



Energy Efficiency Promotion in Thailand

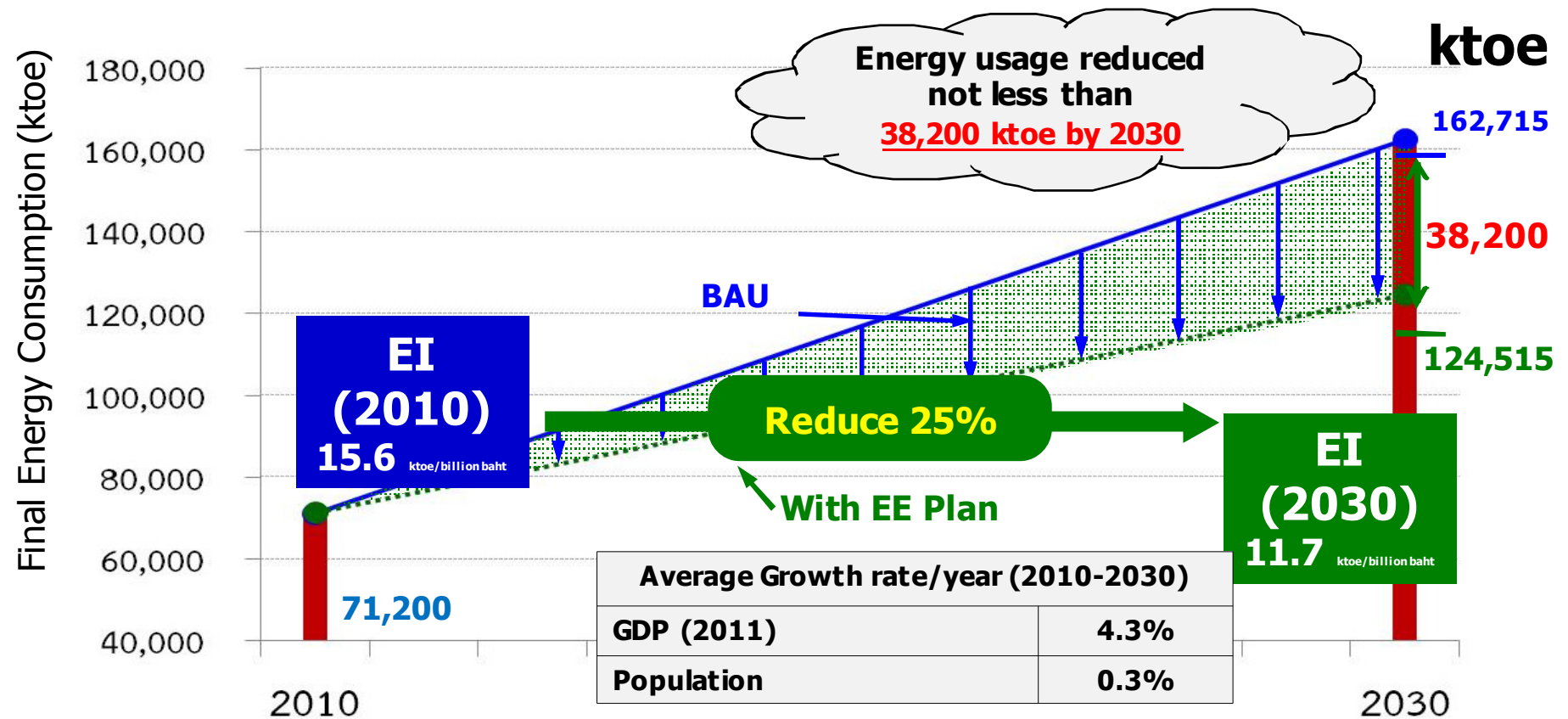
Dr. Kurujit Nakornthap
Deputy Permanent Secretary of Energy
Ministry of Energy, Thailand



กระทรวงพลังงาน
MINISTRY OF ENERGY

1. Energy Efficiency Development Plan (2010-2030)

Government policy @ 23rd AUG 2011 aims to reduce Energy Intensity 25% within 20 years



