


Energy Efficiency and Conservation in Thailand Report(2019)

Department of Alternative
Energy Development and
Efficiency (DEDE)

Thakorn Chaiviriyakul

 Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY



 กระทรวงพลังงาน
MINISTRY OF ENERGY

1

- **Thailand's Energy Efficiency Situation**

2

- **Energy Efficiency Plan (EEP 2015)**

3

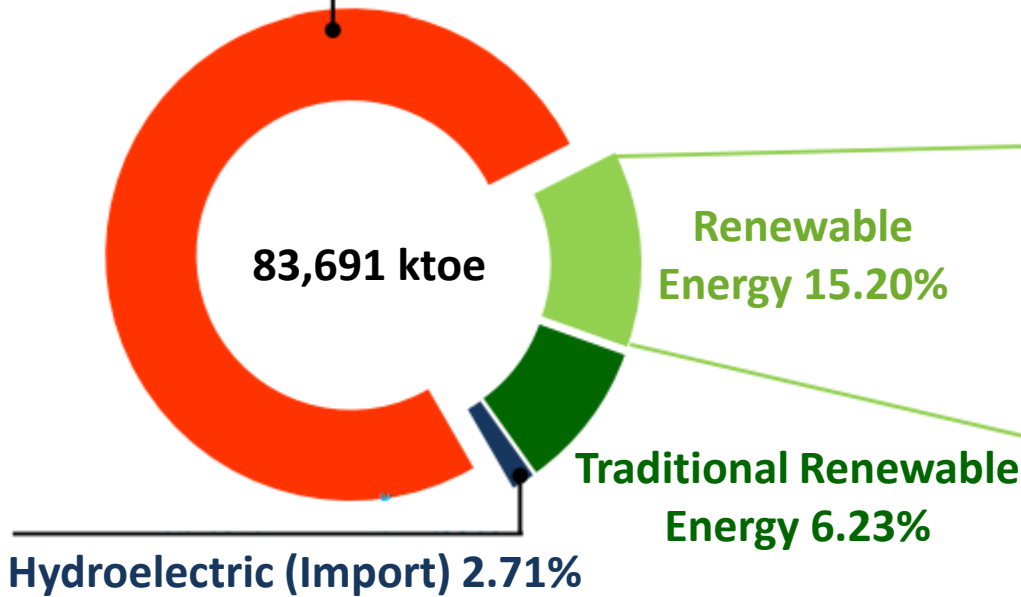
- **Energy Efficiency Policies and Measures**

