

**PROMEEC (Industry) for 2006-2007  
Seminar-Workshop  
< Initiatives and Programs of ECCJ  
on EE&C in Industry in Japan >**



**2006**

**Hideyuki TANAKA**

**Technical Expert, International Engineering Dept.  
The Energy Conservation Center, Japan**

# ***Contents***

## **< Initiatives and Programs of ECCJ on EE&C in Industry in Japan >**

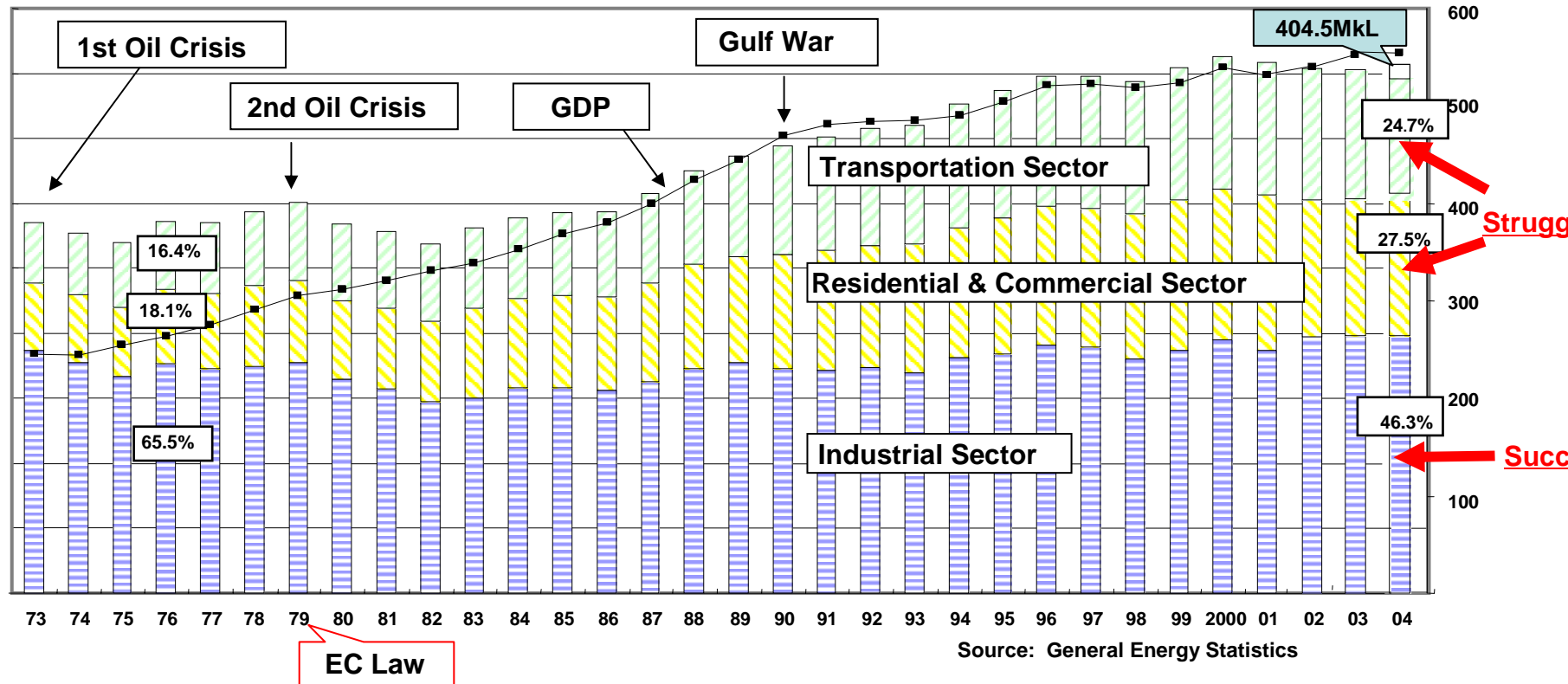
- 1. Status of Energy Consumption in Japan***
- 2. Energy Conservation Law***
- 3. ECCJ Activities & Programs for Industrial Sector***

