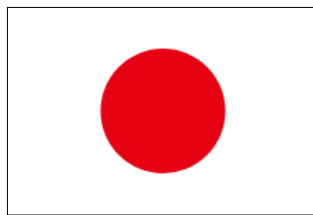


Workshop on Energy Conservation
for
Kyrgyz Republic and Republic of Tajikistan
(ECCA1)



Contents of the Energy Conservation Act and its implementation

4 February 2025, Tokyo, Japan

TOSHIO ANDO

General Manager

International Cooperation Division, ECCJ

Contents

- 1. Regal framework of energy strategy and policy**
- 2. Outline of Japan's Energy Conservation Act**
 - Structure of Energy Conservation Act**
 - Measures Pertaining to Factories**
 - Energy Conservation (EC) Guideline**
 - Key Persons for Energy Management**
 - Regulations for Energy-consuming Equipment**

1. Regal framework of energy strategy and policy

State Level Strategy

Basic Act on Energy Policy

Supply Side

**Petroleum Supply and Demand
Adjustment Act**

Oil Stockpiling Act

Gas Business Act

Electricity Business Act

**Act on special measures for electricity
from renewable energy sources**

Etc.

Consumer Side

Energy Conservation Act

**Act on Energy Consumption
Performance of Buildings**

- **Strategic Energy Plan** shall be developed and reviewed every 3 years.
- The Strategic Energy Plan set up three policy targets in terms of “3E+S”
① Energy security, **② Economic Efficiency**, and **③ Environment**
with placing top priority on **Safety. (3E+S)**

<Policy targets for 3E+S>

Safety

(top priority)

**Energy
Security**

Self-sufficiency: About 30%, higher than before the great east Japan earthquake (about 20%)

**Economic
Efficiency**

Electricity cost: To lower from the current level (9.7 trillion yen in FY2013 to 8.8 trillion yen in FY2030)

Environment

Greenhouse gas emission reduction target: (reduction of 46.0% in FY 2030 compared to FY 2013)

Source : ARNE

- In October 2020, Prime Minister Suga declared that **Japan will aim to reduce greenhouse gas emissions to net-zero by 2050**, that is, to realise a carbon-neutral, decarbonised society.
- At the Leaders Summit on Climate in April 2021, Prime Minister Suga announced that **Japan aims to reduce its GHG emissions by 46 percent in FY 2030 from its FY 2013 levels**.

Remarks at Leaders Summit on COP26 (Nov. 2021)

Japan aims to reduce its greenhouse gas emissions by **46 percent** in the fiscal year **2030** from its fiscal year 2013 levels, and that **Japan will continue strenuous efforts in its challenge to meet the lofty goal of cutting its emissions by **50 percent** in the fiscal year 2030.**

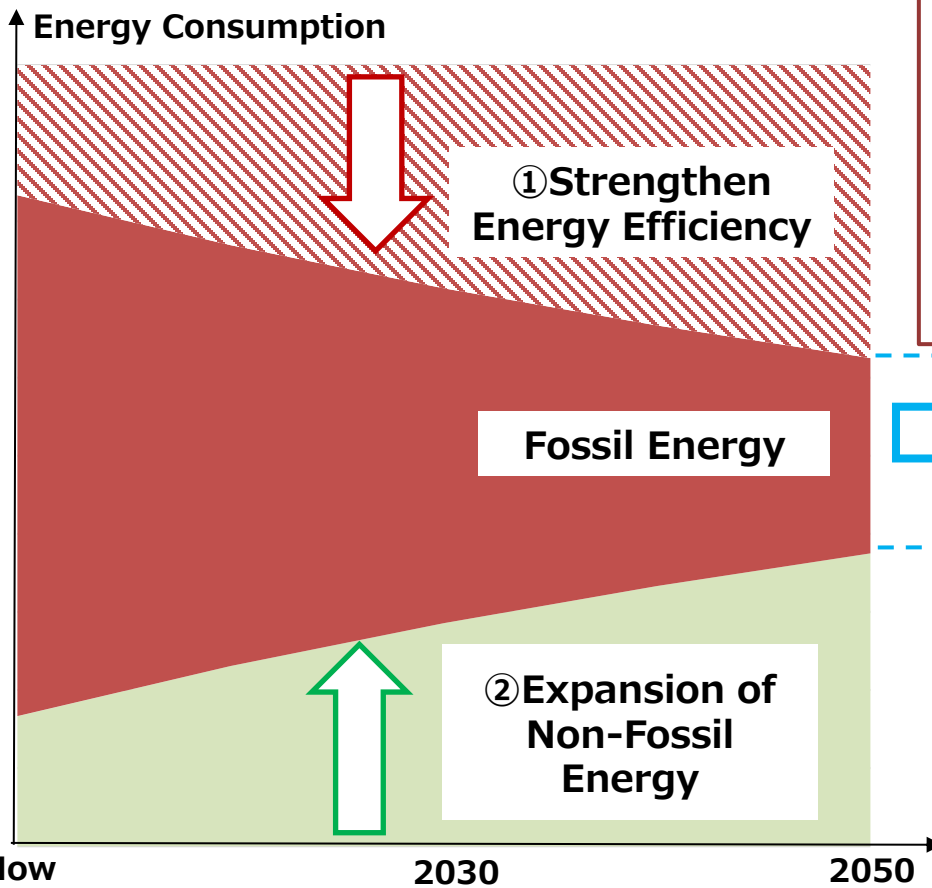


Source : ARNE

The Evolution of Energy Efficiency Policy to Support Clean Energy Transition

1979. The Act on Rationalizing Energy Use

2023. The Act on Rationalizing Energy Use and Shifting to Non-fossil Energy



<Thorough Energy Efficiency>

[Industry]

- Expansion and revision of Industrial and Business Benchmarking
- Support for development, practical application, and introduction of energy efficiency technologies

[Office and Household]

- Expanding ZEB/ZEH, reviewing building energy efficiency standards
- Reviewing and strengthening the Top Runner Program for equipment and building materials

[Transport]

- Reviewing system, improving logistics Efficiency

Remaining CO₂

Necessary technologies in the future:
CCS, DACCS, BECCS, etc.

<Measures to promote demand-side energy transition>

- Expand introduction of non-fossil energy such as renewable energy for self-consumption and hydrogen etc. (i.e., upgrading of demand)
- Optimization of demand according to electricity supply and demand conditions, including use of surplus renewable energy
- Utilization of on-site power generation and equipment control to stabilize the grid, etc.

2. Outline of Japan's Energy Conservation Act

Structure of Energy Conservation Act

Chapter 1 General Provisions

Chapter 2 Basic Policy, etc.

Chapter 3 Measures Pertaining to Factories, etc.

Section 1 Measures Pertaining to Factories

Section 2 Qualified Energy Managers

Section 3 Designated Training Organizations

Section 4 Registered Investigation Organization

Chapter 4 Measures Pertaining to Transportation

Section 1 Measures Pertaining to Freight Transportation

Section 2 Measures Pertaining to Passenger Transportation, etc..

Section 3 Measures Pertaining to Licensed Managing and Supervising Cargo-passenger Carriers

Section 4 Special Provisions for Air Transportation

Chapter 5 Measures Pertaining to Buildings

Chapter 6 Measures Pertaining to Machinery, Equipment, etc.

Section 1 Measures Pertaining to Machinery and Equipment

Section 2 Measures Pertaining to Building Materials Designed to Prevent Heat Loss

Chapter 7 Measures Pertaining to Electricity Providers

Chapter 8 Miscellaneous Provisions

Chapter 9 Penalties Provisions

Fuels

Fuels used for combustion and other specified purposes including;

- a. Crude oil and volatile oils (gasoline), diesel and other petroleum products.
- b. Combustible natural gases.
- c. Coal, cokes and other coal products.
- d. Non-fossil fuels (Black liquor, Wood chips, Hydrogen, Fuel Ammonia, etc.)



Heat

- a. Heat (such as steam, hot water or chilled water) generated by using fuels described above as heat sources.
- b. Natural Heat (Solar heat, Geothermal heat use, Hot spring, Snow & Ice etc.)

