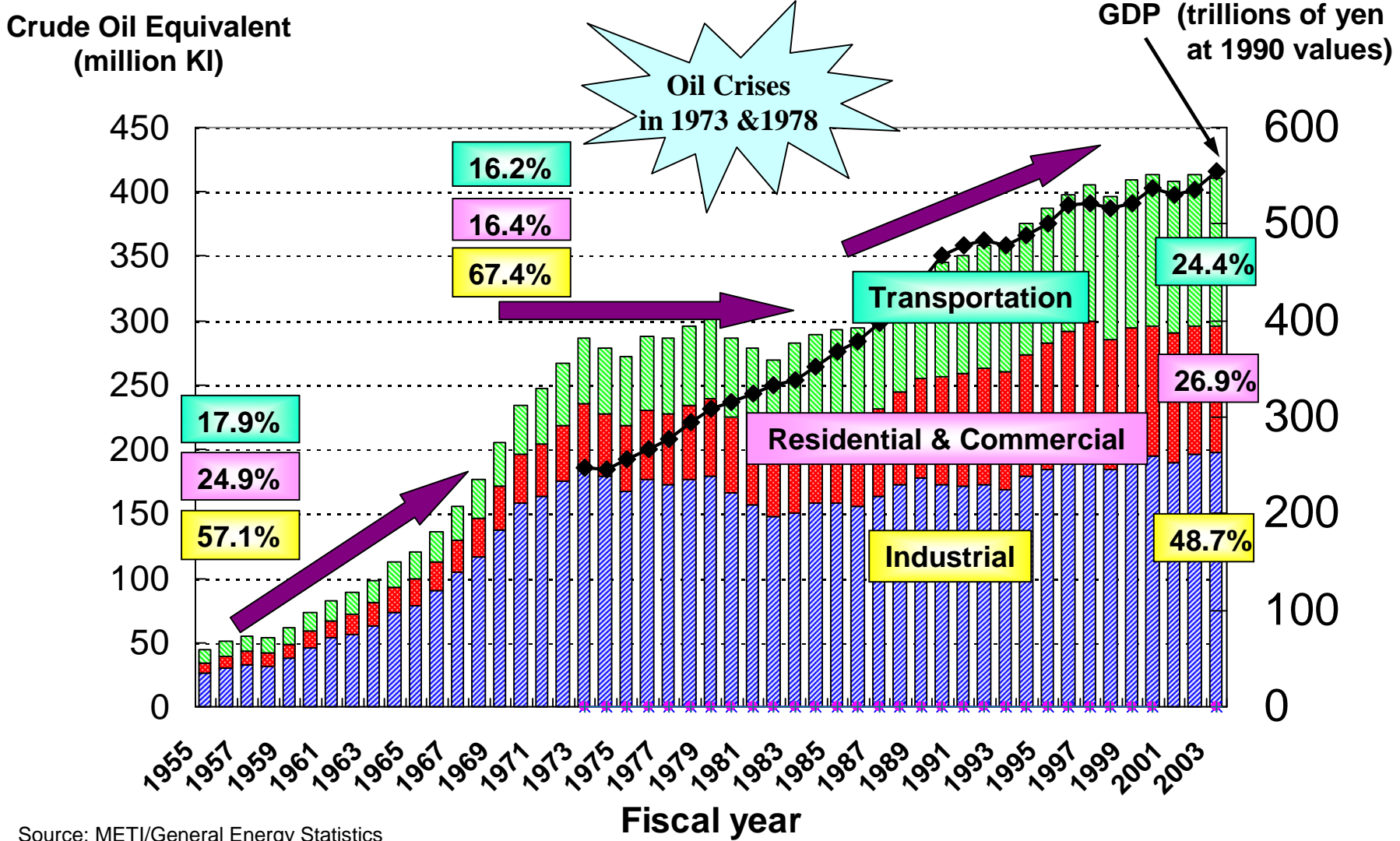


# Energy Conservation in the Japanese Industrial Sector

1. Remarkable Achievements
2. Japanese Way of Approach for E.C.
3. Common E.C. Activities across the Industries
4. Supporting Activities by ECCJ