# **1. Status of Energy Consumption in Japan**

# (1) Transition of Final Energy Consumption & GDP

million kL crude oil equivalent

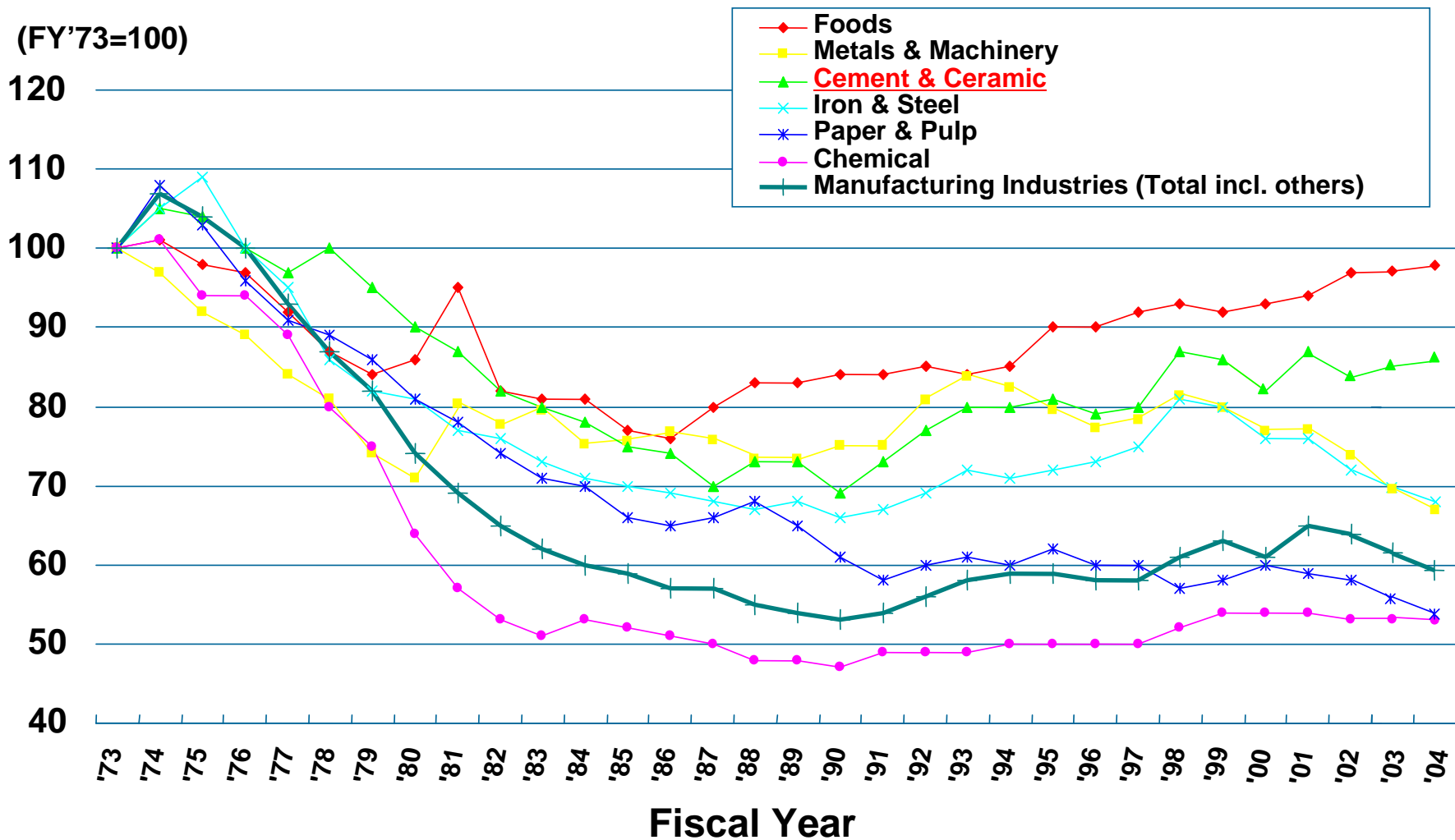
GDP (trillion yen, 1995 values)



- Japan's final energy consumption has consistently increased since the mid 1980s.
- Energy manager system has contributed greatly to carry out the energy conservation in industrial sector.
- Recently, the government policy is focused in 3 Sectors, not only Industry Sector.

# (2) Manufacturing Sector

- Trend of Energy Consumption Intensity by Sub-Sector -



## **2. Energy Conservation Law**

# (1) Outline of the Energy Conservation Law

1947 : Heat Management Regulation Enacted

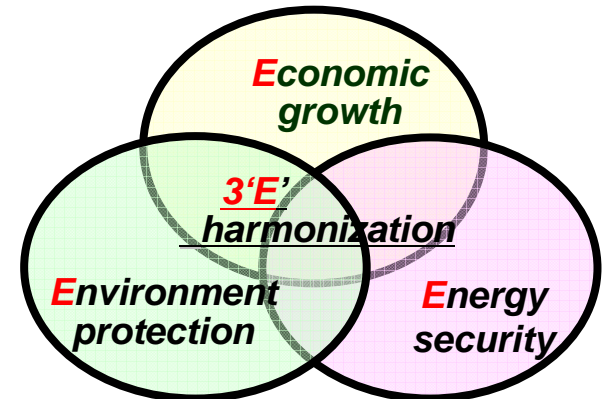
1951 : Heat Management Law Enacted

1979 : **Law Concerning the Rational Use of Energy** Enacted  
(1983,1993,1998, 2002, 2004 amended and reinforced)

## <Basic Objective>

Enhancing energy efficiency in order to achieve 3E's harmonization.

- **Regulations regarding Industries**
- **Regulations regarding Buildings**
- **Energy efficiency standard for**



**Appliances and Automobiles (Top runner program)**

## (2) Regulations for Industries

**[Target]** Reduction in Energy Consumption by 1%/year

### **[Obligations of Factories & Buildings]**

1. To make efforts to rationalize their energy use according to **the judgment standards**
2. To appoint **energy manager(s)** (Type-1 factories),  
To appoint energy management officer, and to send officer for training seminar every 3 years  
(Type-1 Buildings and Type-2 Factories)
3. **Report** the status of energy consumption every year
4. Submission of **medium-to-long term improving plan** (Type-1)

### **<Roles of Energy Managers under the Law>**

1. **To maintain energy-using facilities in sound conditions**  
following the Guidance (Judgment Standards) by the Law
2. **To recommend energy efficiency improvement of the facilities**  
(The management must give consideration to the recommendations in high regard)