*GDP₂₀₃₀ at constant price 1988 = 10,650 billion baht

Target Groups

- Industrial sector
- Transportation sector
- Business Building
- Small Business and Residential Building

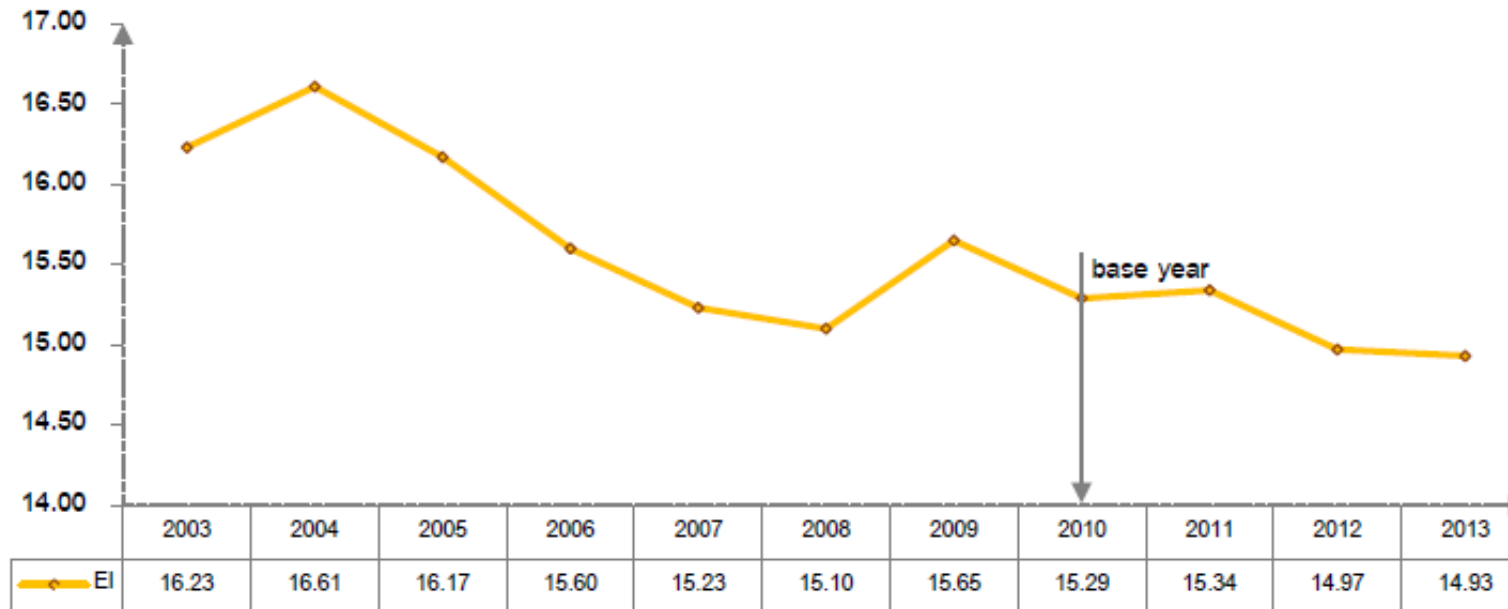
Expected outcome in 2030

- Reduce final energy consumption at least 38,200 ktoe
- Reduce CO2 emission 130 M. tons
- Reduce Energy cost 707,000 M.Bahts.