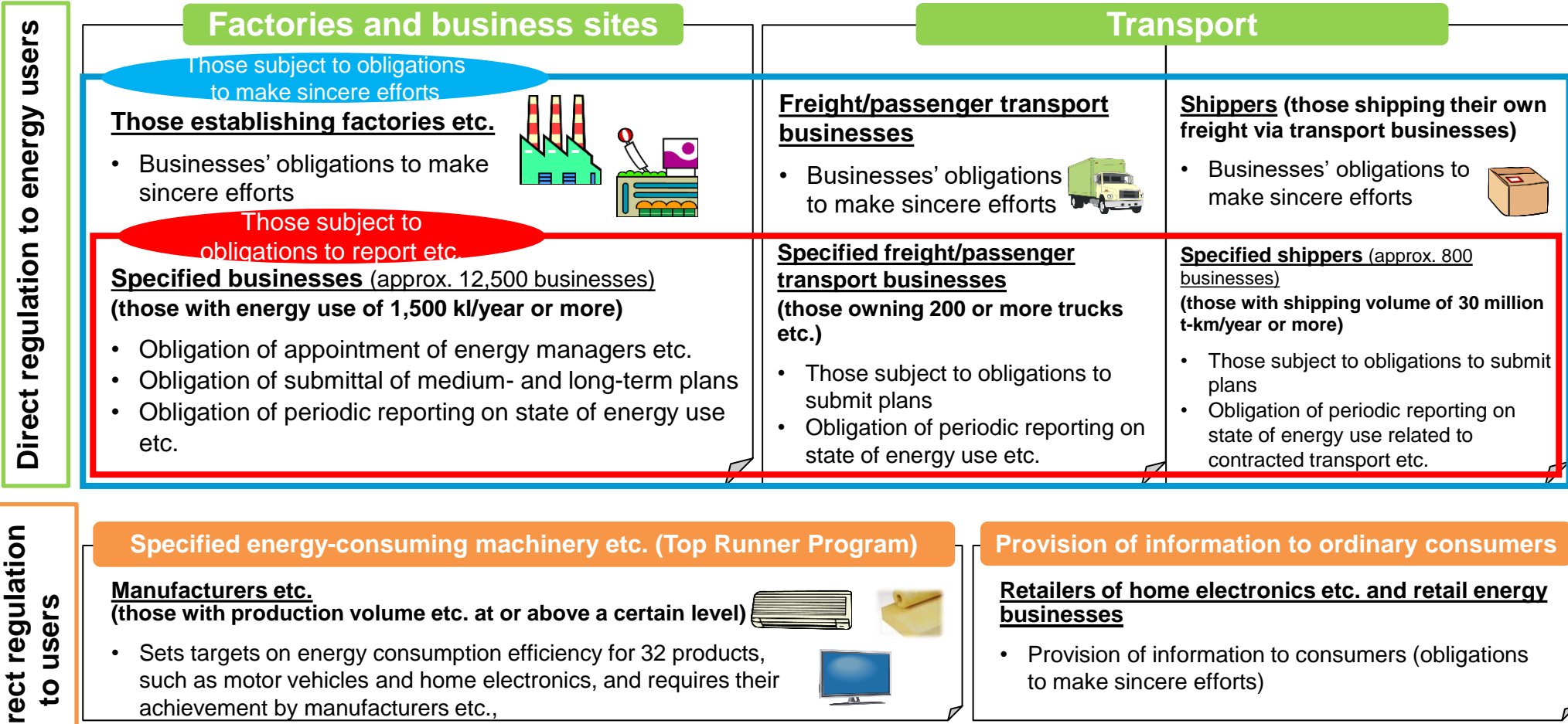


Electric power

- a. Electricity generated from energy sources, including combustion of fuels, energy recovered from waste, Hydro, heat from Geothermal and Nuclear, and renewable energy from wind and solar energy.
- b. Reviewed primary energy conversion factors for all power sources.

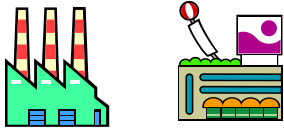


The Act on the Rationalization of Energy Use (enacted in 1979)



* Provisions related to buildings were migrated to the Act on Improvement of Energy Consumption Performance of Buildings in FY2017

(1) Manufacturing plants & business establishments



- ◆ Business operators with an annual energy consumption of at least 1,500kl (crude oil equivalent) at manufacturing plants and business establishments. (Designated operator)
- ◆ A factory / commercial building consume certain amount of energy (Designated factory)
> 3,000 kl : Type 1 designated factory, >1,500kl : Type 2 designated factory

(2) Transportation



- ◆ Freight carriers with a transportation capacity of a minimum certain scale, such as 200 trucks or 300 railway cars for railroads, etc.
- ◆ Cargo owners (Consigner) with an annual freight transport order of at least 30 million tons.

(3) Machinery and equipment



- ◆ Passenger cars, air conditioners, television sets, etc., 32 items.
(Comprises about 70% of household energy consumption.)

(4) Residential buildings and structures



- ◆ Act on Improvement of Energy Consumption Performance of Buildings
Imposition of obligation to ensure buildings
 - ※ compliance with energy efficiency standards [Houses and Buildings]
 - * Application starts from large-sized non-residential buildings by stages.

	Factory and Business Operator	Transport	Building / Residential
Regulation	Appointment of Energy Manager and Energy Management Officer		Building Design Code for Energy Conservation (Separate act)
	Periodical Reports on annual energy consumption Medium to Long-term Plans to achieve the target of 1% Improvement per year of Energy Intensity.		
	Provision of Energy Conservation Guidelines		
	Benchmark System and SABC Evaluation System		
	Regulations on specified appliances and etc.: Top runner system with labeling System		
Incentives	Subsidies and Low interest loans (Equipment Investment, Interest Subsidy, Housing Insulation Retrofit, Clean Energy Vehicles, etc.)		
	Preferential Taxation for green investment		
	Free of charge Energy Diagnosis for SMEs		
	Information Provision, National Campaign, Award System		
	R&D Subsidies (High-Performance Heat Pumps, Highly Efficient Gas Engines, Innovative Batteries, IoT Technologies, Autonomous Driving Systems, etc.)		

2. Outline of Japan's Energy Conservation Act Measures Pertaining to Factories

Energy Conservation (EC) Guideline

Key Persons for Energy Management

Section 1 Measures Pertaining to Factories

Subsection 1 General Provisions

Decision-making Criteria for Business Operators
Guidance and Advice

Subsection 2 Measures Pertaining to Specified Business Operators

Designation of Specified Business Operators
Energy Management and Supervision Officer
Energy Management Planning Promoter
Designation of Type 1 Designated Energy Management Factories
Preparation of Medium-to-long-term Plans
Regular Reporting
Instructions and Orders for Rationalization Plan
Recommendations for Shift to Non-fossil Energy