# (3) Designated Energy Management Factory under the Energy Conservation Law

Energy consumption	Classification	
Include Oil [Heat and Electricity]	Following Industries - <b>Manufacturing</b> - Mining - Electricity Supply - Gas Supply - Heat Supply	- All industries other than those listed at left, (e.g. office <b>buildings</b> , department stores, hotels, schools, hospitals, government offices, and amusement parks) - Head office/office bldg. of the industries listed at left
	<div style="border: 2px solid blue; padding: 5px;"> <b>Designated Energy Management Factory</b> </div>	<div style="border: 2px solid red; padding: 5px;"> <b>Type-1</b>  <b>Designated Energy Management Factory</b> </div>
3,000kL/y	<div style="border: 2px solid cyan; padding: 5px;"> <b>Type-2</b>  <b>Designated Energy Management Factory</b> </div>	
1,500kL/y		
0kL/y		

**[Regulatory obligations]**

- **Appointment of energy management officer**
- Regular reporting of energy utilization
- **Preparation & Submission of mid- & long- term EC plan** (Participation of Qualified Person for Energy Management is needed at the time of this plan preparation.)

**[Regulatory obligations]**

- **Appointment of energy management officer**
- Regular reporting of energy utilization

**[Regulatory obligations]**

- **Appointment of energy manager(s)**
- Regular reporting of energy utilization
- **Preparation and submission of mid- & long- term EC plan**

# Reinforcement of Energy Conservation Measures for Factories and Business Establishments through the Integration of Heat and Electricity Control

Old system (to FY2005)

Designated **heat** management factory

Type 1: 3,000kL/y or more [2,858 Factories]

Type 2: 1,500kL/y or more [2,129 Factories]

Designated **electricity** management factory

Type 1: 12million kWh/y or more [4,534 Factories]

Type 2: 6million kWh/y or more [5,087 Factories]

Integrated  
heat-and-  
electricity

New system (from FY2006)

Designated **energy** management factory

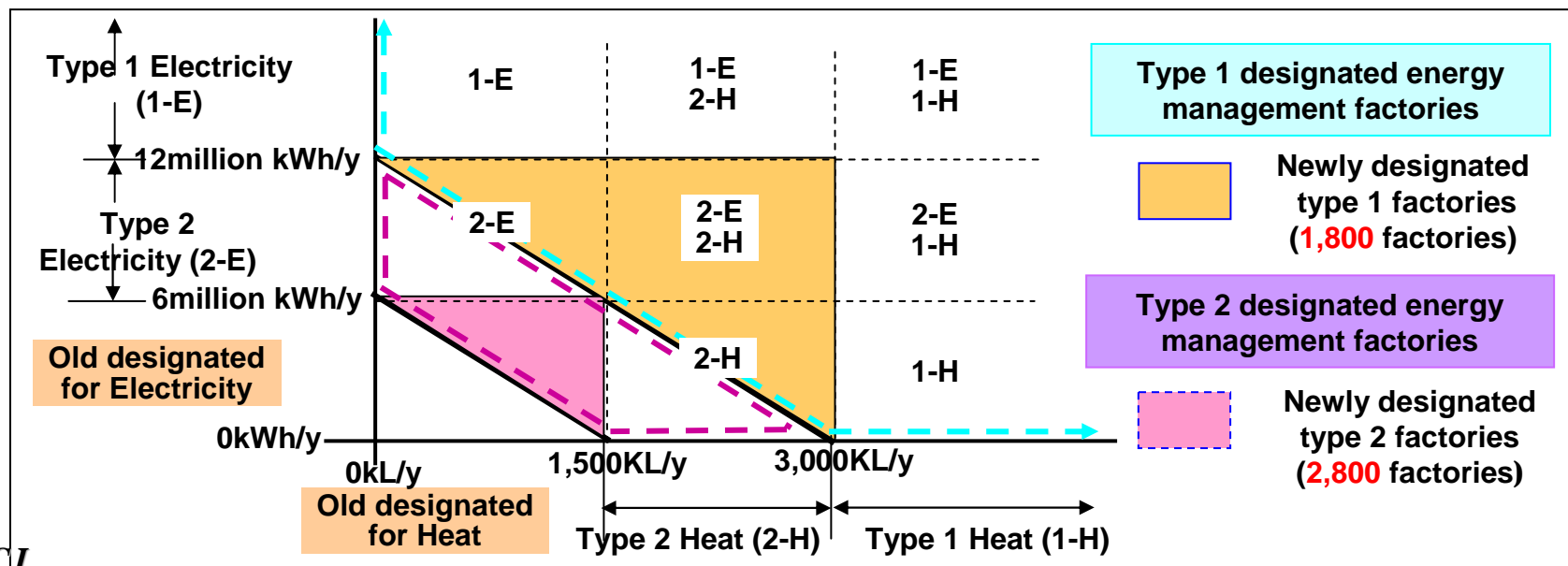
Type 1: 3,000kL/y or more

Type 2: 1,500kL/y or more

[Electricity: 1MWh = 9.76GJ (Normal case)

Crude oil: 1kL = 38.76GJ or 1GJ = 0.0258kL]

Total designated factories: 10,000 → 13,000



## (4) Number of **Energy Managers** Required by the Law

### Type-1 Designated Energy Management Factories

#### **Mining, Electricity/Gas/Heat supply factories**

Fuel consumption, annually	Number Required
3,000 or less than 100,000kL-oe	1
100,000kL-oe or more	2

### Type-1 Designated Energy Management Factories

#### **Manufacturing factories other than those listed above**

Fuel consumption, annually	Number Required
3,000 or less than 20,000kL-oe	1
20,000 or less than 50,000kL-oe	2
50,000 or less than 100,000kL-oe	3
100,000kL-oe or more	4

Energy managers should be selected from licensed persons.  
The License to be acquired through the state examination.