1.4 EE Current Status

Performance on Energy Efficiency Measures

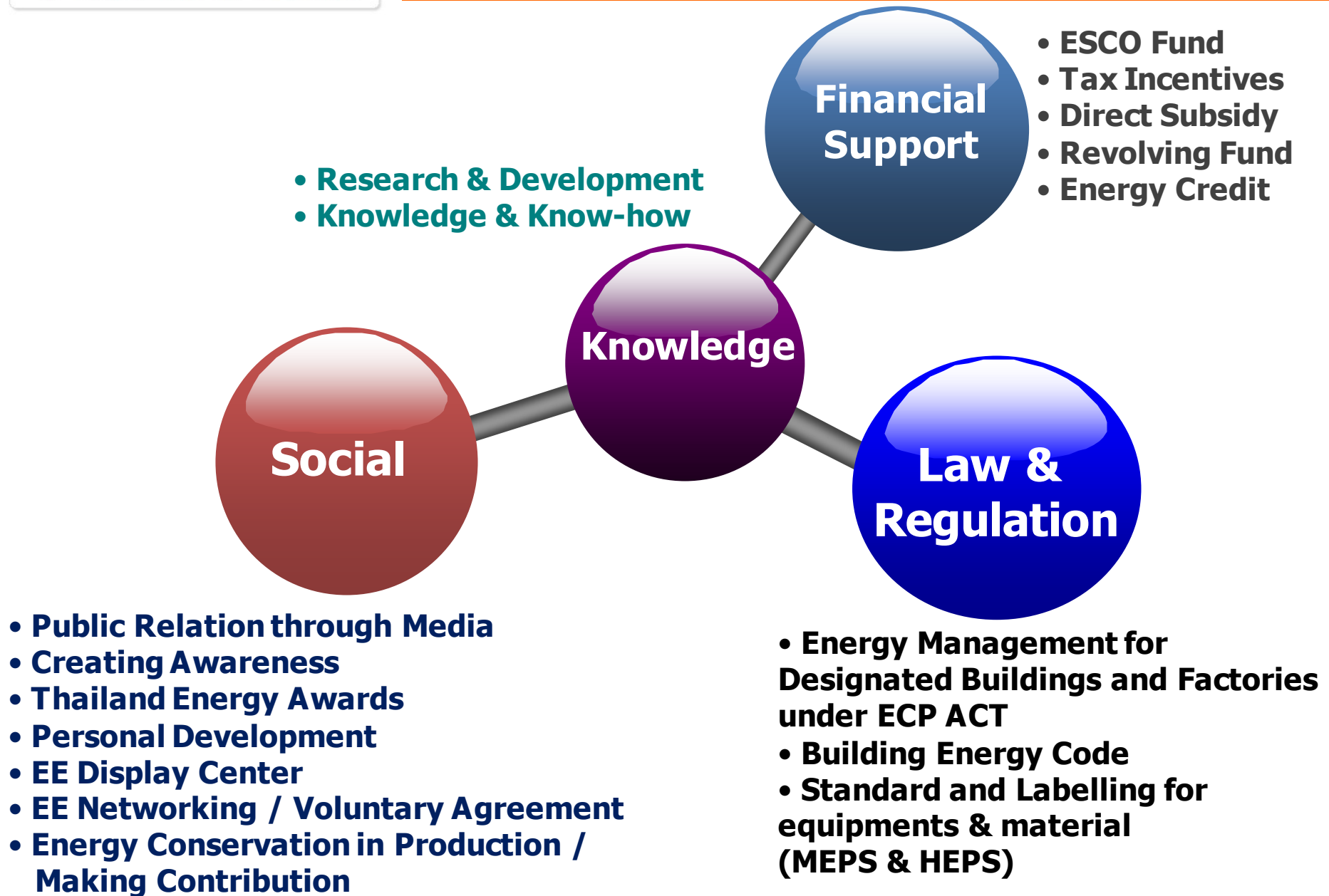
ktoe/thousand million Baht



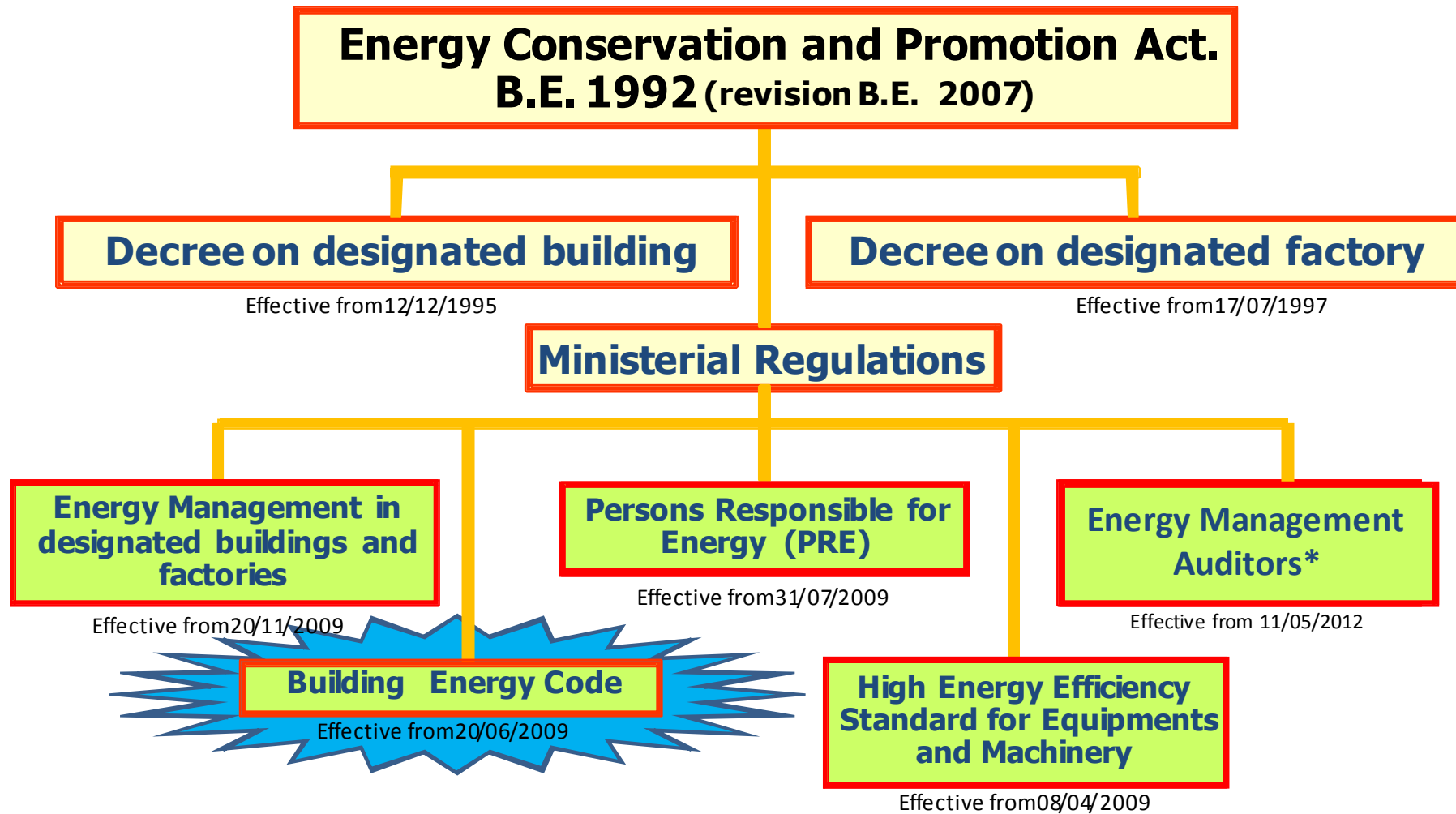
EE Results in 2013

- ✓ reduce energy consumption 2.4 %
- ✓ Save over 44,000 Mbaht in Energy Import
- ✓ Reduce CO₂ 5.7 M tons.

2. Scheme to promote EE



2.1 EE Legal Framework



Energy Conservation Promotion Act 1992

(Amendment in 2007)

- **Monitoring designated factories and buildings in compliance with laws**
- **Focusing on Energy Management**
- **New building Design for Energy Efficiency**

Legal Measures

- **Energy Management Standard in designated factories/buildings**

- Designated factories/buildings : 5,406
- Appointment of Personnel Responsible for Energy(PRE) : 4,905
- Submission of energy management reports 4,491
- Energy saving potential 306.20 ktoe/year



- **Building Energy Code**

- MOU signed with 7 local administrations e.g. Bangkok Metropolitan Administration, Chiang Mai Municipality Pattaya Municipality etc.
- 2E Building Center/training related stakeholders
- Inspecting 108 Building Plans