Subsection 3 Measures Pertaining to Specified Chain Business Operators

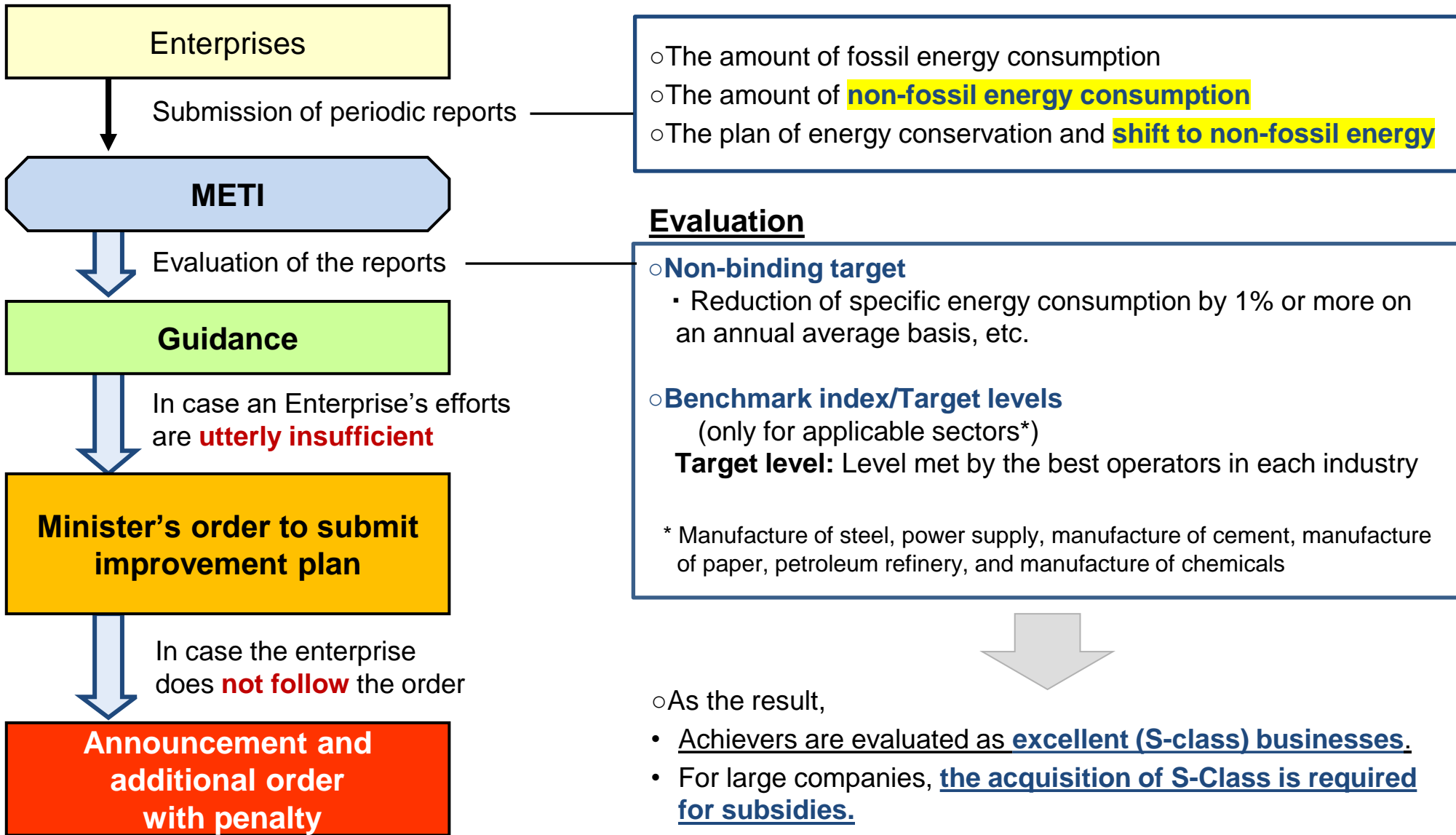
Subsection 4 Measures Pertaining to Licensed Managing and Supervising Business Operators

Subsection 5 Measures Pertaining to Management-related Business Operators

Subsection 6 Miscellaneous Provisions

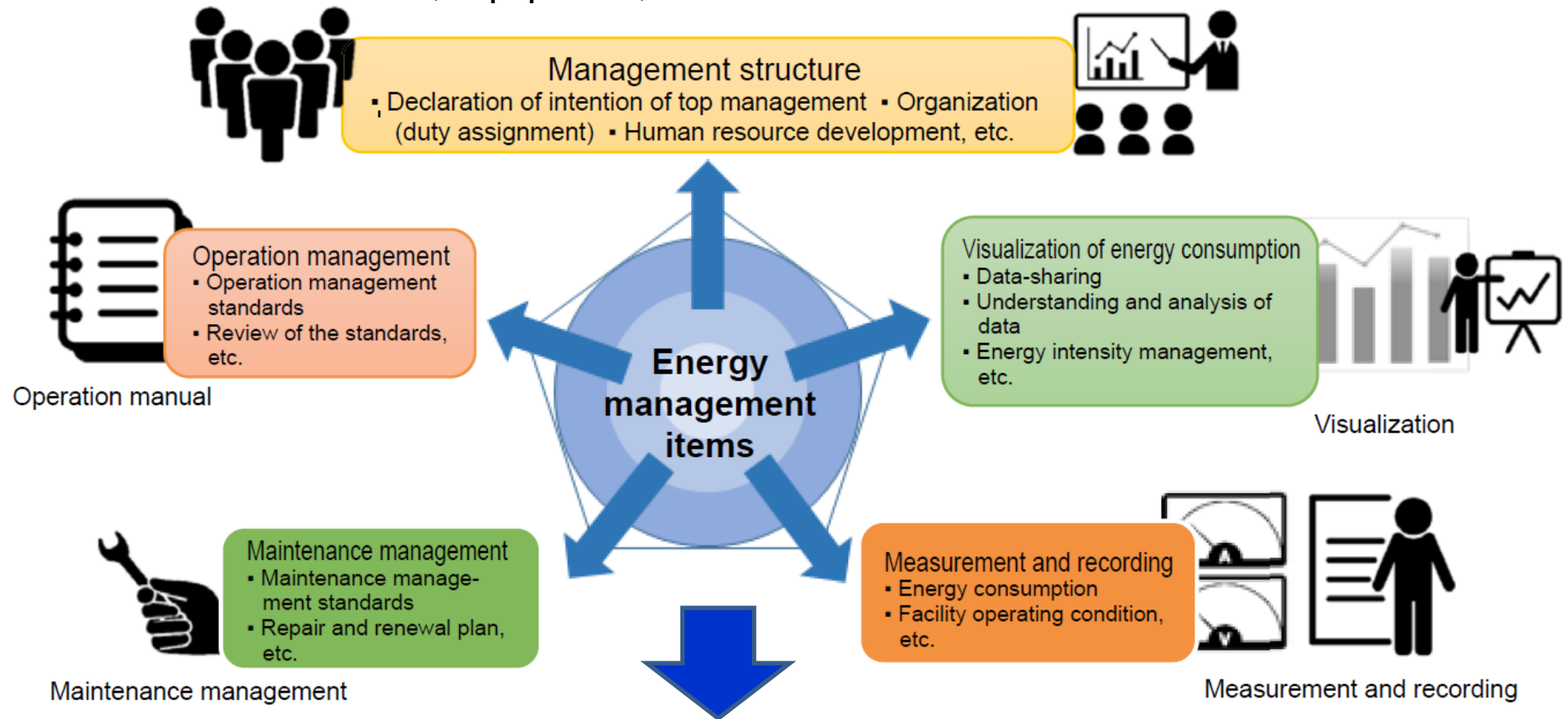
Section 2 Energy Managers

-
-



(1) Energy management

Energy conservation requires implementation of steady energy management consisting of 5 items. Enhancement of a management structure, visualization of energy consumption, measurement and recording of energy data, and improve operation and maintenance of facilities, equipment, etc.



EC Guidelines

I. Norms

Company-wide Contents established by business operator

* Energy Policy, EnMS, Key persons, Resources, Awareness, etc.

Rationalization of Energy Use in Offices & Factories

* Establishment of **EM Manuals (Energy Management Manuals)**

* Strict observation of the **norm value** for energy intensive equipment

II. Targets

Target measures to be taken systematically by mid-to-long term plan for the rational use of energy

Effort Targets

* Reduce energy intensity by **an annual average of 1% or more** in a mid to long term

* Achieve the specified **benchmark** in each industry

Matters relating to energy consumption equipment, etc.