# (5) Supportive measures

## Low-interest loan

Project plan should be approved by the ministry based on the Law

Approval condition:

- (1) To be satisfied with “Judgment Standards (guidance for introduction of high energy efficiency equipments)” in Energy Conservation Law.
- (2) Total energy saving in the plant is 100kL or more per year.

Preferential interest rate loan: (for example)

Interest rate: 2.2%, loan period: 1~30years, loan coverage: 50%  
through Development Bank of Japan, or through Japan Finance Corporation for Small and Medium Enterprise, etc.

## Tax Incentives for Investment of Energy Conservation Facilities

( 74 facilities only for S&M enterprises as of June 2005)

"Tax Incentive System for Promotion of Investment in Reformation of Energy Supply and Demand Structure" was established in 1978.

(1) Deduction for corporate tax or income tax

**7%** of acquisition cost of equipment

(Upper limit: 20% of corporate tax or income tax)

or

(2) Special depreciation

**Up to 30%** of acquisition cost of equipment in addition to ordinary depreciation

## **(6) Energy Conservation Programs towards 2010 in the Industrial Sector**

- 1. Thorough implementation of energy efficiency required by the regulations in all designated factories & workplaces through energy audit & Follow up under severer administrative set-up**
- 2. Tighter regulations for expanding the number of designated factories & workplaces**
- 3. Higher efficient energy utilization in a coordinated manner in multiple factories & workplaces**
- 4. Voluntary Environmental Action Plan of KEIDANREN**  
(KEIDANREN = Japan Federation of Economic Organization)
- 5. Supportive measures (Tax, Loan, Subsidy) for introducing energy efficient equipment and facilities**
- 6. Capacity building (Energy Manager)**
- 7. Commendation of excellent energy managing factories**

# Self-help efforts in Enterprises

## Energy Management

Observation (fact finding) → Control → Improvement

Large effect

Introduction of newest technology & facilities

Task force

*a large amount of investment*

High level  
(Investment level)  
<Top management>

Project

Technological improvement,  
Adoption of high efficiency equipment

Middle level  
(Technological level)  
<Engineers>

**Kaizen by Sho-shudan**  
(Small group)

Keeping the operation standard,  
small maintenance, tuning up the  
operational conditions,

*a small amount of investment*

Low (easy) level  
(operational &  
facility management level)  
<Workers>

< Minimum requirement: Monitoring system  
or measuring tools of energy consumption >

Every departments / Persons in charge of every management  
should be participating to the activities. < T Q M >

Small effect

# **3. ECCJ Activities & Programs for Industrial Sector**

# (1) Profile of ECCJ

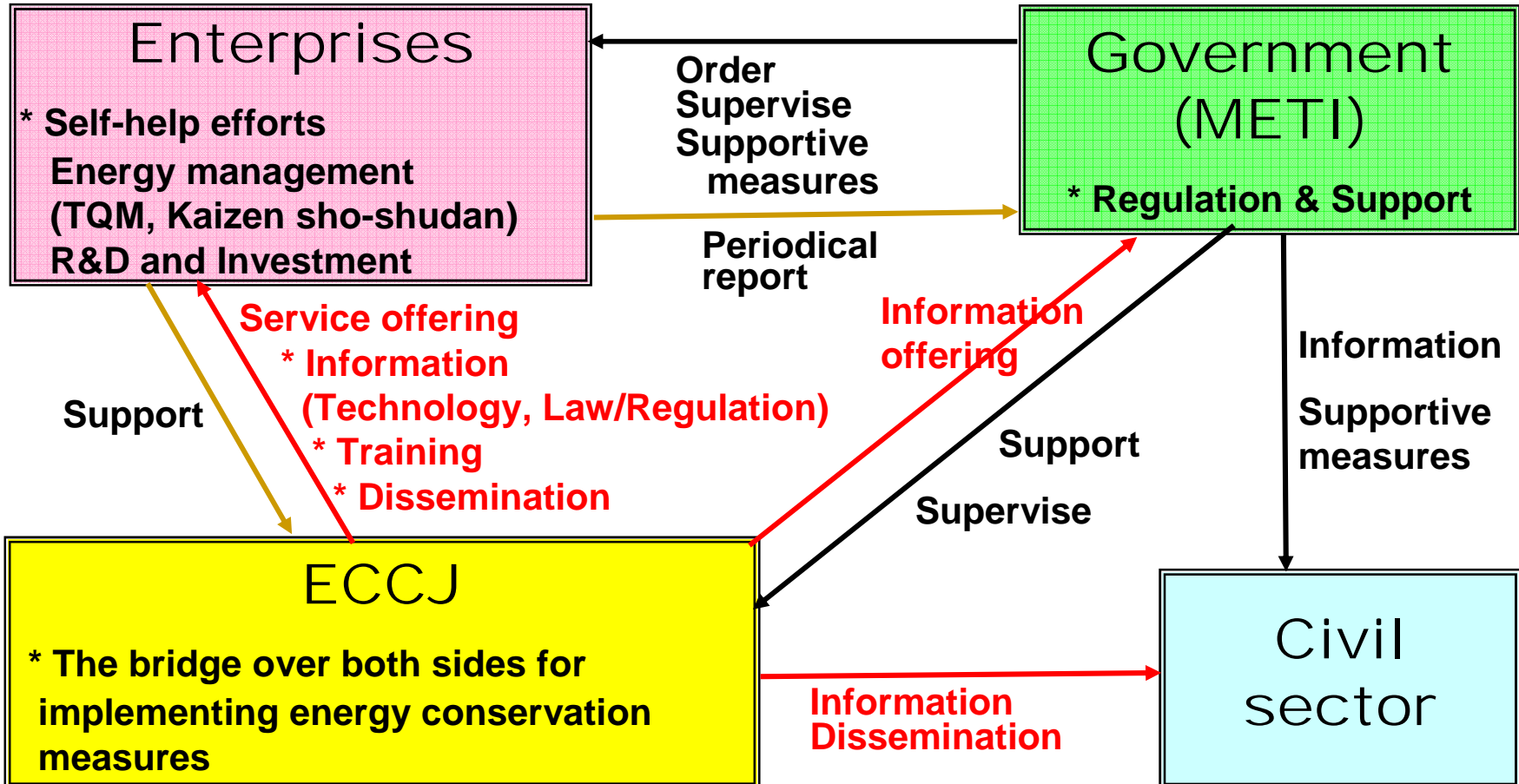
- Legal status:** \* **NPO**  
**Incorporated foundation under the supervision of METI**
- Establishment:** \* **1978 (just after the 2nd oil crisis)**
- Purpose of establishment:** \* **Core organization responsible for promotion of energy conservation**
- Office location:** \* **Tokyo Head office & 8 branches**
- Supporting member:** \* **2,834 companies (as of April 2005)**
- Staff:** \* **128 persons (as of April 2005)**
- Budget:** \* **41.2 million US\$ in 2005FY (@120¥/\$)**  
**Subsidies (69%), State Examination (9%), Assignments (7%), Membership Fee (4%), Others (11%)**
- Fields of activity:** \* **Industrial, Residential/Commercial, Transportation and Cross sectors**