- **Energy saving equipment/machinery standards/labeling**

- Announcement of Ministerial Regulations for 8 types of HEPs i.e. air conditioner, glass, refrigerator
- Completion of 27 drafts of Ministerial Regulations/22 products for MEPs
- 4 product labels were issued in 2007-2010 (household cooking stove using LPG, glass, micro fiber insulation and VSD)



2.2 Energy Management Standard for Designated Factories and Buildings

- Criteria for Designated Factories/Buildings



Factories/Buildings with
Peak Demand $\geq 1,000$ kW
Transformer Capacity $\geq 1,175$ kVA
Total Energy Consumption ≥ 20 million MJ/year

- Number of PRE in designated factories/buildings

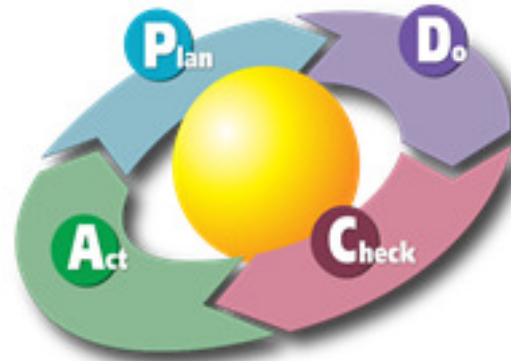


Types	Designated Factories/Buildings	
Peak Demand	1,000-3,000 kW	$\geq 3,000$ kW
Transformer Capacity	1,175-3,530 kVA	$\geq 3,530$ kVA
Energy Use	20- 60 million MJ/ year	≥ 60 million MJ/year
Number of PRE	1	2 (at least 1 senior PRE)
Number of Designated Factories/Buildings	2,955	2,451

2.2 Energy Management Standard for Designated Factories and Buildings

- **Performance and Current Status of Designated Factories and Buildings**

- **5,406 designated Factories/Buildings**
(3,363 Designated Factories / 2,043 Designated Buildings)
- **Appointment of PRE in 4,905 factories/buildings (90.73%)**
- **Submission of Energy Management Report:**
4,491 factories/buildings (84.94%)
- **Energy Saving Potential 306.20 ktoe/year**



- **Ministerial Regulation Highlights**

To set up a building energy code for new building design for energy efficiency

Enforcing 9 Types of Building

Hospital

Office

Education

Condominium

City Hall

Theater

Hotel

Entertainment

Department Store/Shopping Center

Building size from 2,000 sqm. must be built under the following building energy code system:

Building Envelope

Lighting

Air conditioner

Water Heating
Equipment

Total Energy Use

Renewable Energy
Use

2.4 Machinery/Energy Saving Equipment Standard/labeling

• Summary of MEPS and HEPS

MEPS → 6 Products

- Fluorescent lamp
- Fluorescent lamp Compact
- 3 Phases of Motor
- Air-Conditioner
- LPG Gas Stove
- Refrigerator