*December, 2006*  
Shuichi KAWANO  
President ECCJ

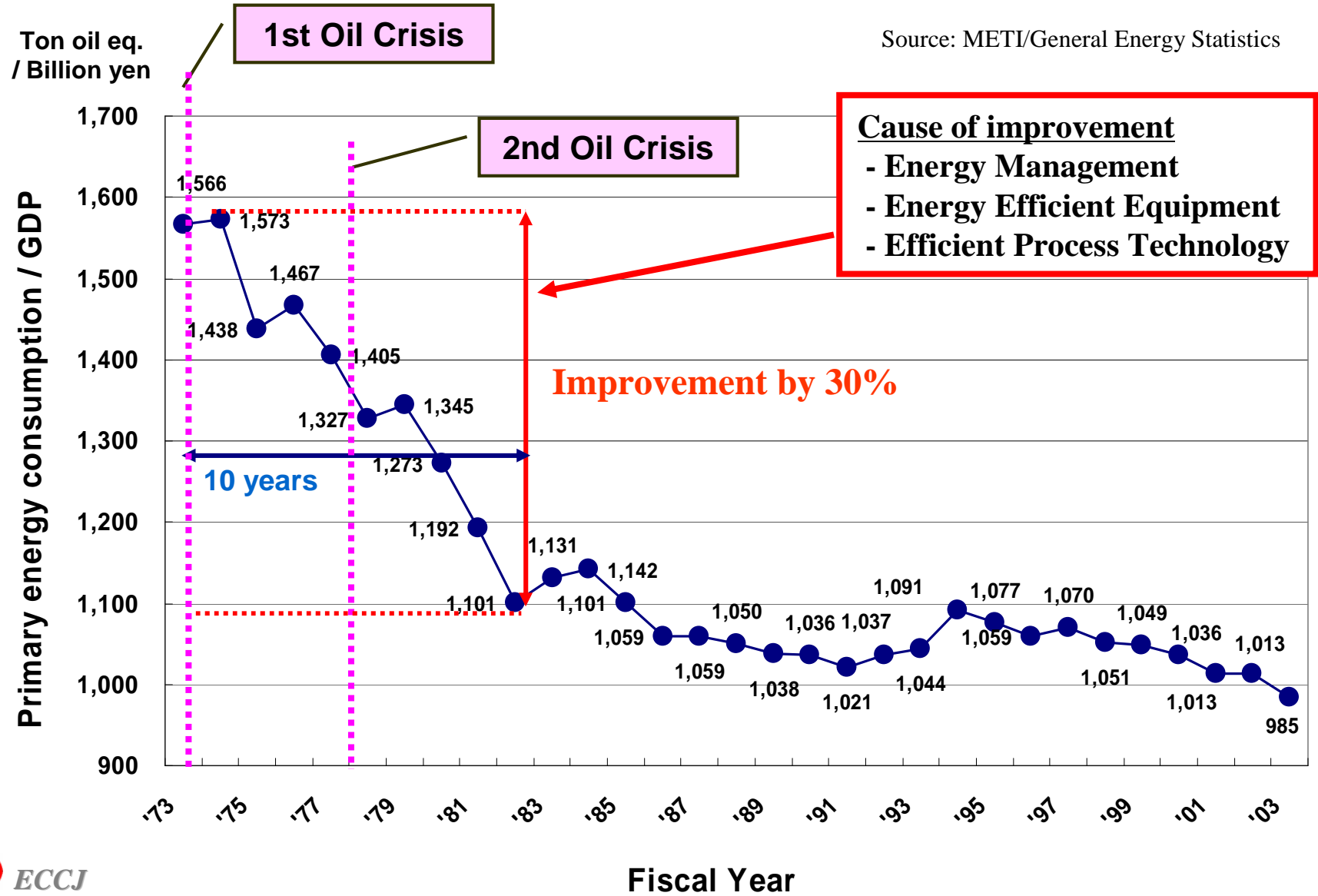
# Changes in Final Energy Consumption and GDP