## (2) Roles of ECCJ

ECCJ is the core organization responsible for promotion of energy conservation.  
Its activities were authorized by the Diet when the Energy Conservation Law was enacted.

### < Energy Conservation Law >



## (3) Main Activities of ECCJ

### for Industrial Sector

**Energy conservation audit services** for factories  
**Education & training** on energy conservation  
**State examination** for energy managers (assigned by the Gov.)  
**Dissemination** (conference for successful cases of EC activities  
excellent energy conserving equipment, etc.)  
**Technological development and spillover**

### for Residential, Commercial & Transportation Sectors

Energy conservation audit services for buildings  
Ranking catalogue for energy efficient appliances  
(dissemination of Top Runner Program )  
Promotion of Energy labeling system  
Energy efficiency products retailer assessment system  
International energy star program implementation  
Dissemination of Energy conservation indicator “E-Co Navigator”  
Energy education at elementary and middle schools  
ESCO research and development

### for Dissemination etc. (cross sector)

Energy conservation campaign & exhibition (ENEX)  
Commendation (Grand energy conservation prize)  
Information & data base, Publicity and publishing  
Survey and monitoring  
International cooperation & Communications

# (4) Energy Audit Implemented by ECCJ (on Request) - Basic Scheme and Program -

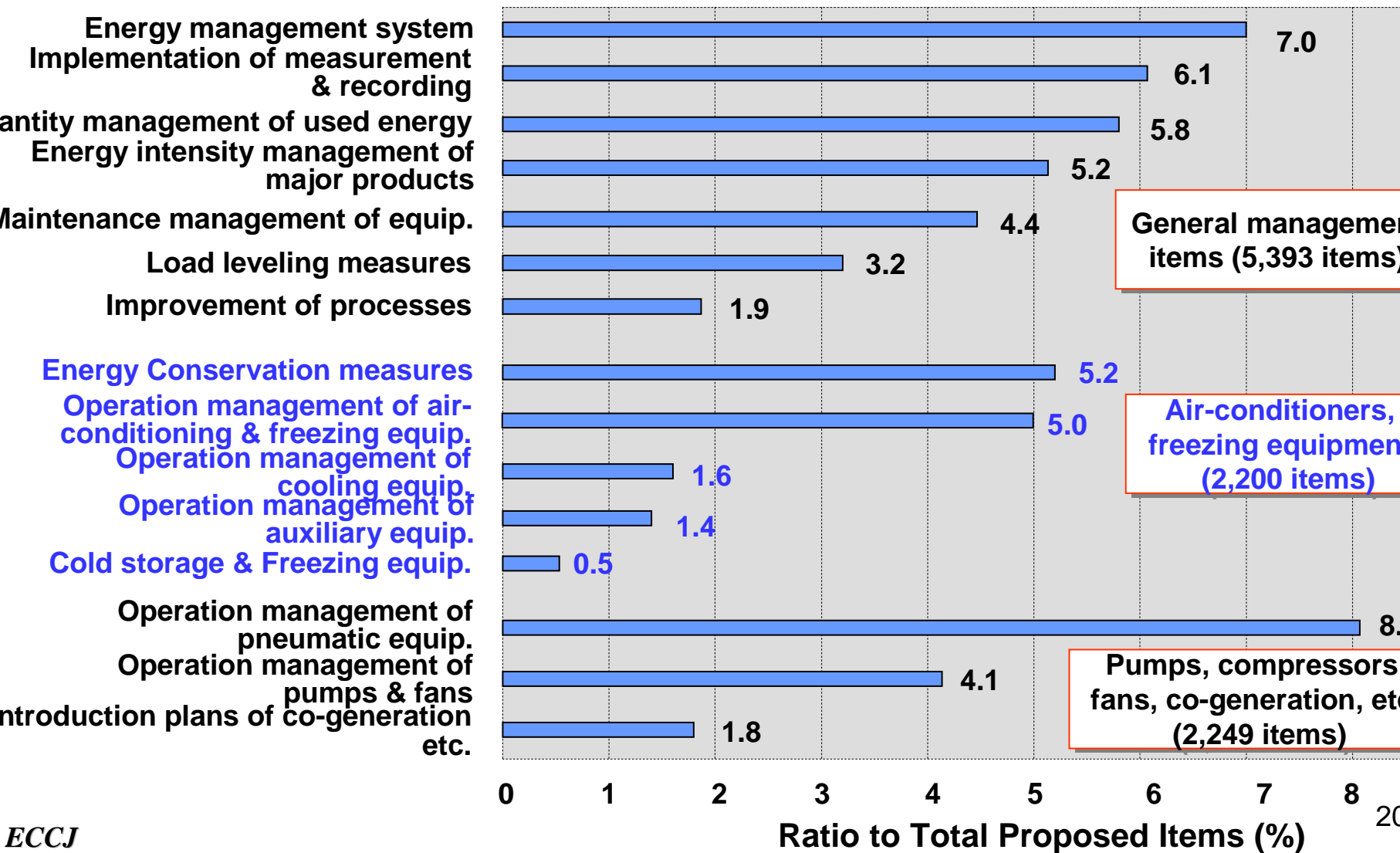
Program	Applicable factory	Overview		Funded by	
Energy Conservation Auditing for Buildings (Free-of-charge)	Buildings	<ul style="list-style-type: none"> <li>- On-site discussions</li> <li>- Document review</li> <li>- On-site inspections</li> </ul>	1 day .....	<ul style="list-style-type: none"> <li>- Report of findings</li> <li>↓</li> <li>- Proposals on improvement</li> </ul>	METI
Energy Conservation Auditing for Factories (Free-of-charge)	Medium sized factories	<ul style="list-style-type: none"> <li>- On-site discussions</li> <li>- Document review</li> <li>- On-site inspections</li> </ul>	1 day .....	<ul style="list-style-type: none"> <li>- Report of findings</li> <li>↓</li> <li>- Proposals on improvement</li> </ul>	METI
	Large Sized factories	<ul style="list-style-type: none"> <li>- Document review</li> <li>- On-site inspections with measuring devices</li> </ul>	3 days .....	<ul style="list-style-type: none"> <li>- Report of findings</li> <li>↓</li> <li>- Proposals on improvement &amp; introduction of new technologies</li> </ul>	METI/NED

Number of factories audited: **2,044** (Fiscal years 1997–2005)

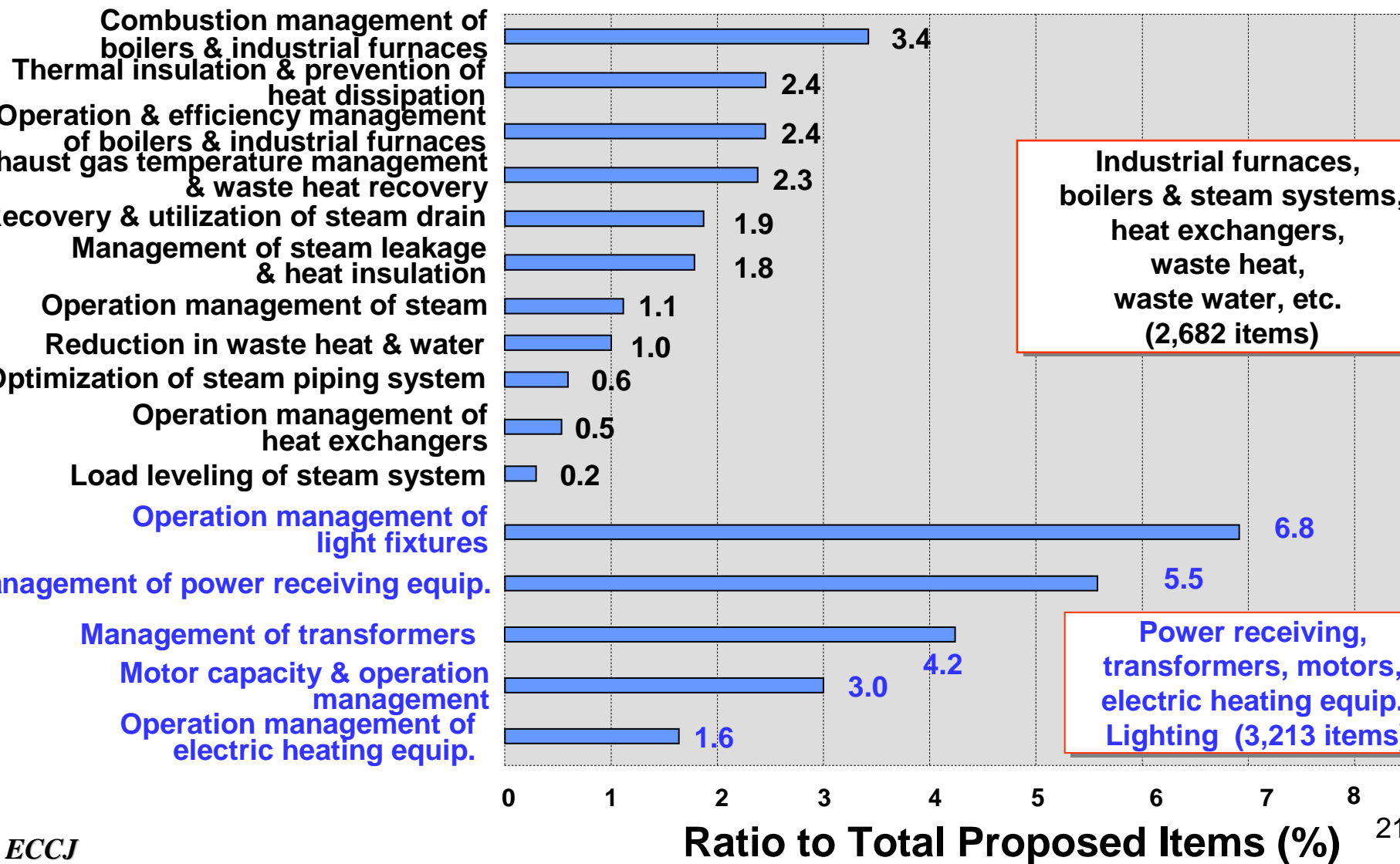
# (5) Improvement Items Proposed by Auditors