Draft MEPS → 20 Products



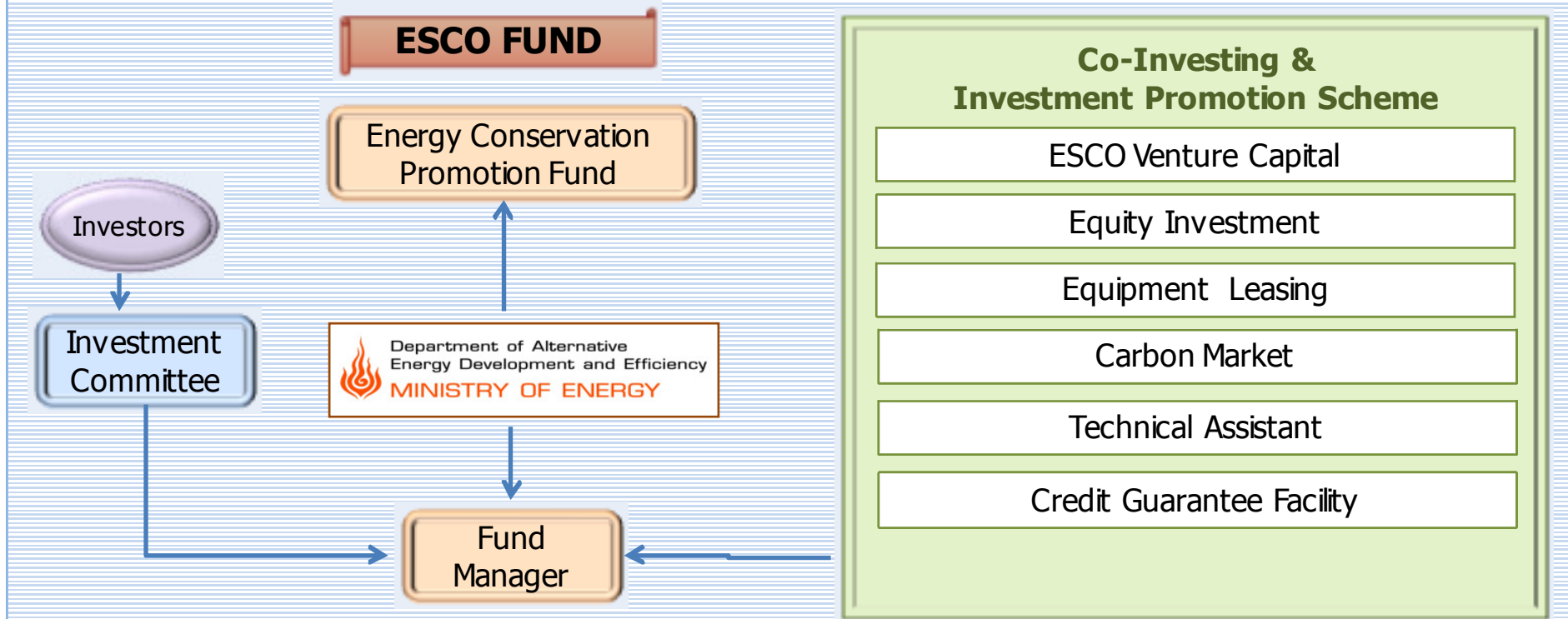
HEPS → 8 Products

- Air-Conditioner
- Refrigerator
- Desk, Wall, Standing Electric Fan
- Electric Rice Cooker
- Water Cooler for Ventilation System
- Glass
- Electric Heater
- Electric Thermos Jug

Draft HEPS → 34 Products



3.1 Co-Investing Scheme : ESCO Fund



- 500 + 500 mil.B allocated from Gov's **ENCON FUND**
- 2 Fund Managers assigned & given 3 years window of investment
- **Equity Investment** 10-50% equity holding, Max. 50 mill. B./project , Investment period 5-7 years
- **Equipment Leasing** 100% of total cost with max. 10 mill. B. Maximum leasing period 5 years
- As of now , 54 projects invested with total investment of 6.1 billion Bt.(510 mill. B. from ESCO Fund)
- Total Energy saving of 1.06 billion B.

Financial Mechanism (contd.)

ESCO Fund

➤ Terms and Conditions

- Joint Investment participation in the project; 10-50 % of the total investments, not exceeding 50 mil.Baht for 3-7 years
- Joint venture with ESCO; 10-30 % of investment but not exceeding 50 mil.Baht; 3-7 years
- EE+RE equipment rental/purchase; not exceeding 50 mil.baht, within 5 years pay back period
- Carbon Credit; Technical Assistance; Guarantee Facility

➤ Performance (Phase I and II)

- Allocated Loan 1,057 mil.Baht
- Funded projects : 54 , Total investment : 5,542 mil.Baht
- Saving 1,255 mil.Baht



• Criteria and Supporting Condition

20% subsidy for each standard/measure including in-depth measure (e.g. High Frequency Electronic ballast, Variable Speed Drives for water pumping, HEP motor), at the minimum of 50,000 Baht per person and at the maximum of 3,000,000 Baht per person with not more than 7 years payback period.