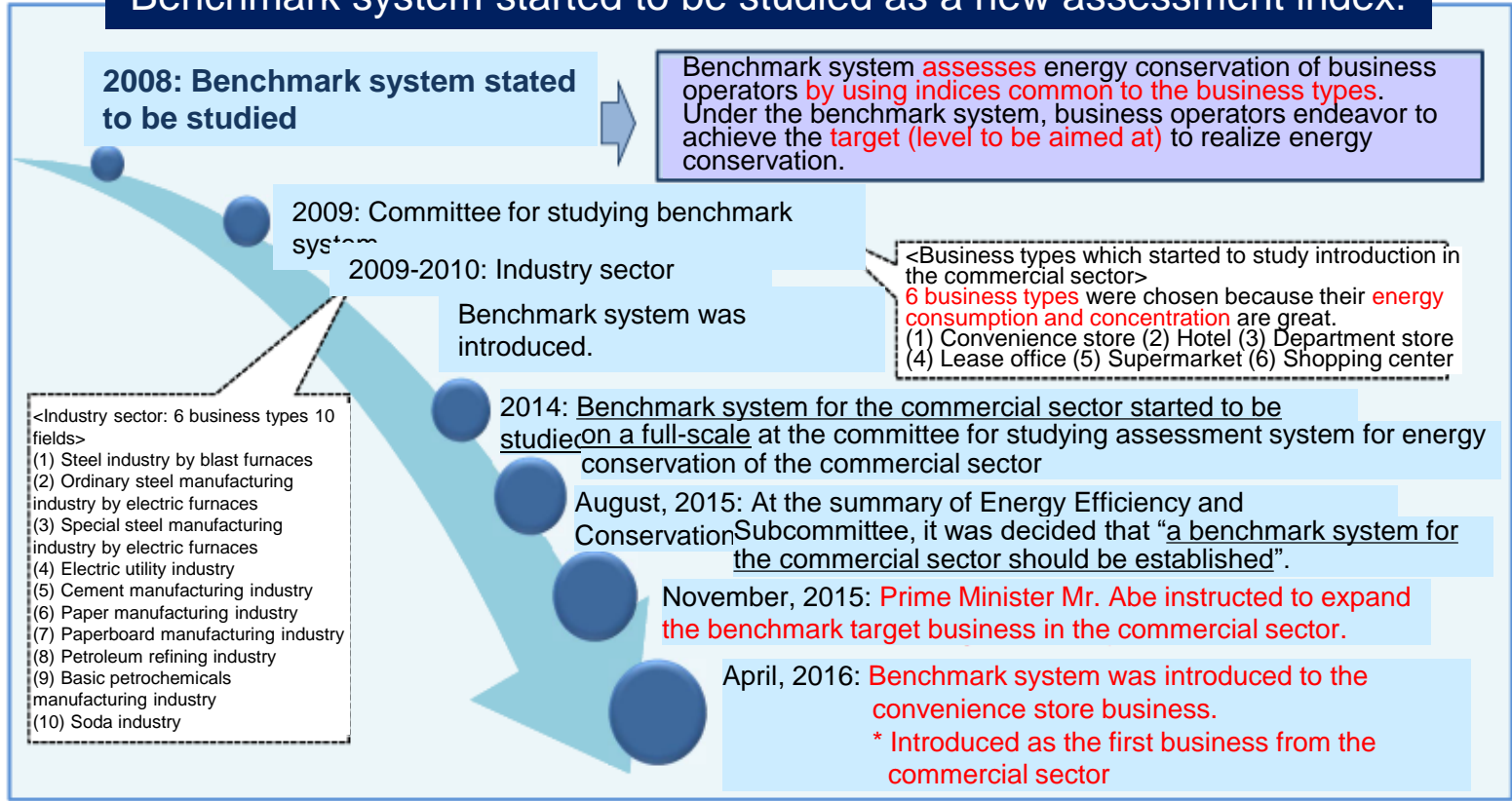
Matters relating to rationalization of energy use

* Utilization of unused energy, Regional energy sharing, etc.

The EC Guidelines are specified and released as the notification by Minister of Economy, Trade and Industry based on the EC Act.

- It became **difficult to continue decreasing** the energy consumption intensity **by 1% or more in yearly average**.
- Superior business operators who had already achieved considerable energy conservation are **not appropriately assessed because it became difficult for them to achieve 1% decrease**.

Benchmark system started to be studied as a new assessment index.



Source: Data of Ministry of Economy, Trade and Industry

Dialogue between Public and Private Sector (26 Nov, 2015)