Items of frequency appeared in advice, Total proposed items = **16,052**

[ECCJ publishes the proposed measures & expected effects for the other factories' reference]



**(Continued)**



## (6) Training/Education Course by ECCJ

Education/Training Course	Training Object	Target Applicant
<b>State Examination</b> (1/y, 1d, 10areas)	Training for Energy management (Acquisition of qualification)	Person who wants to get the qualification of QPEM
<b>Training for Qualification</b> (1/y, 7d, 6areas)		
<b>Training Course for Energy Management Officer</b> (Qualification Acquirement) (1~y, 1d, 10areas)	Education/Training for a. Energy management (Grading-up of quality & skills) b. Improvement of awareness on energy conservation	- Energy Management Officer of type 1 or 2 Designated Energy Management Factory - Industry engineer
<b>Training Course for Energy Management Officer</b> (Improvement in knowledge and skills) (1/y, 1d, 10areas)		
<b>Energy Management Symposium</b> for manufacturing Industry (1/y, 1d, 10areas)	Explanation of amended law, report and plan	- Energy Manager & person in charge of energy management
<b>Energy Management Symposium for Building</b> (1~3/y, 1d, 10areas)	Explanation of amended law	- Energy management officer and person in charge of energy management

**(Continued)**

Education/Training Course	Training Object	Target Applicant
<b>Correspondence Course</b> (12/y, 6months)	<b>Training for Energy management</b> (Acquisition of qualification)	<b>Industry Engineer who wants to get the qualification</b>
<b>Short-term Training Course</b> (Preceding of examination) (1/y, 4days, 10areas)		
<b>Practice Training/ Education Course</b> 5courses/y, 6~12days, 3areas)	<b>Education/Training for</b> a. Energy management (Grading-up of quality and skills) b. General public (Improvement of awareness on energy conservation)	<b>Industry Engineer or Manager</b>
<b>Technical Education Course</b> (1~3/month, 1day, 10areas)		
<b>Technical seminar/Factory tour on Energy Conservation</b> (1~3/month, 1day, 10areas)		
<b>Top management seminar</b> (By request, 1day at Tokyo)		

# **(7) Grand prize at the National Convention of Excellent Successful Cases In Energy Conservation Activities**

<2005 FY, Central & 9 Regional Conventions>

## **1. Grand prize of METI (2)**

\* Rawson, Ltd. (Convenience store)

“Active introduction of energy conservation measures for refrigerating and air conditioning by ESCO method”

\* Idemitsu Kosan Co., Ltd., Aichi Oil Refinery

“Implementation of energy conservation in the oil refinery process: Major surgery for oil desulphurization equipment”

## **2. Prize of Director General of Agency for Natural Resources and Energy (5)**

## **3. Prize of Director General of Economy and Industry Bureaus (14)**

## **4. Prize of the Chairman of ECCJ (18)**

## **5. Fineness Prize of ECCJ (14)**

You can see details of these **Successful Cases** on the ECCJ's Web-Site.



