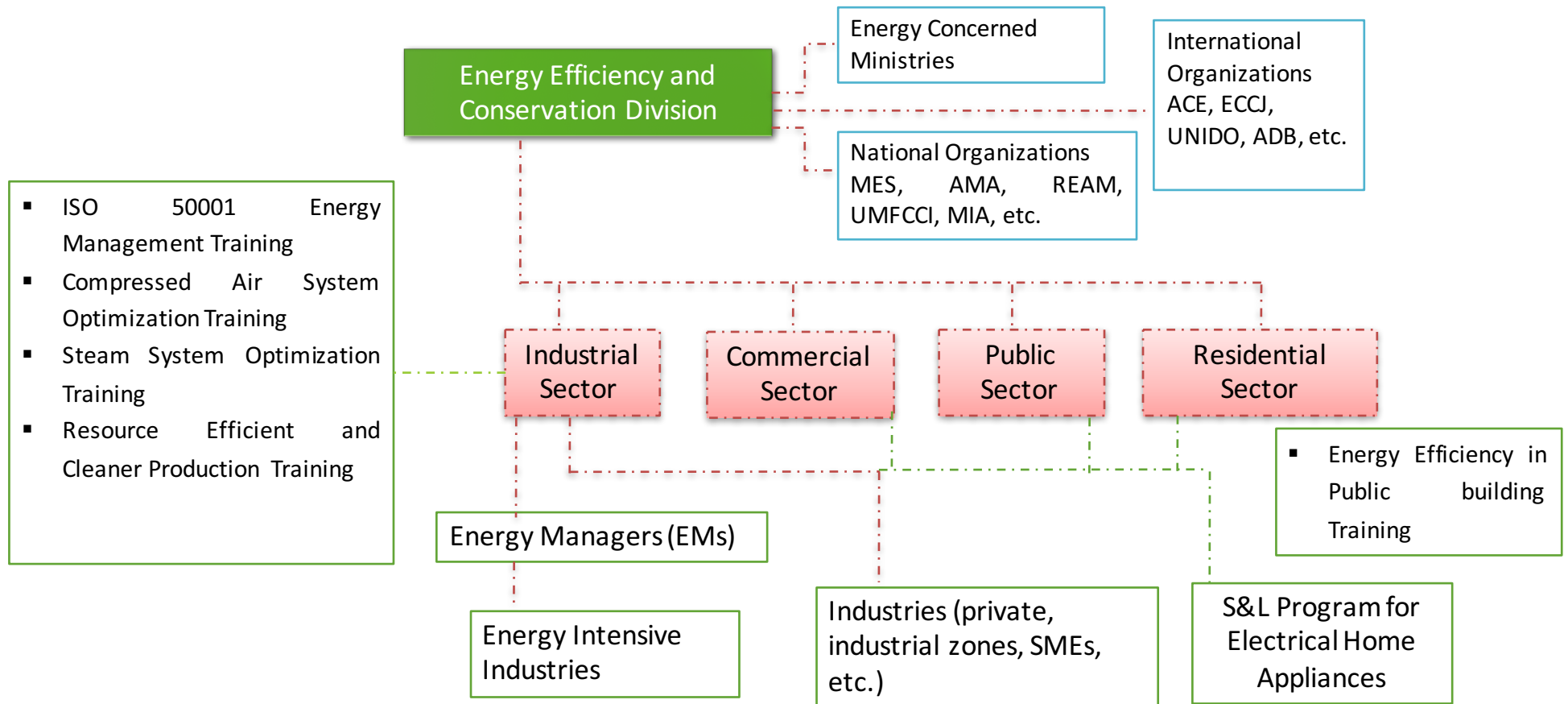
Sector	Sub-Sector	Saving Potential (%)	EE Technologies Proposed
		Average	
Industry	Iron and Steel	45	Cogeneration, EE Boiler, Waste Heat Recovery, EE Furnace, High Efficiency Motors
	Cement	23	High Efficiency Motors, EE Kilns, Cogeneration, Waste Heat Recovery, Variable Speed Drives
	Pulp and Paper	65	Cogeneration, EE Boiler, Waste Heat Recovery, EE Furnace, High Efficiency Motors
	Textile	12.5	High Efficiency Motors, EE Boilers, EE Lighting, EE Air Conditioners
	Thermal Power Plants	4	High Efficiency Motors, Cogeneration, Combined Cycle Gas Turbine
	Sugar Mills	35	Boilers, Waste Heat Recovery, Cogeneration, High Efficiency Motors
	Rice Mills		Cogeneration, EE Boilers
	Ceramic and Brick	20	Cogeneration, Waste Heat Recovery, EE Kilns, High Efficiency Motors
	Industrial Sector: Average Saving Potential (%)	20%	