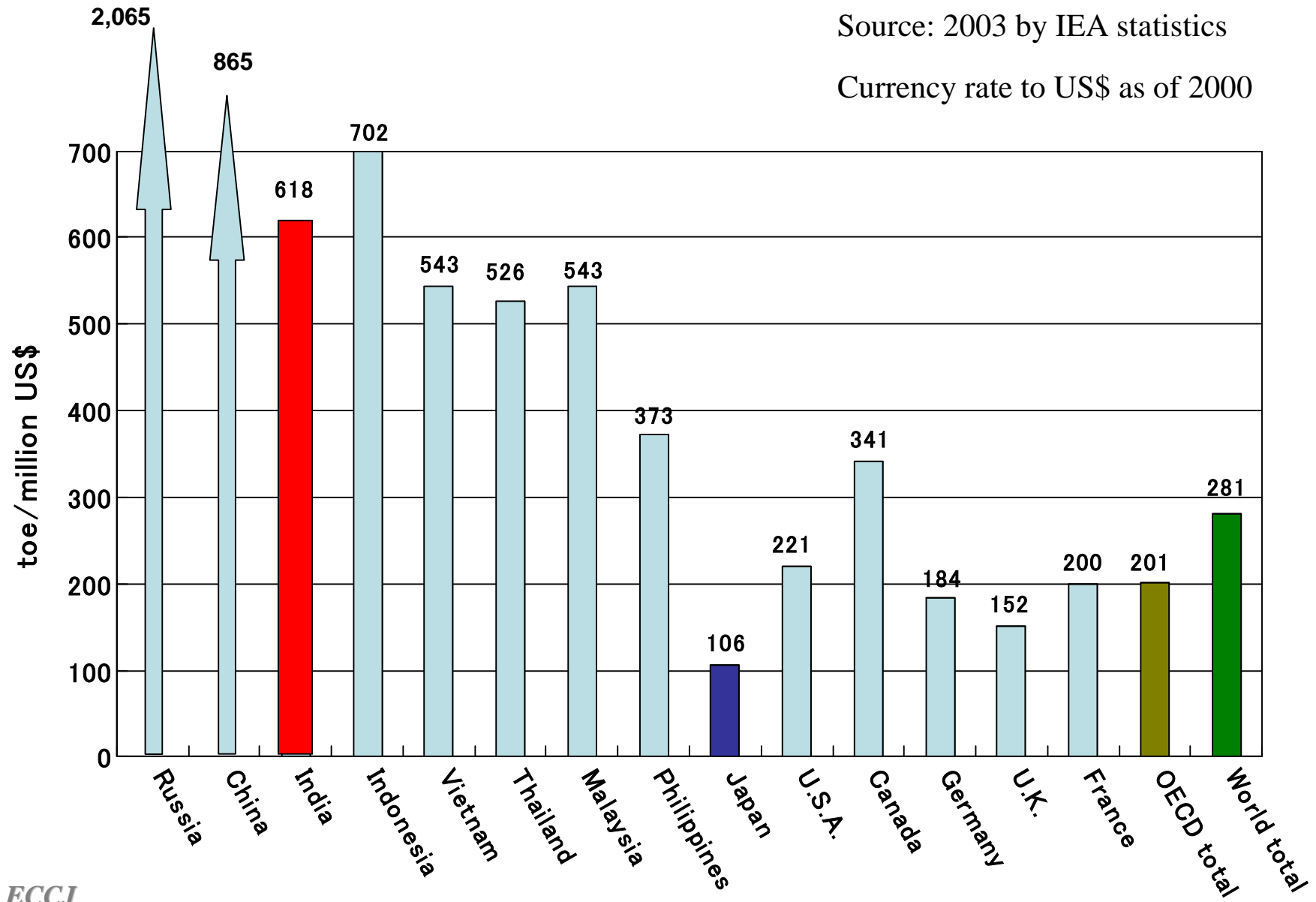
Source: METI/General Energy Statistics



# Changes in Primary Energy Intensity per GDP in Japan



# Primary Energy Intensity per GDP



## Why did the manufacturing industry of Japan succeed in the energy conservation after the Oil Crisis?

1. Cost reduction incentive (enforcement of **international competitiveness**) and **self-help efforts by enterprises**  
 --- *Energy conservation investment and technological innovation.*  
*ZD, QC activity, **Kaizen by small group activities**, TQC and TQM.*
2. Regulation measures by Government (**Energy Conservation Law**)
3. Support and subsidy system by Government (**finance, tax, subsidiary aid**)