Thailand Energy Situation 2016

Final Energy Consumption

By Type

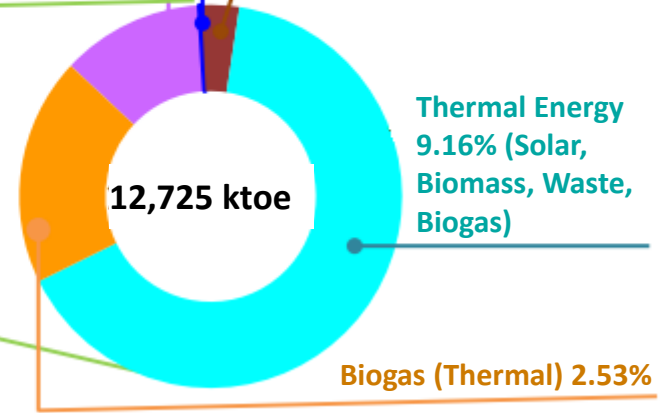
Fossil Fuel 75.85%



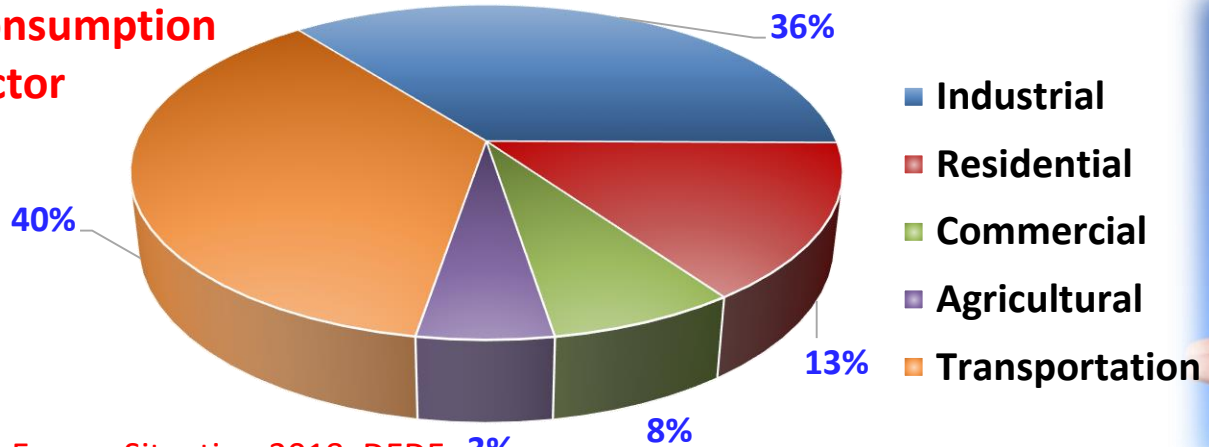
Electricity 2.73% (Solar, Wind, Biomass, Waste, Biogas)

Small Hydroelectric 0.05%

Large hydroelectric 0.73%



Final Energy Consumption by Sector



**Source: Thailand's Energy Situation 2018, DEDE



Department of Alternative
Energy Development and Efficiency

MINISTRY OF ENERGY

Thailand's Energy Efficiency Situation



Integration



Harmonized Time Frame



Better Balanced Focus

Security Economy Ecology

PDP

POWER DEVELOPMENT PLAN

แผนพัฒนากำลังผลิตไฟฟ้าของประเทศไทย*

EEP

ENERGY EFFICIENCY PLAN

แผนอนุรักษ์พลังงาน*

Approved:
August 13th,
2015

AEDP

ALTERNATIVE ENERGY DEVELOPMENT PLAN

แผนพัฒนาพลังงานทดแทนและพลังงานทางเลือก

GAS

GAS PLAN

แผนบริหารจัดการก๊าซธรรมชาติ

OIL

OIL PLAN

แผนบริหารจัดการน้ำมันเชื้อเพลิง



กระทรวงพลังงาน
MINISTRY OF ENERGY

PDP

EEP

AEDP

GAS

OIL

TIEB



Department of Alternative
Energy Development and Efficiency

MINISTRY OF ENERGY

Energy Efficiency Plan (EEP 2015)



EEP 2015 Overview

Goal to reduce **Energy Intensity** by **30%** in **2036**,
 down to **5.97 ktoe/billion Baht**