Sector	Sub-Sector	Saving Potential (%)	EE Technologies Proposed
		Average	
Commercial	Office Buildings	25	HE Lighting, ACs, Office Equipment through MEPS
	Restaurants	25	HE Lighting, ACs, LPG cooking, Solar water heating
	Hotels	30	HE Lighting, ACs, LPG cooking, solar water heating
	Commercial Sector: Average Saving Potential (%)	25%	
Residential	Urban Households	30	HE Lighting, refrigeration, MEPS for appliances, SHW, LPG cooking
	Rural Households	30	HE Lighting, refrigeration, MEPS for appliances
	Residential Sector: Average Saving Potential (%)	30%	
Public Sector	Public Buildings	25	HE Lighting, ACs, Office Equipment through MEPS
	Hospitals	30	HE Lighting, ACs, LPG cooking, SWH, cogeneration
	Schools	25	HE Lighting, ACs, Office Equipment through MEPS, Boilers, SWH
	Public Lighting	50	LED, HPS street lighting
	Public Sector: Average Saving Potential (%)	25%	



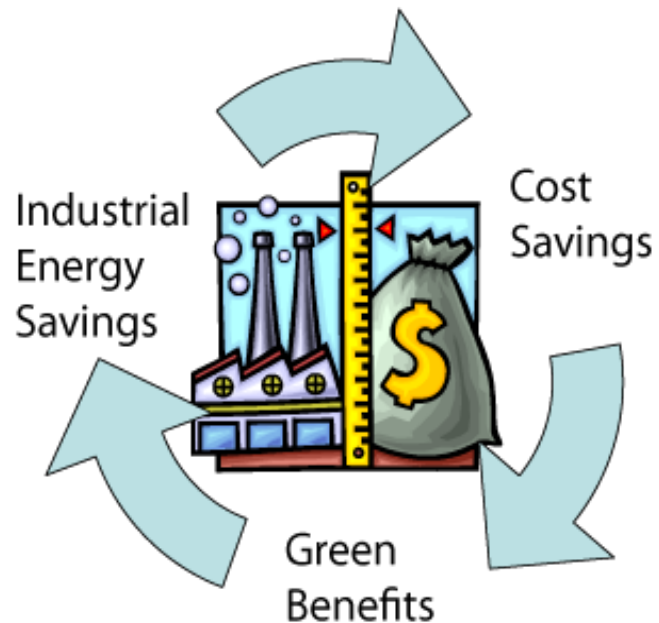


# Scope of Energy Efficiency Policy





# Energy Efficiency Practices in Industries



## Energy Efficiency Options

- Good House Keeping (Cleanness, Maintenance, process control)
- Record, documentation and reporting
- Apply energy management system, system optimization
- Apply energy efficiency technology
- Utilize energy efficient machines/ appliances

## Actions to be taken

- Energy Management Awareness
- Focus on energy intensive industries
- Management Training and Technical Transfer
- Appoint energy manager
- Do energy audit



# Factory Assessment/ Energy Audit

## Checking items for Energy Conservation Measures

- ✓ General management system
- ✓ Air conditioning and refrigeration equipment
- ✓ Pump, fans and compressors
- ✓ Boiler, industrial furnace, steam system, heat exchanger, waste heat and wastewater
- ✓ Power receiving and transforming equipment, electric motors, lighting equipment and electrical heating equipment





## Third Draft of Energy Efficiency and Conservation Law

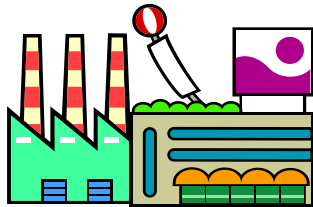
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- Chapter I: Title and Definition
- Chapter II: Objectives
- Chapter III: Scope of the Law
- Chapter IV: Formation of National Energy Conservation Committee
- Chapter V: Duties and Power of the Ministry
- Chapter VI: Energy Conservation Measures in industries
- Chapter VII: Energy Conservation Measures in buildings
- Chapter VIII: Energy Conservation Measures in Transport Vehicles
- Chapter IX: Standardization on Energy Performance
- Chapter X: Formation of a Directorate for Energy Efficiency
- Chapter XI: Establishment of Energy Manager and Auditor System
- Chapter XII: Energy Auditing, Inspection and Monitoring
- Chapter XIII: Energy Conservation Promotion Fund
- Chapter XIV : Penalty