• Target groups

- To buy EE products
- Payback period < 7 years
- Industries/ Commercial buildings/ Agro-Industries



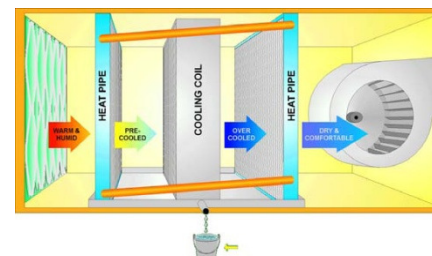
High eff. motor



VSD



LED



Heat Pipe



Heat Pump

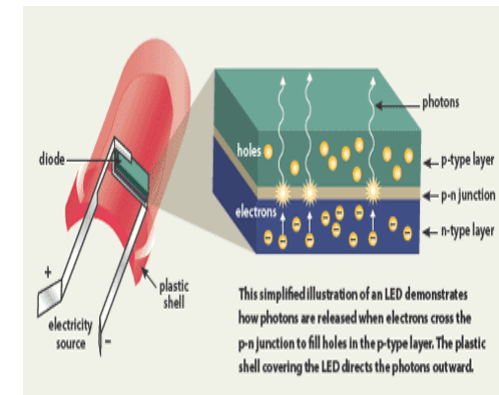
Promoting the use of LED lamp

=> Save 70%

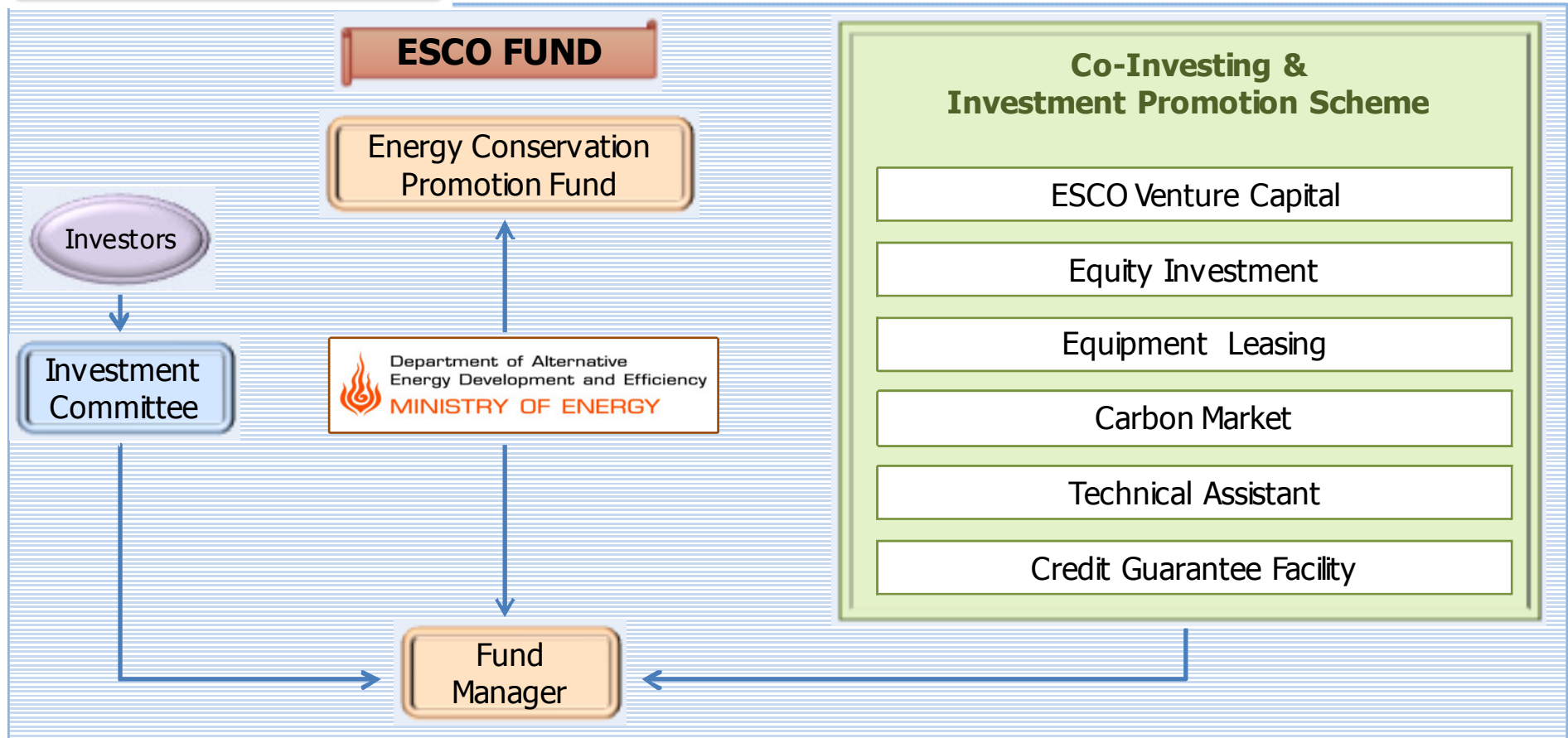


Advantages

- High Efficiency => capable of outputting 135 lumens/watt
- reduced power consumption
- Long life of current > 50,000 hours
- Smaller size
- No warm-up period
- Controllable - can be controlled for brightness and color
- made of solid material with no filament or tube or bulb to break
- Excellent Color Rendering
- Environmentally friendly - no mercury or other hazardous substances



3.3 Co-Investing Scheme : ESCO Fund



- 500 + 500 mil.B allocated from Gov's **ENCON FUND**
- 2 Fund Managers assigned & given 3 years window of investment
- **Equity Investment** 10-50% equity holding, Max. 50 mill. B./project , Investment period 5-7 years
- **Equipment Leasing** 100% of total cost with max. 10 mill. B. Maximum leasing period 5 years
- As of now, 54 projects invested with total investment of 6.1 billion Bt.(510 mill. B. from ESCO Fund)
- Total Energy saving of 1.06 billion B.

3.4 Energy Conservation Promotion in Buildings through Labeling

• Objectives

- To promote and stimulate labeling for energy efficiency in buildings/households
- To create an awareness to buildings and home buyers/tenants
- To make labeling information become the long-term market mechanism for enhancing sustainable energy conservation



Energy Efficiency Building



Energy Efficiency House

4.1 Capacity Building and Public Relations Measures

- Technology dissemination : **Energy Display Center**

54 technologies and the Mini Plant

Energy Display Center consists of