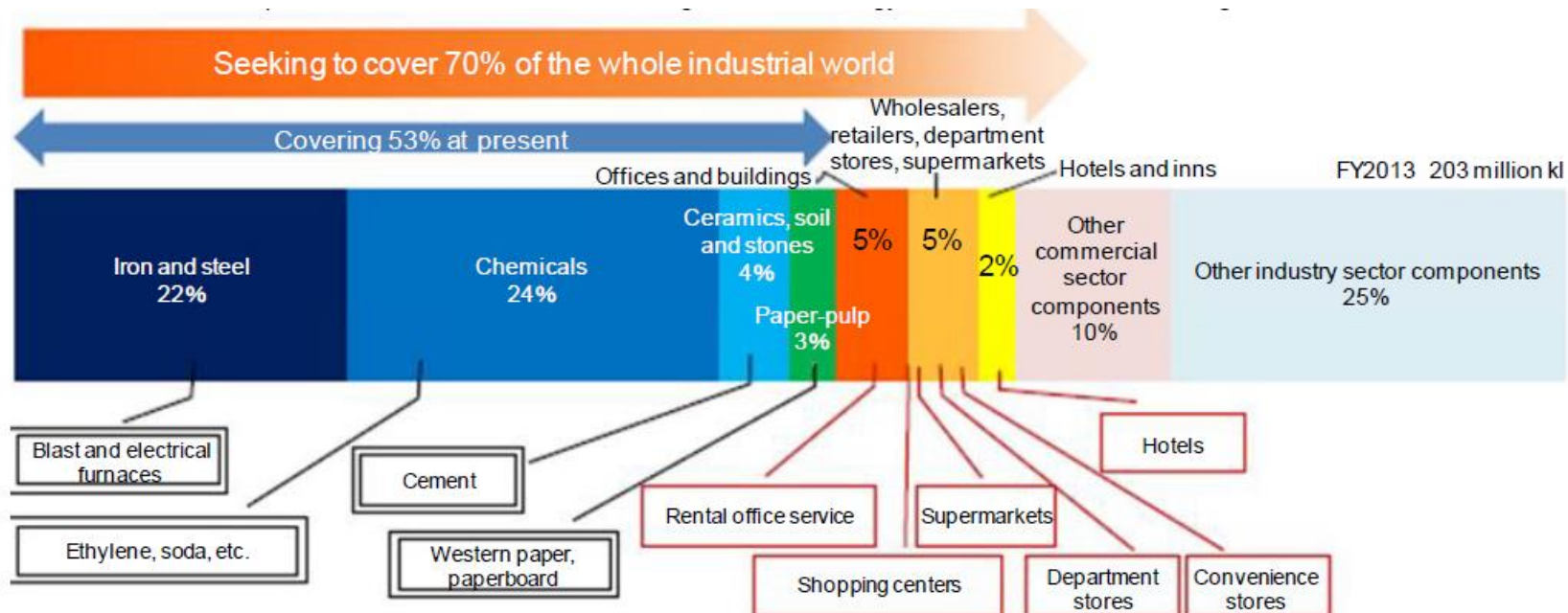


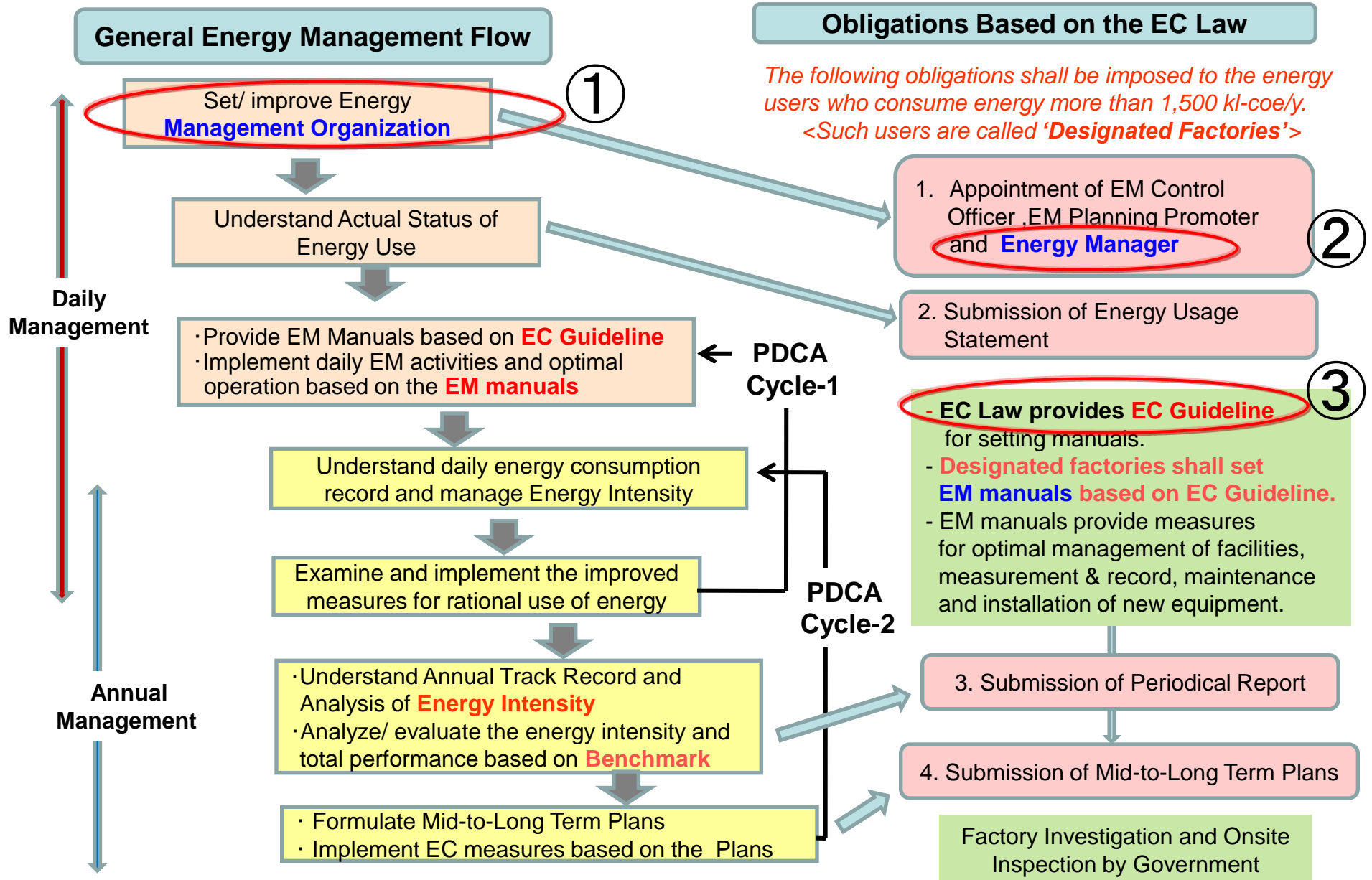
Prime Minister's Statement

We plan to expanding the benchmark system to the service industry with the coverage becoming 70% of total energy consumption of industry/commercial sectors.

Dialogue between public and private sectors

Based on the Japan Revitalization strategy 2015(Cabinet decision on June 30,2015), the dialogue between the public and private sectors for future investment is held for the two sectors to clarify the path the Japanese economy should follow in the age of uncertainties growing through the intensification of global competition and the rapid technological innovation and to share the government's desirable environment development course and the direction of private sector investment. The third dialogue dealt with energy-related investment and challenges.



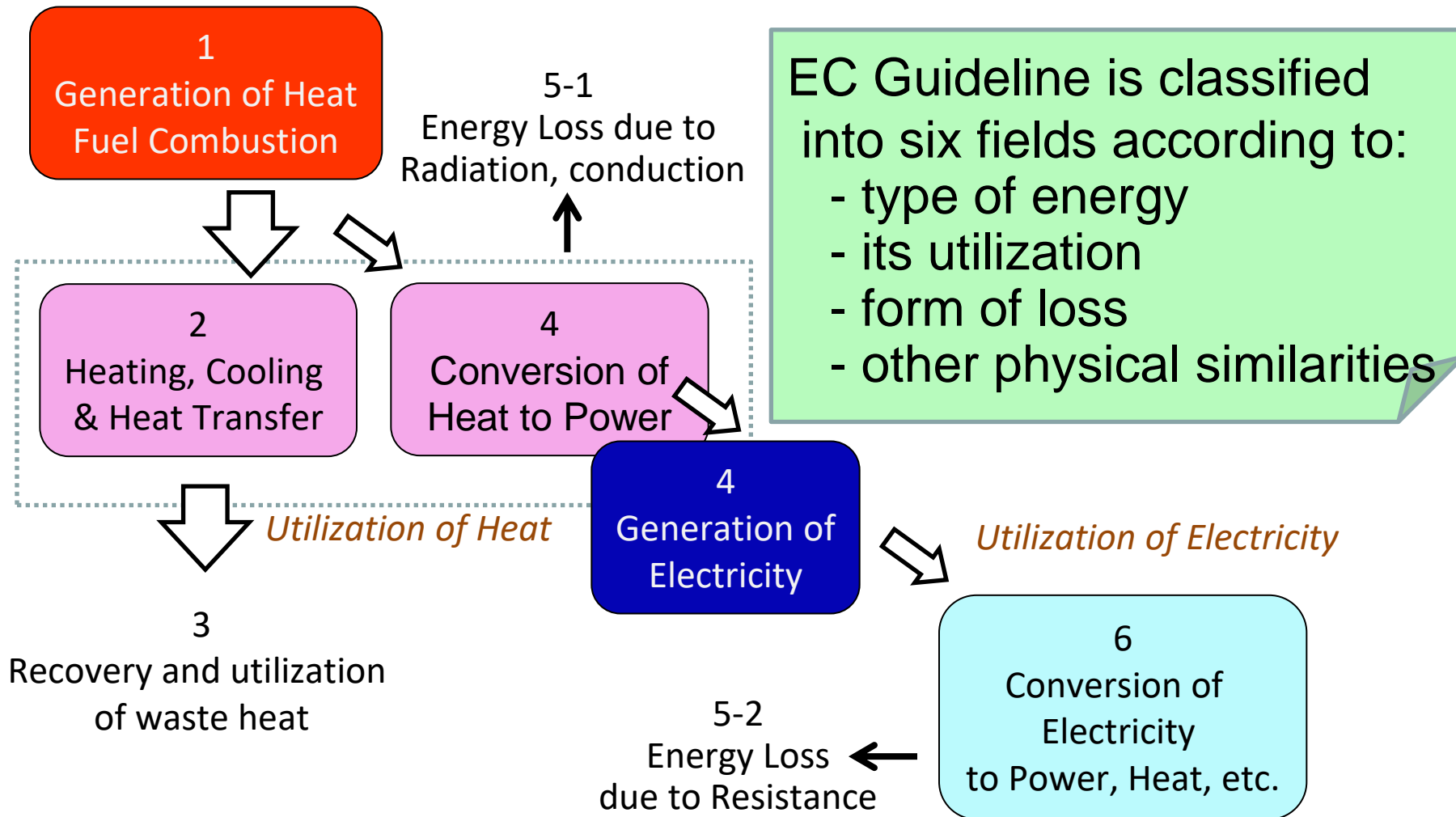


3. Overview of “EC Guideline”

Functions of Equipment		Fuel Combustion	Heating, Cooling, and Heat Transfer	Waste Heat Recovery	Conversion of Heat to Motive Power	Prevention of Energy Loss	Conversion of Electricity to Motive Power
PDCA Action							
Standards Components	Management						
	Measurement & Recording	<i>In order to promote Energy Efficiency in Factory, it is important to manage facilities so as they kept in as good condition as that can be operated in most energy efficient state.</i>					
	Maintenance & Inspection						
	Necessary Measures when Installing New Facilities						
Targets Components	Improvement of Existing Facilities	<i>“EC Guideline” describes action standards to drive EE&C PDCA Spiral-Up cycle, and “EM Manual” according to the “EC Guideline” developed for each particular facility enables steady advance in EE&C.</i>					
	New Installation and Updates of Facilities						

Six Fields of EC Guideline for a Factory

Unified coordination ... to avoid overlapping and missing.