# Scope of Regulation

Energy Intensive Industries

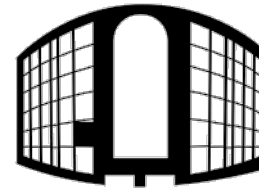


Industrial Guidelines



Energy Manager

Energy Intensive Buildings (Commercial, Public)



Building Guidelines

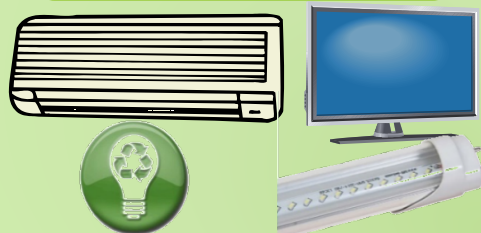


Energy Manager

Residential Sector



MEPS for Electrical Home Appliances



Fuel Economy for Transport Vehicles, Public transport system improvements





# Legislation System for Appliances and Equipment

Minimum Energy Performance Standard and labeling Programme Establishment			
	Priority List of Electrical Appliances	MEPS	Status
1	Room Air Conditioners (≤ 10 kW)	EER (2.9) ISO 5151, 2010	National Roadmap (2016), Preparation on Regulation Process
2	Lightings ; LED Lightings Fluorescent Tubes	CIE S025 (LED) IEC 62612 CIE S084 (FL) IEC 60081	GEF Project with UNEP (2017-2020)
3	Electric Motors		Processed
4	Refrigerators and Freezers		Plan
5	Televisions		Plan
6	Cook Stove	Nationally	Plan
7	Distribution Transformers		Processed



# Contd. 4. How to choose efficient appliances?



The more STARS you see, the more energy efficient the appliance is !!



In the red box is a consumption figure. It will tell you how much the appliance will consume per year based on optimal use.

2008

ฉลากแสดงระดับประสิทธิภาพของเครื่องใช้ไฟฟ้า  
ประเภท : ตู้เย็น 2 ประตูแบบไม่ฟรอน (NON-CFC)

ใช้พลังงานไฟฟ้า (กWh/ปี)	543.85
น้ำยาฟรอน (กก/ปี)	1.783.83

ยี่ห้อ WHIRLPOOL รุ่น WSN18NG  
ขนาด (cm) 325.0 (18.0 (ประตู))

กฟผ. กระทรวงพลังงาน

ENERGY EFFICIENCY RATING

**EXCELLENT**

Energy Consumption kWh per hr

Full load (100%)	1.20
Part load (60%)	0.66

Cooling Capacity: 1.72 kW  
Multi-split (inverter) air-conditioner

ABC  
ABC1234CAB

Tested in accordance with JIS 9612  
Actual energy consumption may vary from test results  
For more information and to compare models, visit [www.nea.gov.sg](http://www.nea.gov.sg)



# Energy Efficiency in Residential Sector: How would you save energy at home?

## 1. Do audit by yourself

Appliances	Average (peak) Power Draw (kW) (watts/1000)	Number of hours used per day	Number of kilowatt used per day (kW x hrs used /day)
<b>Kitchen</b>			
Lights			
Refrigerator			
Microwave			
Toaster			
Electric Jug			
Others			
<b>Laundry</b>			
Lights			
Iron			
Washing machine			
Clothes Dryer			
Solar hot water booster			
Others			
<b>Lounge /Dinning</b>			
Lights			
Television			
VCD/DVD player			
Stereo			
Others			
<b>Bedroom One</b>			
Lights			
Others			
<b>Bedroom Two</b>			
Lights			
Others			
<b>Bathroom</b>			
Lights			
Others			
<b>General (Porch, Garage, etc)</b>			
Lights			
Others			
<b>Total</b>	_____kW		_____kW/day

## 2. Calculate your energy consumption

$$= \text{kW} \times \text{hours} \times \text{kyats/kWh (1 unit)}$$

## 3. Manage your usage

TURN OFF LIGHT



Switching off a light in an empty room

Set temperature setting of Air Conditioners to 24 Degree Celsius

## 4. Replacing with Efficient appliances

How? Please see next





Your kind suggestions, comments and cooperation are welcome. Thank you!



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