*Mutual effect, synergy effect*

Japan became **the first class country in energy conservation technology.**

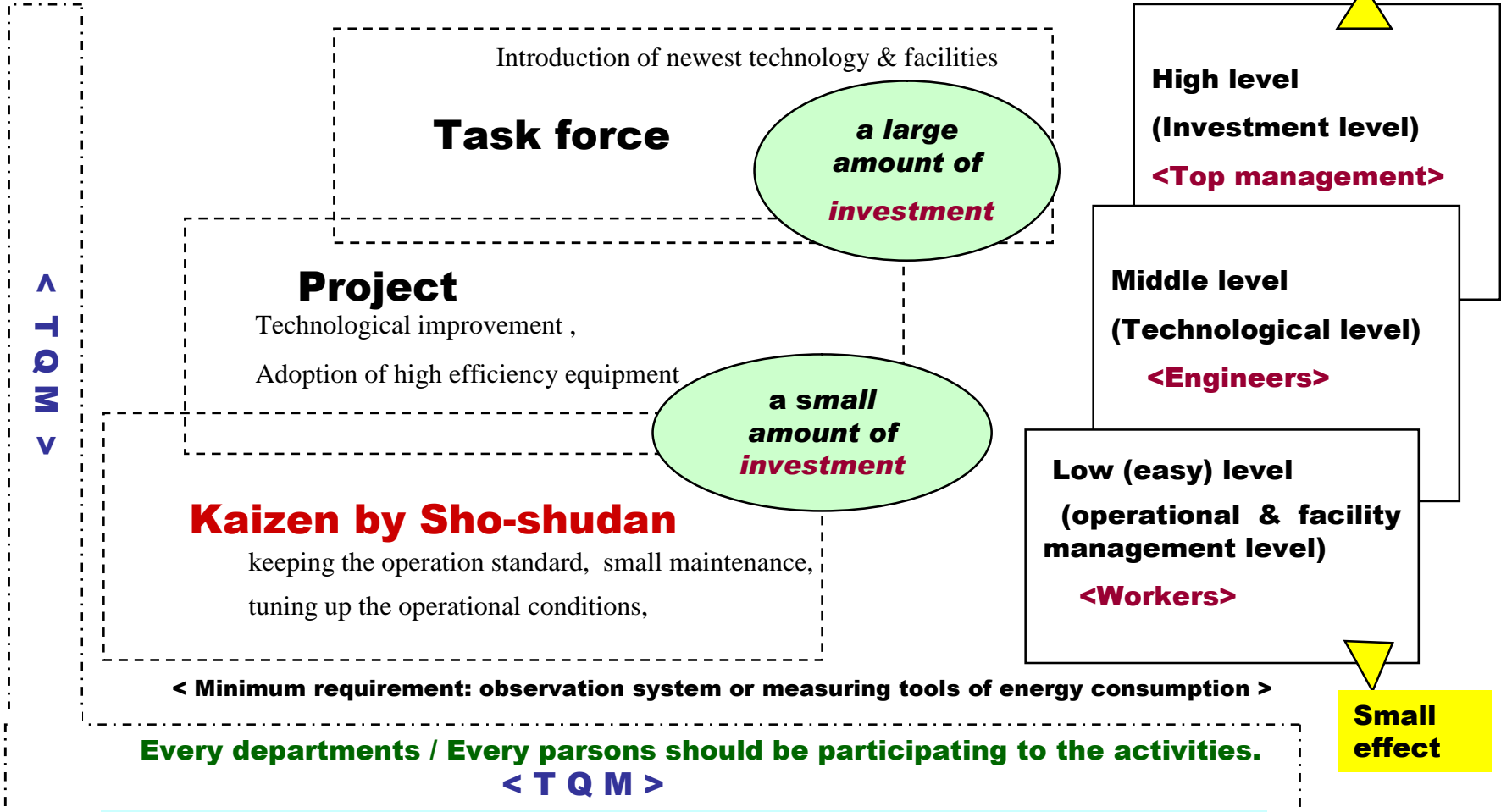
< Energy conservation is **to minimize energy loss** and **to maximize energy efficiency** at energy utilizing site. >

### < Energy Conservation Philosophy >

- Energy Conservation should be **achieved at “on-site”**.
- Energy Conservation is **practical** and **steady** activities.