EEDP 2011 - 2030
 = **25% Reduction**

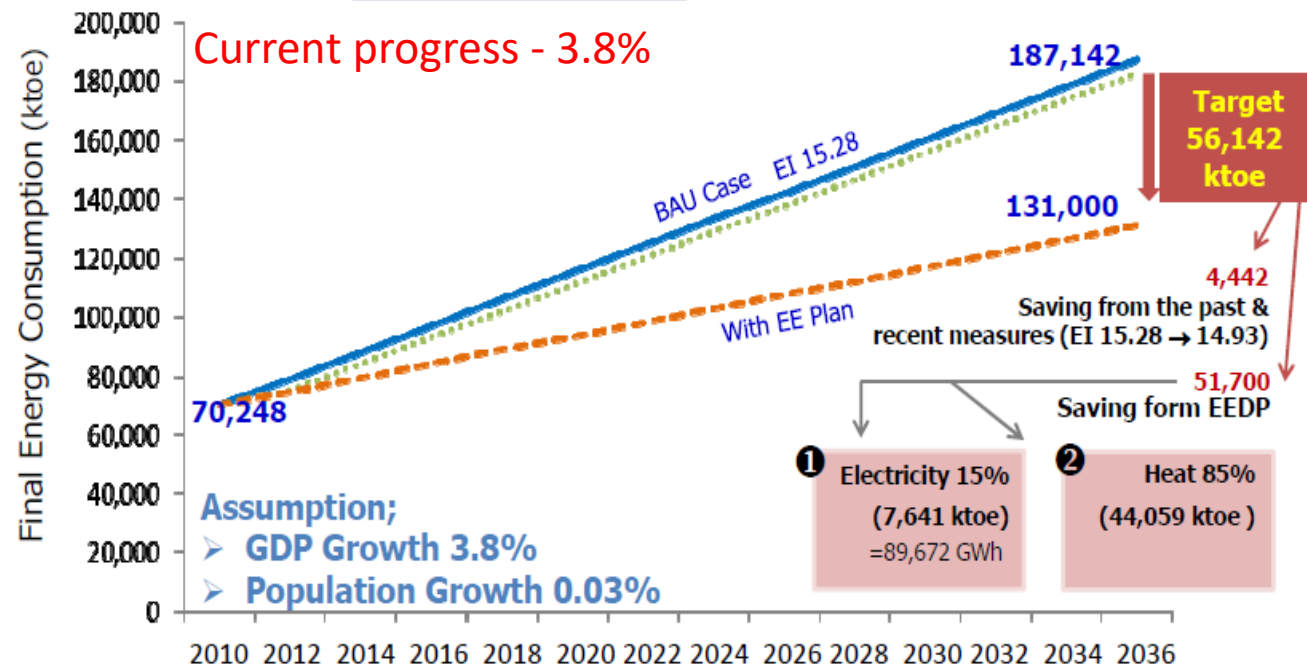


EEP 2015 - 2036
 = **30% Reduction**

$EI^{base2010} = 8.54$
 ktoe/billion baht

$EI^{Actual2017} = 7.94$
 ktoe/billion baht

$EI^{Goal2036} = 5.97$
 ktoe/billion baht



Concept



Long-term Implementation

Combination of Compulsory & Voluntary Measures

Performance-based Support



3 Strategies – 10 Measures

Compulsory

- EE 1 : Energy Management system in designated factory/building
- EE 2 : Building Energy Code
- EE 3 : Energy Standard and Labeling (HEPS/MEPS)
- EE 4 : Energy Efficiency Resources Standard (EERS)

Voluntary

- EE 5 : Financial Incentive
- EE 6 : Promotion of LED (Light Emitting Diode)
- EE 7 : Promotion of EE in Transport Sector
- EE 8 : Research and Development in Energy Efficient Technologies

Complementary

- EE 9 : Human Resources Development
- EE 10 : Promotion of Public Awareness on Energy Conservation

EED 2015 Measures Summary

TARGET IN YEAR 2036

Unit: ktoe

Measures/Sector	Industrial	Building	Residential	Transportation	Total	%
EE1 : Energy Management system in designated factory/building	4,388	768			5,156	10.0
EE2 : Building Energy Code		1,166			1,166	2.3
EE3 : Energy Standard and Labeling (HEPS/MEPS)	749	1,648	1,753		4,149	8.0
EE4 : Energy Efficiency Resources Standard (EERS)	202	184	114		500	1.0
EE5 : Financial Incentive	8,895	629			9,524	18.4
EE6 : Promoting LED	281	424	286		991	1.9
EE7 : Promotion of EE in Transport Sector				30,213	30,213	58.4
Total	14,515 (28.1%)	4,819 (9.3%)	2,153 (4.2%)	30,213 (58.4%)	51,700	100.0

Industry Sector still be key player for target achievement



Department of Alternative
Energy Development and Efficiency

MINISTRY OF ENERGY

Energy Efficiency Policies and Measures

Compulsory Measures



BEC Regulation

To prescribe types and sizes of buildings and also standards, rules and procedures for designing of energy conservation building.