# Presentation of Successful Cases (Best Practice)

*ECCJ organizes and implements every year from 1976*

**Mass meetings for announcement of excellent cases to disseminate and promote them.**

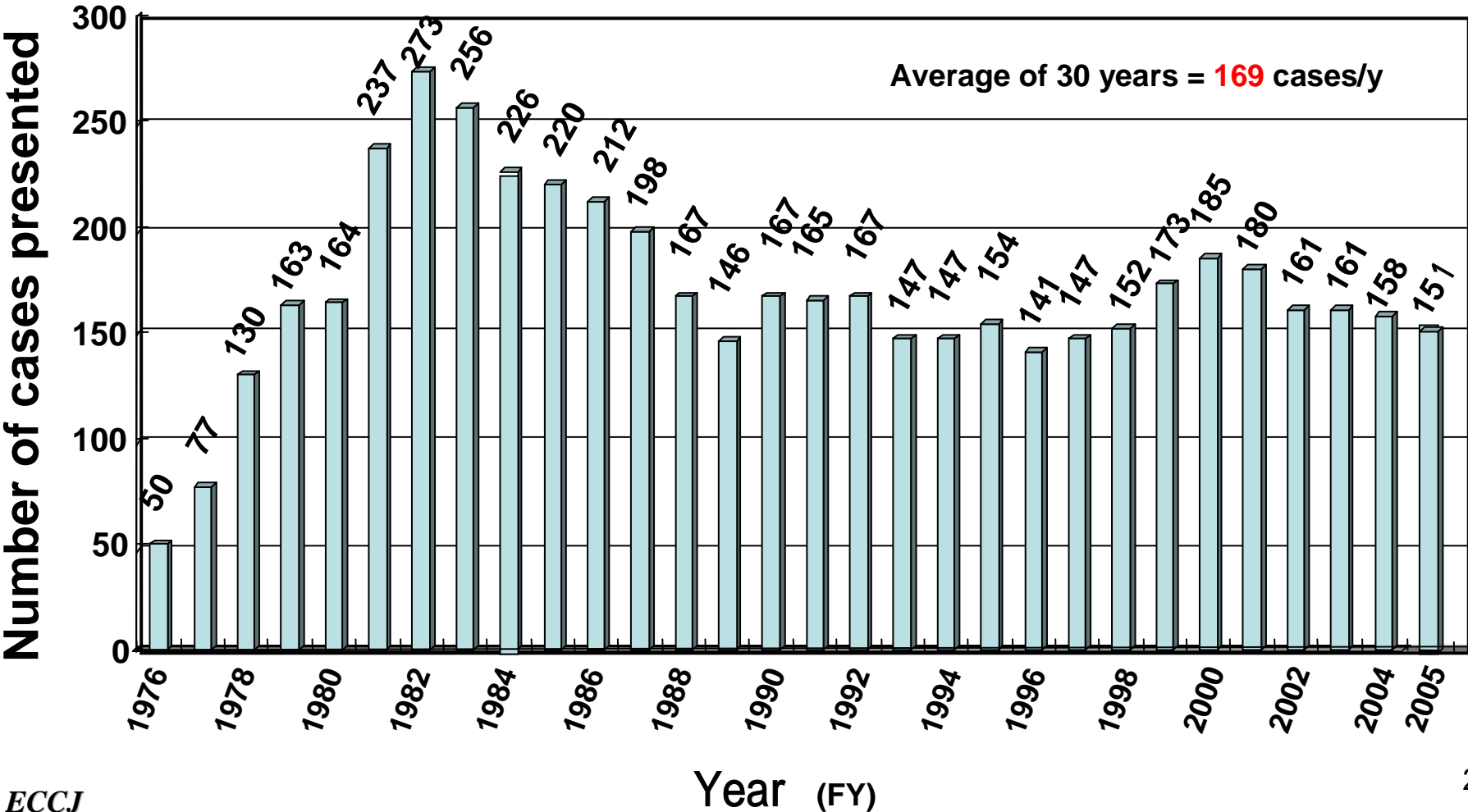
**<4,000~5,000 participants at 11 venues every year>**



Annual Central Convention in TOKYO

# Number of successful cases presented

at the National Convention of Excellent Successful Cases in Energy Conservation Activities



# **(7) Award System to Promote Energy Conservation**

**- Grand Prize for Energy Efficient Appliances / Systems -**

## **Evaluation Items**

### **1. Specification, etc.**

**(1) Specifications of Product**

**(Performance / Energy Efficiency)**

**(2) Features of Technology**

**(3) Patent / Published Papers / Actual Sales Amount**

### **2. Effect and Impact**

**(1) Effect of Energy Conservation**

**(2) Effect on Material Preservation / Easiness of Recycle**

**(3) Creativity and State of the Art**

**(4) Product / Marketability / Economy**

**(5) Impact on Environmental Improvement / Safety**

**(6) Overall Evaluation**

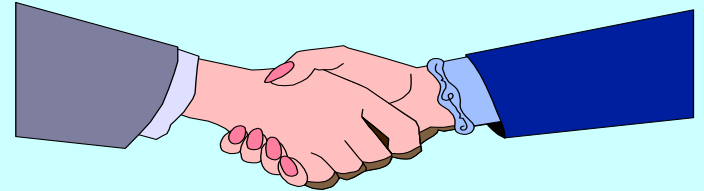
**Number of Winners: 10 – 25, Every Year**

# Commendation (2005FY)

- . **Grand prize** for high energy efficiency appliances & cars for home use & business use
  - \* **1 Grand prize** honored by Minister of Economy, Trade and Industry
    - Air conditioning & refrigerating system for convenience store (Hitachi Air-Con System Ltd.)
  - \* **2 Grand prizes** honored by Director General of Agency for Natural Resources and Energy
  - \* **10 Grand prizes** honored by the Chairman of ECCJ
- . **Factories & persons** contributed to energy conservation
  - \* **64 factories** and **85 persons** were commended.



***Thank you***



## **More Information**

**More information could be seen in  
ECCJ's Internet Home Page at :**

**[http://www.eccj.or.jp/index\\_e.html](http://www.eccj.or.jp/index_e.html)**