# Self-help efforts in Enterprises

**E n e r g y M a n a g e m e n t**  
Observation (fact finding) → Control → improvement



Energy audit is effective. Energy managers play the important role at many stages.

## Step of Improvement

“Step 1”: Energy management/Operation management level,  
 --- **no-low cost level**

— cleaning, measuring, recording, operation tuning,  
 minor repair, and minor remodeling

Activities of this step can be carried out **by operators'** own idea or ability  
 with advices of an energy manager/engineer.

< suitable for **Kaizen by Sho-shudan** >

“Step 2” : **Technical improvement**, medium-scale investment

— Replacement of obsolete equipment with high  
 efficiency equipment and introduction of energy-  
 saving equipment

<**Engineer's level**, some possibility for **Kaizen by Sho-shudan**>

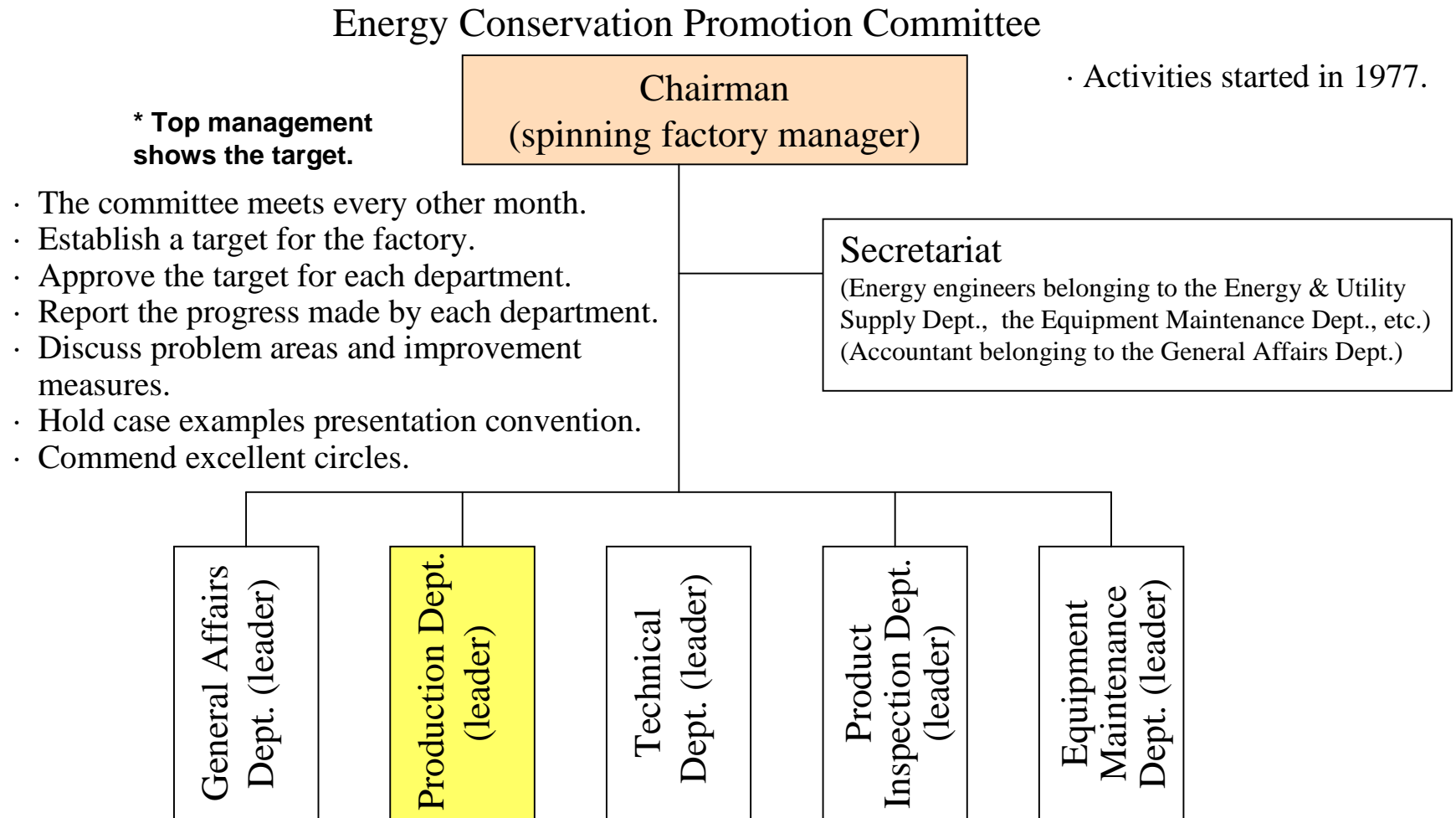
“Step 3” : Improvement requiring a **large-scale investment**