New or retrofitted buildings being constructed which have total area of all stories equal to **2,000 m²** or more must be designed under the energy conservation requirements.

Currently mandatory only for government buildings. Voluntary for others.



1.Hospital



2.Education



3.Office



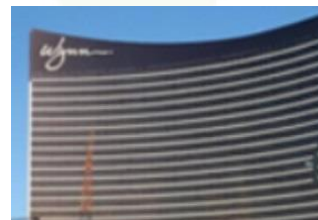
4.Condominium



5.Convention Hall



6.Theater



7.Hotel



8.Entertainment



9.Department Store



MEPS: Minimum Energy Performance Standards

- Both voluntary and mandatory program
- Collaboration between **DEDE** and **TISI**
- Standards are set up by DEDE, but they are regulated by TISI.



voluntary certification mark
19 Products



mandatory certification mark
4 Products

Mandatory equipment:

1. Refrigerator
2. Air-conditioner
3. Fluorescent light tube
4. Ballast-integrated light bulb

HEPS: High Energy Performance Standard

- Voluntary program
- Collaboration between **DEDE** and **EGAT**
- Standards are set up by DEDE, and labeling programs are responsible by DEDE and EGAT



28 Products



19 Products



Insulator



Glazing Panes



VSD



1. Household LPG Gas Stoves
2. High Pressure Gas Stoves
3. Small Gasoline Engines (Air Cooled)
4. Small Diesel Engines (Water Cooled)
5. Three-Phase Induction Motors
6. Fiberglass Insulators
7. Flat Plate Glasses
8. Variable Speed Drives
9. Heat Pump
10. Air Compressor
11. Building Paint
12. Adhesive Film for Glasses
13. Lightweight Concrete
14. Single-Phase Induction Motor
15. Infrared Gas Stoves
16. Ceramic Roof
- 2018**
17. Electric Welding Machine
18. Deep Fat fryer
19. Cooker Hood

For the 2017's project,

- 7.2 million Highly Energy Efficient Labels distributed to 16 products.
- Once purchased and used, could lead to the saving of energy as high as 149.9 ktoe.