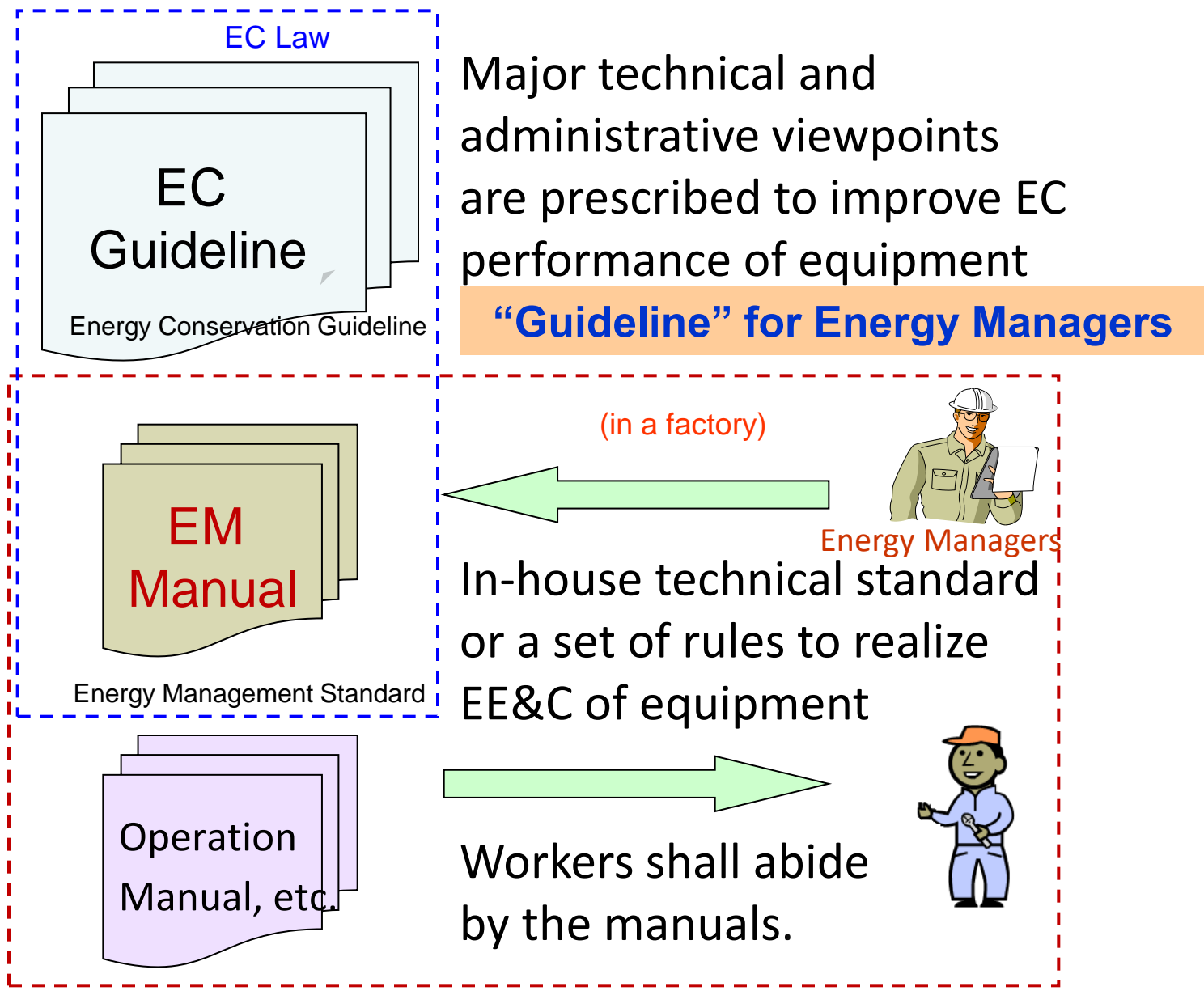


Merit of EC Guideline

- "EC Guideline" provides **energy consumers** with a **guideline for EE&C activities**.
- By developing and implementing "EM Manual" according to the "EC Guideline", **energy consumers can ensure advances in EE&C and obtain EE&C future improvement plan** easily.
- "EC Guideline" encourages **inferior energy consumers to catch up**.
- "EC Guideline" can be used as **a checklist for energy audit**.
- "EC Guideline" provides **regulators with grounds for instructions** to energy consumers.

The **Energy Conservation Law** requests to establish “**EM Manual**” according to the **EC Guideline** by every facility using energy.

- The EM Manual must cover the followings:
1. operation
 2. measurement and recording
 3. maintenance
 4. future replacement



2. Outline of Japan's Energy Conservation Act Measures Pertaining to Factories

Energy Conservation (EC) Guideline

Key Persons for Energy Management

Section 1 Measures Pertaining to Factories

Subsection 1 General Provisions

Decision-making Criteria for Business Operators
Guidance and Advice

Subsection 2 Measures Pertaining to Specified Business Operators

Designation of Specified Business Operators

Energy Management and Supervision Officer

Energy Management Planning Promoter

Designation of Type 1 Designated Energy Management Factories

Preparation of Medium-to-long-term Plans

Regular Reporting

Instructions and Orders for Rationalization Plan

Recommendations for Shift to Non-fossil Energy

Subsection 3 Measures Pertaining to Specified Chain Business Operators

Subsection 4 Measures Pertaining to Licensed Managing and Supervising Business Operators

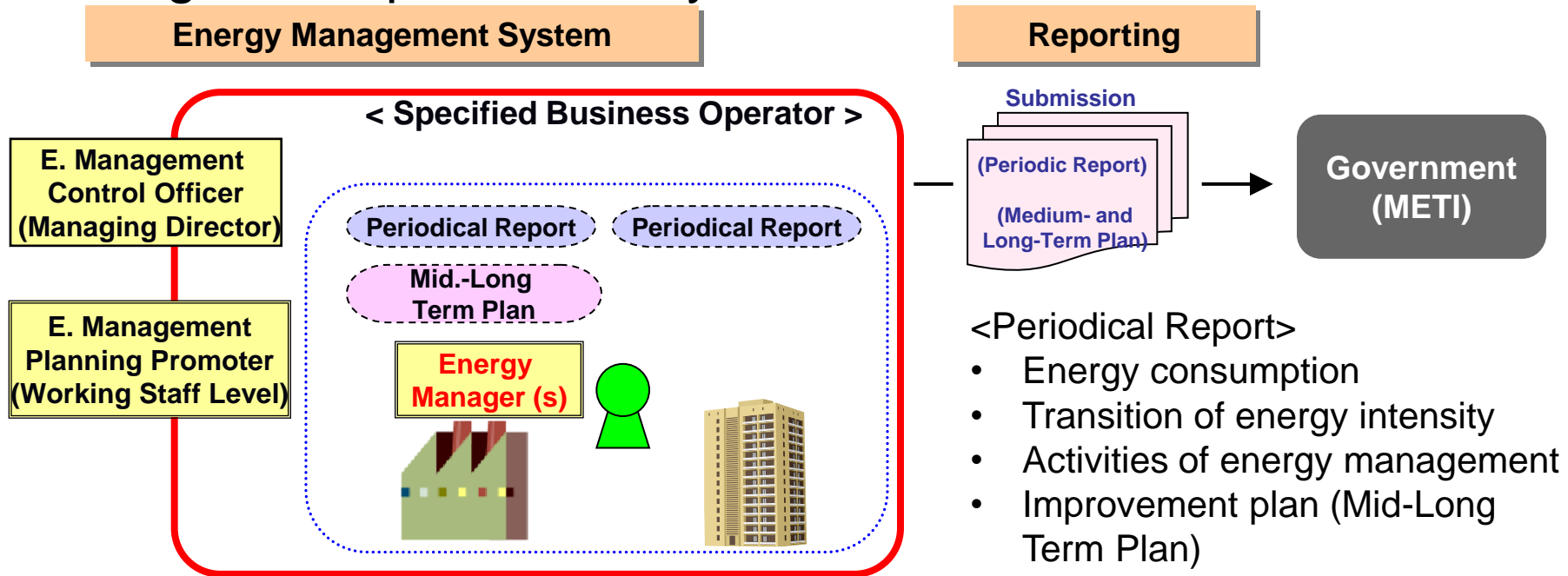
Subsection 5 Measures Pertaining to Management-related Business Operators

Subsection 6 Miscellaneous Provisions

Section 2 **Energy Managers**

-
-

- Establishment of a company-wide energy management system is stipulated in the EC Law.
- Daily energy management is implemented on a plant-by-plant and facility-by-facility basis
- Qualification/certification (examination/seminar) of Energy Managers are performed by ECCJ



<Periodical Report>

- Energy consumption
- Transition of energy intensity
- Activities of energy management
- Improvement plan (Mid-Long Term Plan)

<Daily Energy Management>

- Monitoring and recording of energy consumption
- Maintenance of Facilities, etc.

Energy Management Control Officer

Condition: No specific qualification is required, however, an executive-level employee is assumed.

A person who shall supervise and manage the implementation of the energy management as part of the business operation.

- Role:
1. Promotion of efforts with management perspective
 2. Coordination of Medium- and Long-term Plan
 3. Planning for on-site management, implementation of practical business affairs

Energy Management Planning Promoter

Condition: A person who has completed training courses concerning energy management or who has a qualified energy manager's license.