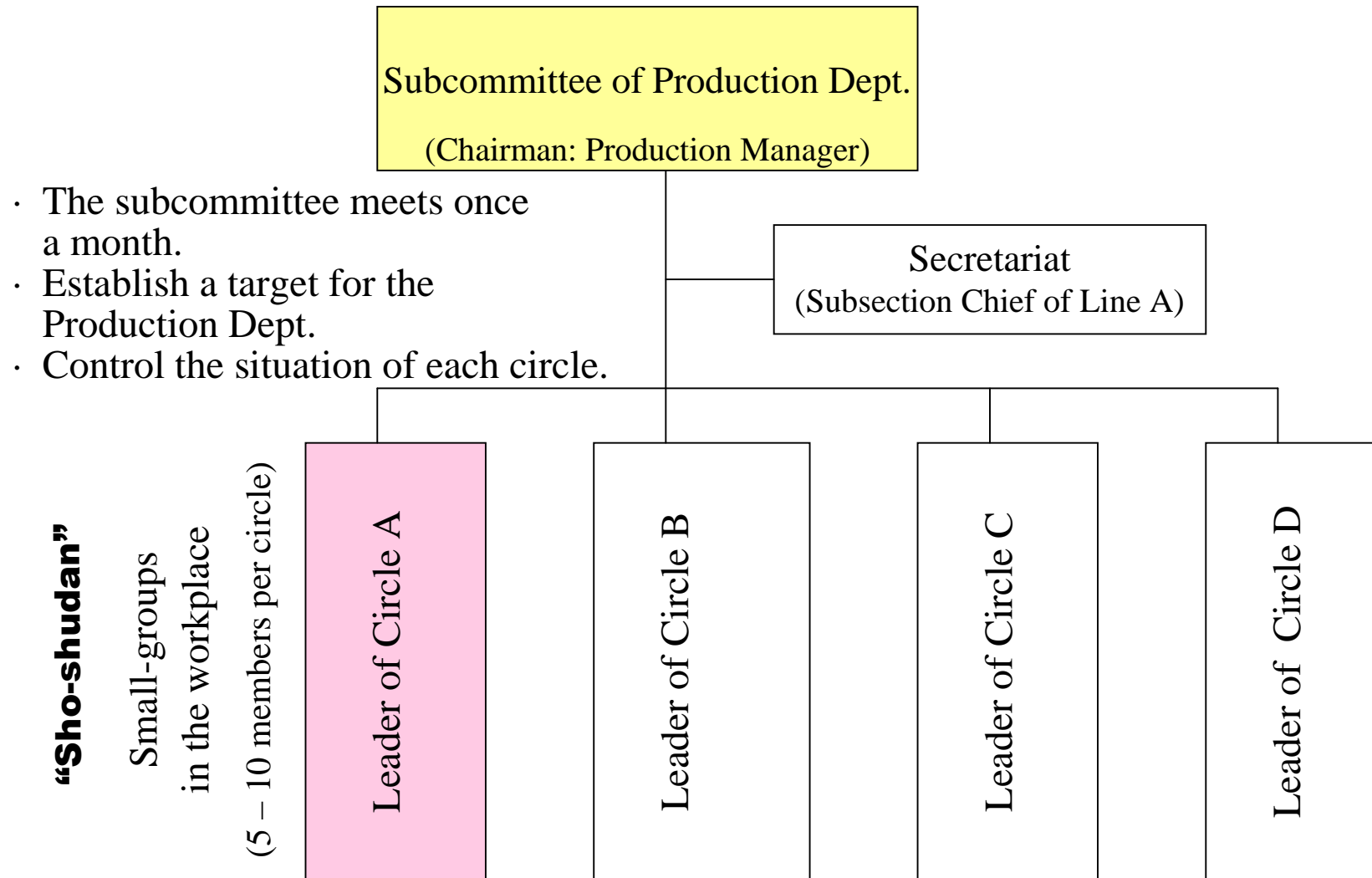
— Introduction of a new process and construction of a  
 new plant <Depreciation cost and period must be concerned>