2007-2015



เตาแก๊ซหุงต้ม

เตาแก๊ซแรงดันสูง

เครื่องยนต์ดีเซลขนาดเล็ก

เครื่องยนต์แก๊สโซลีนขนาดเล็ก

มอเตอร์สามเฟส

ฉนวนใยแก้ว

กระจก

VSD

2016



ฮีตปั๊ม

เครื่องอัดอากาศ

สีทาผนัง

2017



ฟิล์มกรองแสง

อิฐมวลเบา

มอเตอร์เฟสเดียว

เตาอินฟาเรด

หลังคากระเบื้อง

2018



เครื่องเชื่อมไฟฟ้า

เครื่องทอดน้ำมันท่วม

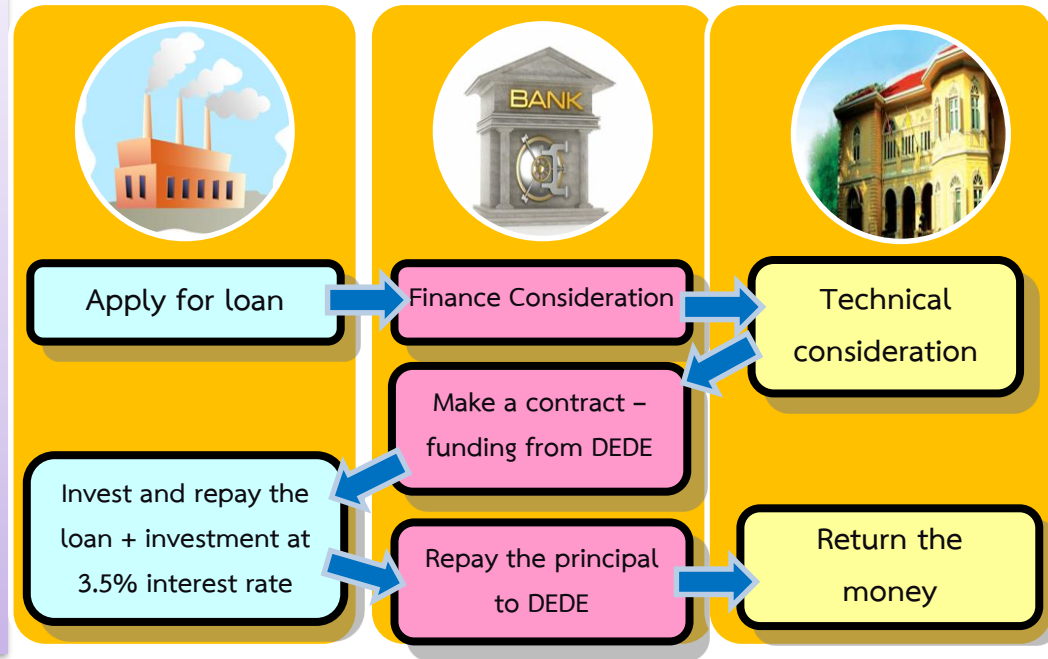
เครื่องดูดควัน



Energy Efficiency Policies and Measures Voluntary Measures (current status and ongoing measures)

Criteria:

- Available for factories/buildings/project developers for both EE and RE (RE ~ 37%)
- DEDE loans the funding via financial institutions to familiarize the bank with EE/RE investment
- Maximum loan of no more than 50M baht with interest rate of no more than 3.5%
- Payback period of 7 years



Phase	# of projects	Total investment (Mbaht)	Investment via ENCON Fund (Mbaht)	Investment via bank/applicant (Mbaht)	Energy saved (ktoe)	Energy saved (Mbaht)
1	78	3,427	1,902	1,525	98	1,805
2	83	3,330	1,735	1,595	99	1,713
3	98	5,878	2,702	3,176	93	2,329
4	12	1,282	377	905	13	421
5	24	2,042	489	1,554	17	539
6	82	1,350	1,262	68	7.6	245
6 (extended)	84	1,681	1,641	40	5.7	276
Total	455	18,924	10,061	8,864	333	7,319



โครงการส่งเสริมการปรับปรุงเพื่อเพิ่มประสิทธิภาพการใช้พลังงานความร้อนด้วยวิธีอุดหนุนผลประโยชน์



Criteria :

- Performance-based subsidy
- 70 Thai Baht/MMBTU (no more than 10 MBaht per establishment)
- Eligible for Projects involving Boiler, Gas turbine Heat pump or equipment fossils fuel consumption or equipment (non –electric equipment)
- Target group : Designated Buildings and Factories

# of projects	Total* Investment (MBaht)	Energy saving (Million mmbtu)	Targeted Energy saving (ktoe)
64	Approx.704	2.24	89



*Information updated on July 2019



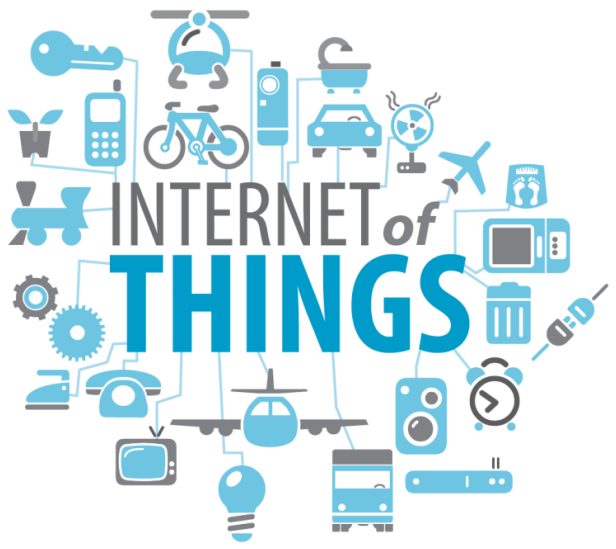
Smart Farm Subsidy Program

Target group:

Energy Efficiency and renewable energy projects in small size pig farm, dairy farm, poultry farm, fish/shrimp farm

Program detail:

- Subsidize 40% of total cost but no more than 1.5 million Baht (around 46,000 USD) per entity
- Payback period no longer than 7 years



Internet of Things (IoT) Subsidy Program

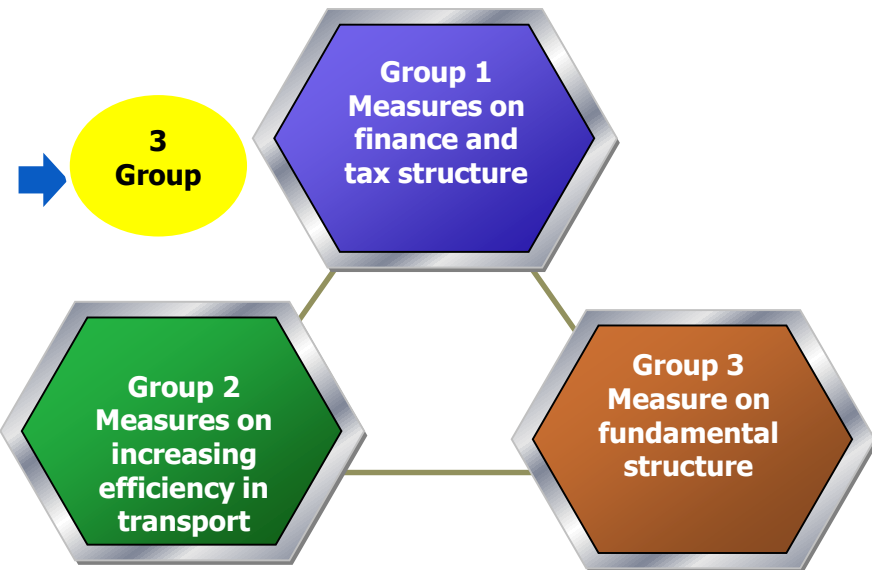
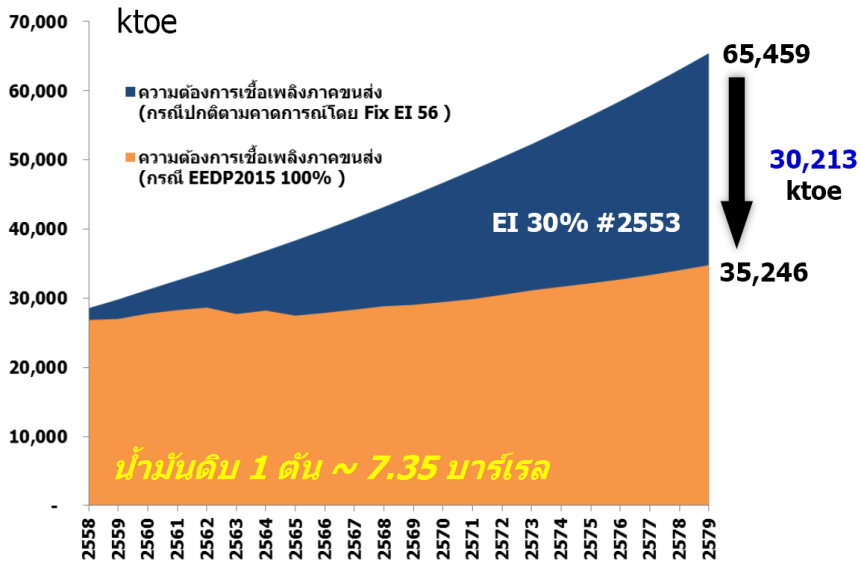
Target group:

IoT technologies implementation (either with new or existing system) in designated buildings and factories

Program detail:

- Subsidize 20% of total cost but no more than 2 million Baht (around 46,000 USD) per entity, with a minimum of 50,000 Baht (around 1,600 USD)
- Payback period no longer than 7 years
- Must include **BOTH** monitoring and control

EE7 : Promotion of EE in Transport Sector



EE7	Measure	Target of accumulated energy efficiency (ktoe) 2036
EE7-1	Fuel price reconstruction	455.60
EE7-2	Tax & Eco sticker, Eco car	13,730.56
EE7-3	Tire Labeling	469.05
EE7-4	Logistics and Transportation Management (LTM)	1,361.56
EE7-5	Eco driving	1,490.99
EE7-6	Revolving fund	588.00
EE7-7	Subsidies	1,216.00
EE7-8	Electric Vehicles for Public Transport	4,822.71
EE7-9	Double Track Railway	4,921.97
EE7-10	Oil transmission through pipeline	34.00
EE7-11	Electric Vehicles	1,122.75



Energy Efficiency Policies and Measures

Complementary Measures



“Thailand Energy Awards”

- Awareness Raising
- Participation
- Public Relation
- Increase Visibility

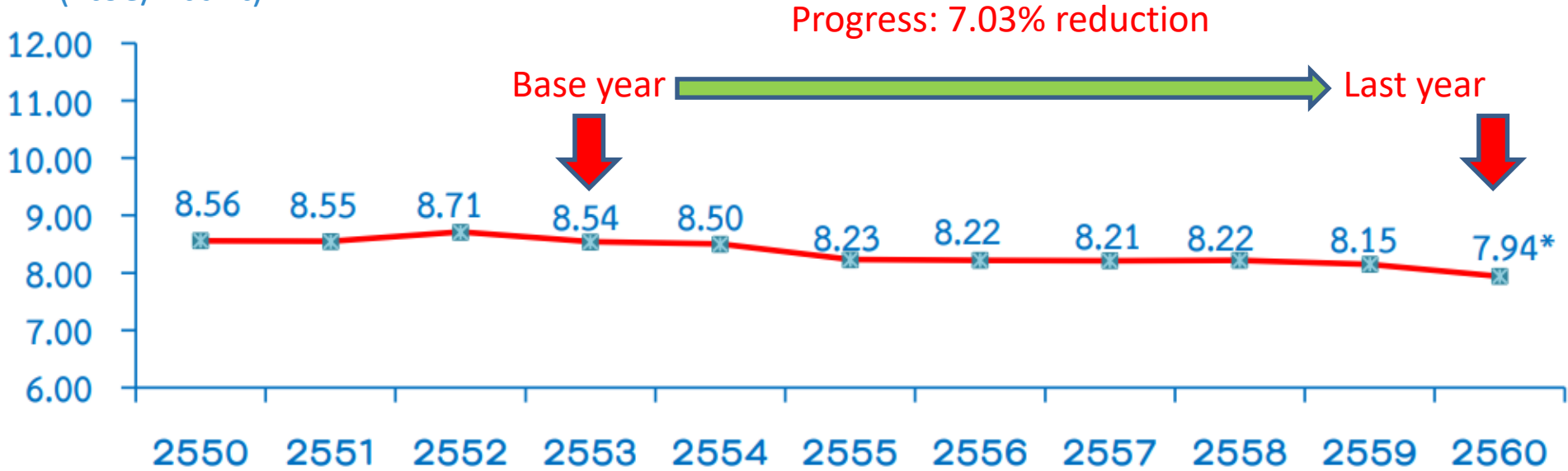


“ASEAN Energy Awards”



Current Progress

EI (ktoe/Bbaht)



Thank You

ขอบคุณครับ



For further information, please contact

- Planning Division/DEDE

❖ Email : frs@dede.go.th