Role: Practical assistance for an energy management control officer

Type 1 Energy Manager and Type 2 Energy Manager

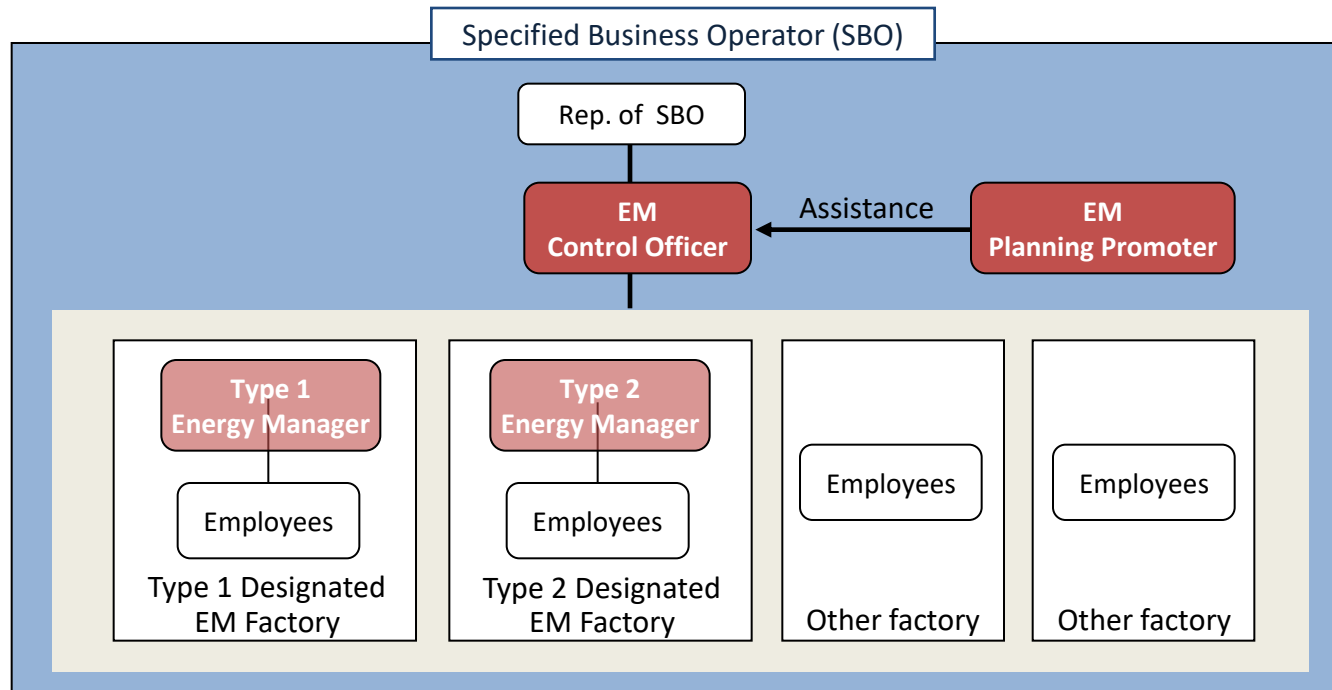
Condition: A person who has completed training courses concerning energy management or who has a qualified energy manager's license.

Role: They shall implement management in the workplaces such as designated energy management factory. Also, they shall collaborate with an energy management control officer and energy management planning promoter to implement systematic efforts based on management judgment and to take effective measures for energy conservation for a company as a whole.

Appointment of Energy Management Control Officer and EM Planning Promoter

◆ Specified Business operators and Specified Chain Business Operators shall appoint “Energy Management Control Officer” and “Energy Management Planning Promoter”

	Energy Management Control Officer	Energy Management Planning Promoter
Condition for appointment	<ul style="list-style-type: none"> Person who supervises and manages business operation 	<ul style="list-style-type: none"> Person who has a Qualified Energy Manager’s License Person who has completed “Energy Management Seminar”
Role	<ul style="list-style-type: none"> Promotion of energy conservation with management perspective Coordination of mid-to-long term plan Guiding Energy Managers 	<ul style="list-style-type: none"> Practical assistance for Energy Management Control Officer



Energy manager: core of the factory's Energy Management

”Energy Manager” is a key person to promote EC.

Top Management



Advising on;
• Improvement plan of EE equipment
• Management of EE&C organization

- Making Periodical Report
- Keeping the energy consuming facilities in sound condition
- Carrying out “Energy Audit”

Energy Manager



- Instruction
- Technical advice

**Engineers
(Middle Management)**



Practical guideline to support Energy management

- EC Guidelines
- Energy Management Manual
- Numerical target of major energy intensity equipment

Under circumstances where there is no Energy Manager Certification System, it is recommended for cooperative companies to appoint a tentative Energy Manager among Engineers.

Appointment of Energy Manager -Qualification and obligation

- ◆ “Type 1 & 2 Designated Energy Management Factories” are obliged to appoint Following number of “Type 1 Energy Managers” or “Type 2 Energy Managers” depending on the industrial category and annual energy consumption
- ◆ Type 1 & 2 Energy Manager play a central role to promote energy management in Type 1 & 2 Designated Management Factories