< **Project, Task-force level**, beyond **Kaizen by Sho-shudan**>

Typical example in Japan

## Example of energy conservation promotion committee (TQM organization in X Spinning Co., Ltd.)





## **Voluntary Environmental Action Plan of KEIDANREN (Japan Federation of Economic Organizations)**

- \* Participants : 35 industrial associations (Coverage Ratio : 82% of CO<sub>2</sub> emissions in industrial sector as of Nov. 2005)**
- \* Implementation of Energy Conservation Measures aiming at the Target by each Industry**

### **Overall Target in FY2010:**

**To reduce CO<sub>2</sub> emission from Industrial and Energy-Converting Sector below the amount in 1990 :**

- Steel Industry:**
  - 10% Energy Consumption below 1990 by 2010**
- Chemical Industry :**
  - 10% Energy Intensity below 1990 by 2010**
- Paper and Pulp Industry :**
  - 10% Energy Intensity below 1990 by 2010**

Source: KEIDANREN (Japan Federation Economic Organizations)

*ECCJ organizes and implements every year*

**the National Convention of Excellent Successful Cases**  
*from 1976*

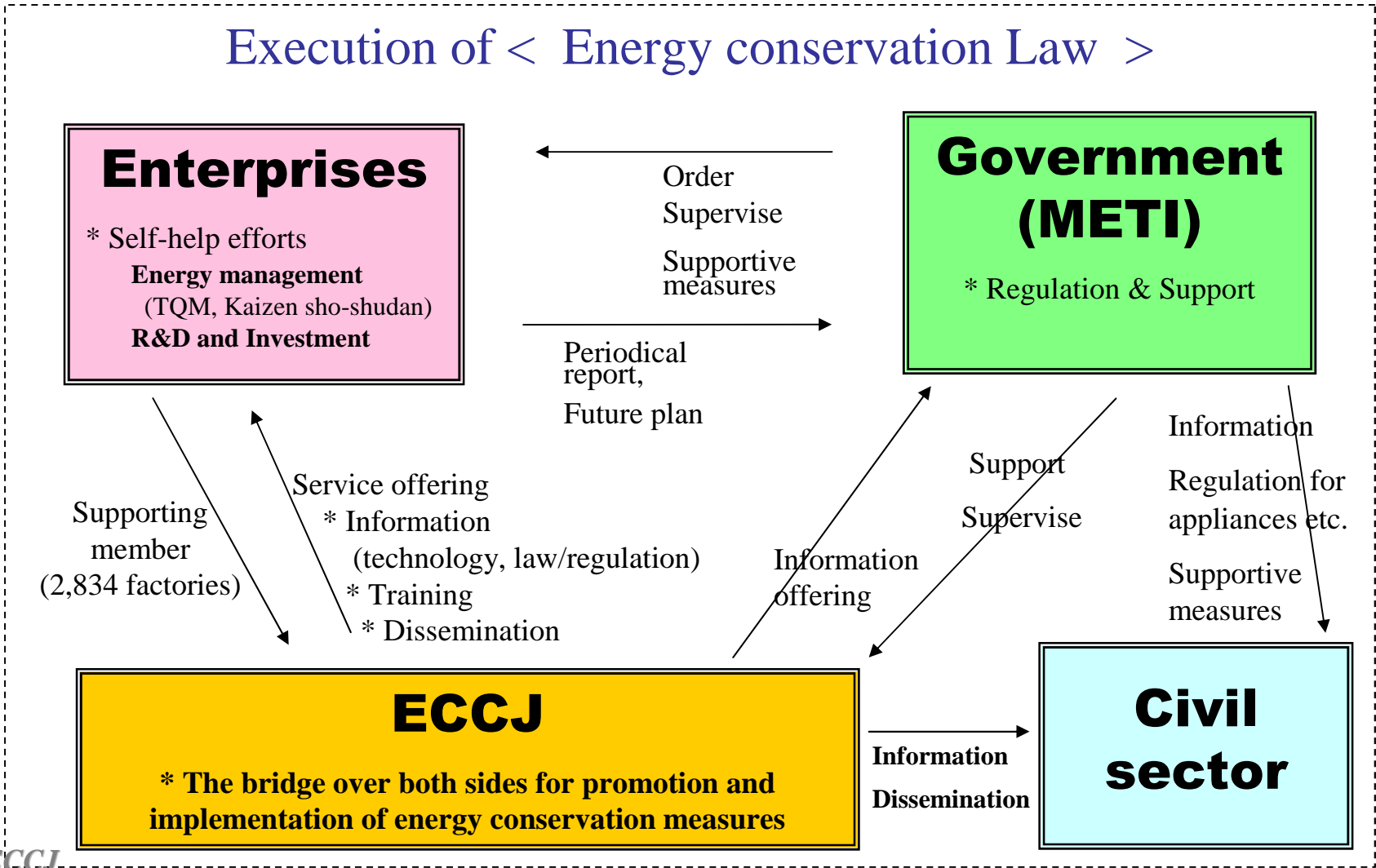
Mass meetings for announcement of excellent cases to disseminate and promote them .  
<4,000~5,000 participants at 11 venues every year>