- **37 technologies of industrial sector**
- **10 technologies of commercial sector**
- **7 technologies of residential sector**



4.2 Capacity Building

- **Providing energy courses to train person in related fields for 38,386 people** e.g.
 - **9,939 Persons Responsible for Energy (PREs)**
 - **2,021 Trainees on the new building design for energy efficiency**
 - **1,226 Trainees on Energy management and audit**
 - **1,200 Trainees/year on Energy conservation technologies** in main equipment system which was regularly used in buildings and factories
 - **Educational Programs** (University, Vocational/College, High school) were conducted to **24,000 students/year**
 - **International Programs** (ASEAN Countries) e.g. Myanmar, Laos



4.3 Technology dissemination by 10 Technical Service Centers

- Dissemination and transfer of energy technology to support the Royal-initiated Self-sufficient Economy Project
- Transfer, dissemination and promotion of renewable energy and energy efficiency use in the Royal Thai Police Office
- Promoting the use of RE and EE to soldiers in military camp
- Development and transfer of production technology and application of Cylindrical Biomass Stove in households and household industry
- Transfer, dissemination, and demonstration of energy saving with participation in designated factories/buildings
- Knowledge campaign and energy consumption exhibition and demonstration



4.4 Public Relations and Public Awareness Campaign

- **Thailand Energy Awards Contest**
(the Prime Minister will be normally invited to present the awards at the House of Parliament)
- **ASEAN Energy Awards**
- **Consulting/Information services**
- **Publishing documents for dissemination**





Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY



Thank you for Your attention