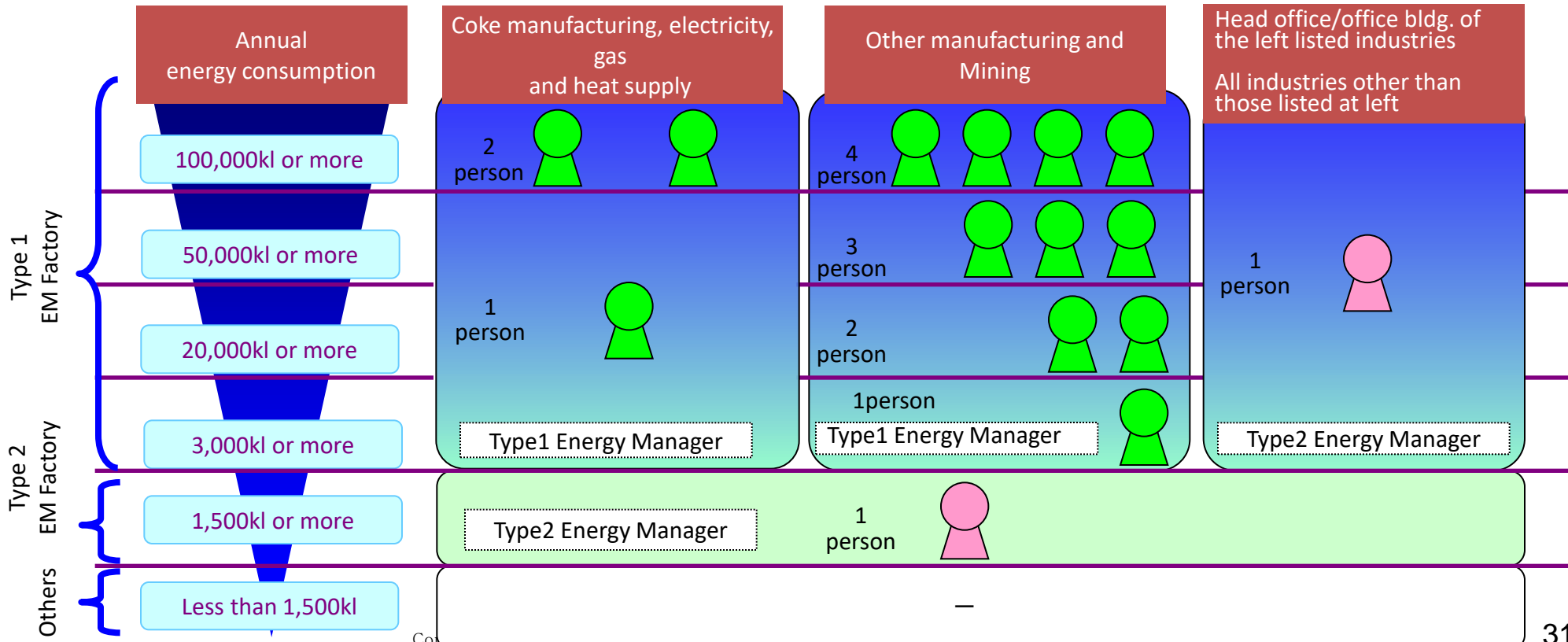
Type1: Qualification of Energy Manager

- Person who has a Qualified Energy Manager’s License

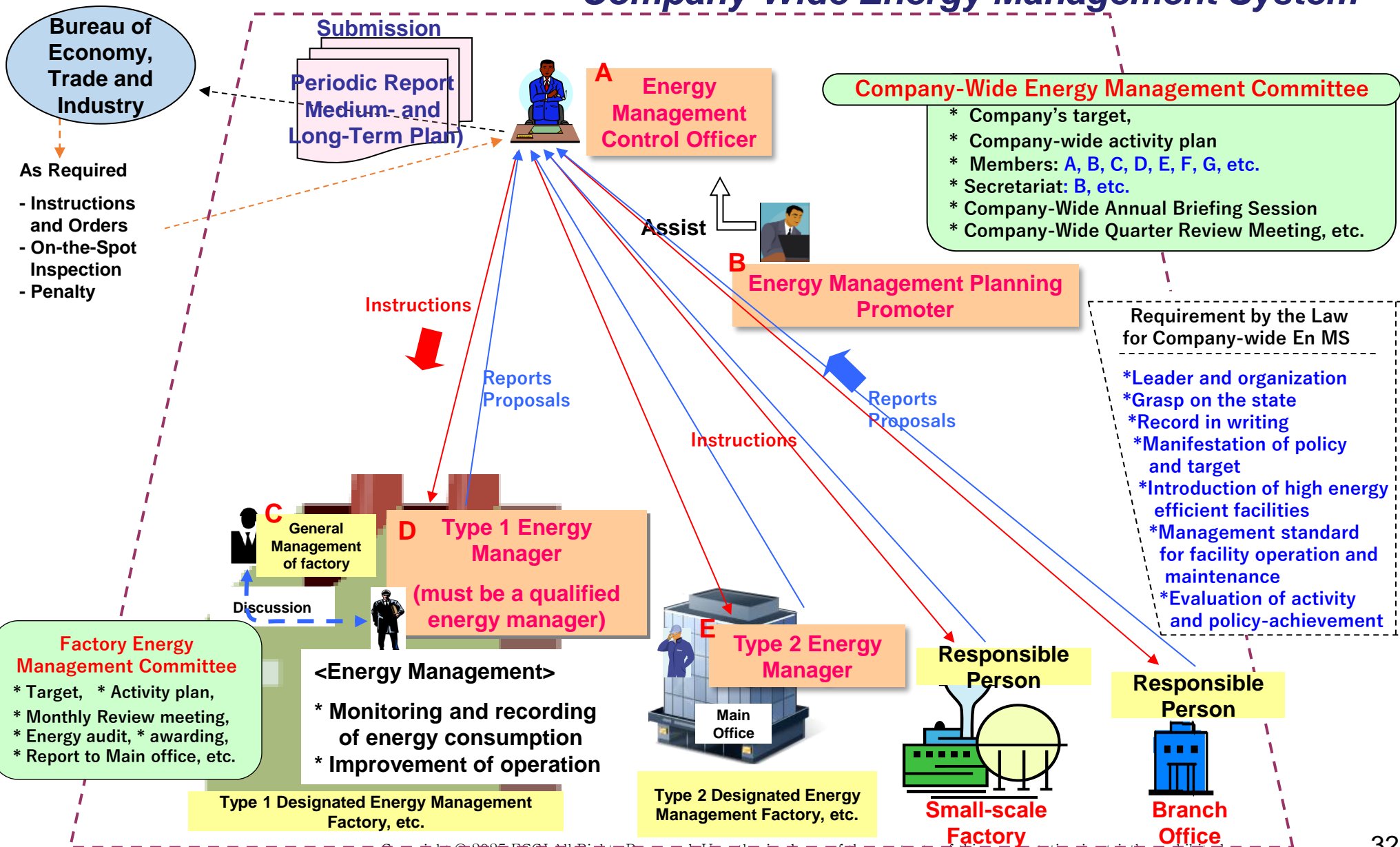


Type2: Qualification of Energy Manager

- Person who has a Qualified Energy Manager’s License
- or
- Person who has completed Energy Management Seminar



Company-Wide Energy Management System



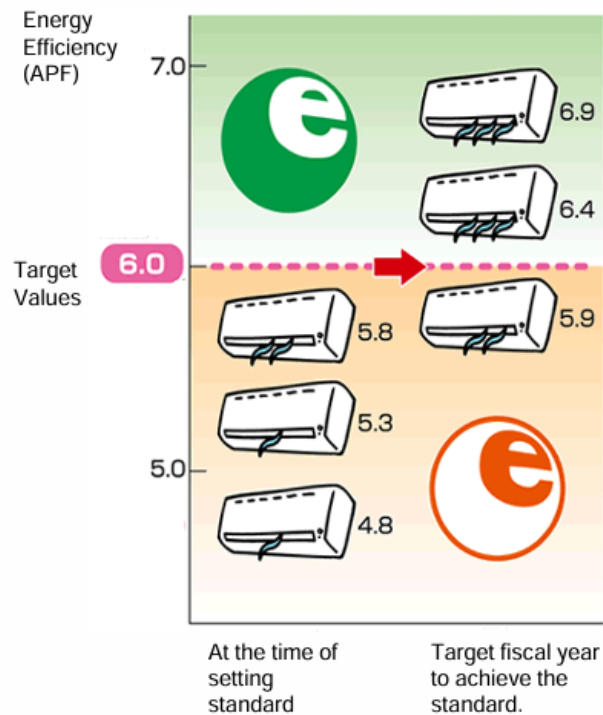
2. Outline of Japan's Energy Conservation Act

Regulations for Energy-consuming Equipment

Energy efficiency Standard: Outline of Top Runner Program

Purpose

Top Runner program aims to raise energy performance of future products above that of the most energy efficient product in the current market.




Achievement of the standard is determined by weighted average for each category.


- Under the Energy Conservation Law, energy efficiency target for household appliances and vehicles are determined by Top Runner method, and manufacturers (and importers) are obligated to meet the standards.

Labeling : Energy-Saving Labeling System

The energy-saving labeling system has been introduced to inform consumers of energy efficiency and to promote energy-efficient products.

Examples of energy-saving labeling

	Energy conservation standard achievement percentage 108%	Annual Electricity Consumption 175kWh/year
	Target year FY2012	

	Energy conservation standard achievement percentage 91%	Energy Electricity Consumption 206kWh/year
	Target year FY2012	

優良省エネ製品 
○○年達成率 ○○○%
High Energy-Efficient Appliance

Label for the product's main unit

This labeling system covers the following **18** Top Runner products:
 air conditioners, refrigerators, TV sets, freezers, fluorescent lights, electric toilet seats, electric rice cookers, microwave ovens, DVD recorders, gas cooking appliances, gas water heaters, oil water heaters, computers, magnetic disk units, gas/oil space heaters, transformers, routers, and switching units.

Thank you for your kind attention



For More Information

The Energy Conservation Center, Japan

<https://www.asiaeec-col.eccj.or.jp/index.html>

Japanese Business Alliance for Smart Energy Worldwide (Established in 2008)

<https://www.jase-w.eccj.or.jp/eng/index.html>

Revision History of Energy Conservation Act

Industry	Residential/Commercial	Transport
1979 Establishment Designated Energy Management Factories Guidance for Buildings and Appliances		Act on the Rational Use of Energy has been amended time to time to cope with the changing market situation
1983 Introduction of licensed energy manager system	1993 Amendment: Periodical reporting	
1993 Introduction of periodical reporting system	1998 Amendment: Introduction of Top Runner Program	
1998 Amendment: Expand coverage of factories	2002 Amendment: Energy Management of Office Buildings	2005 Amendment: Reporting System on Energy by Carriers
2005 Amendment: Integration of Heat and Power Control	2008 Amendment: Energy Management of Office Buildings	
2008 Amendment: Company based rather than plant based regulation, introduction of Bench Marking.	2013 Amendment on building EE&C evaluation to primary energy basis, introduction of building material TR	
2013 Evaluation of Peak Shift	2015 Separate Establishment of Energy Conservation Law for Buildings	
2015 SABC class system		2018 Amendment on freight owner responsible for annual reporting system
2018 Amendment: joint energy efficiency implementation		
2023 Amendment: transition to non-fossil energy on the demand side		

Target products

Construction materials are underlined.

<in 1999>

1. Passenger Vehicles
2. Freight Vehicles
3. Air Conditioners
4. TV sets
5. Video Tape Recorders
6. Fluorescent Lamps*1
7. Copying Machines
8. Computers & Servers
9. Magnetic Disk Units
10. Refrigerators
11. Freezers

<Addition in 2002>

12. Space Heaters (using gas/oil)
13. Gas Cooking Appliances
14. Gas Water Heaters
15. Oil Water Heaters
16. Electric Toilet Seats
17. Vending Machines
18. Transformers

<Addition in 2013>

24. Multifunction Devices
25. Printers
26. Electric Water Heaters
(Heat Pump Type)
27. AC Motors
28. LED Lamps*1
29. Insulation Materials

<Addition in 2006>

19. Electric Rice Cookers
20. Microwave Ovens
21. DVD Recorders

<Addition in 2014>

30. Sashes
31. Double-glazed Glass

<Addition in 2009>

22. Routers
23. Switching Units

<Addition in 2017>

32. Showcase (for Cold or Frozen Food)

*1: Add LED equipment and incandescent bulb in 2019