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

# Role 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.**



## Main Activities of ECCJ

### Industrial sector

- ① Dissemination (conference for **successful cases** of E-C activities, excellent energy conserving equipment, etc.)
- ② **Technological development and spillover**
- ③ Energy conservation **audits services for factories**
- ④ **Education & training** on energy conservation
- ⑤ **State examination** for energy managers (assigned by the Gov.)

### Consumer & Transportation sector

- ① Energy conservation **audits services for buildings**
- ② **Ranking catalogue** for energy efficient appliances  
( dissemination of **Top Runner Program** )
- ③ Promotion of Energy **labeling** system
- ④ International **Energy Star** Program implementation
- ⑤ Energy efficiency product **retailer assessment** system
- ⑥ Dissemination of Energy conservation indicator **“E-Co Navigator”**
- ⑦ Energy efficiency **education** at elementary and middle schools
- ⑧ **ESCO** research and development

### Cross sector

- ① Energy conservation campaign & exhibition (**ENEX**)
- ② **Commendation** (grand energy conservation prize)
- ③ **Information & data base**, Publicity and **publishing**
- ④ **Survey and monitoring**
- ⑤ **International cooperation & Communications**

## Public Programs on Energy Conservation Auditing Performed by ECCJ (FY 2004)

Program	Applicable factory	Overview	Funded by
Energy Conservation Auditing for Factories  (Free-of-charge)	Medium sized factories	<div style="border: 1px dashed orange; padding: 5px; display: inline-block;">             On-site discussions              Document review              On-site inspections           </div> <div style="border: 1px dashed orange; padding: 5px; display: inline-block; margin-left: 10px;">             1 day           </div> <div style="border: 1px dashed orange; padding: 5px; display: inline-block; margin-left: 10px;">             Report of findings →              Proposals on improvement           </div> <p style="text-align: center; color: red; margin-top: 10px;">100 factories/year</p>	METI
Energy Conservation Auditing for Buildings  (Free-of-charge)	Buildings	<div style="border: 1px dashed orange; padding: 5px; display: inline-block;">             On-site discussions              Document review              On-site inspections           </div> <div style="border: 1px dashed orange; padding: 5px; display: inline-block; margin-left: 10px;">             1 day           </div> <div style="border: 1px dashed orange; padding: 5px; display: inline-block; margin-left: 10px;">             Report of findings →              Proposals on improvement           </div> <p style="text-align: center; color: red; margin-top: 10px;">350 buildings/year</p>	METI
Energy Conservation Auditing for Factories  (Free-of-charge)	Large sized factories	<div style="border: 1px dashed orange; padding: 5px; display: inline-block;">             Document review              On-site inspections with measuring devices           </div> <div style="border: 1px dashed orange; padding: 5px; display: inline-block; margin-left: 10px;">             3 days           </div> <div style="border: 1px dashed orange; padding: 5px; display: inline-block; margin-left: 10px;">             Report of findings →              Proposals on improvement &amp; introduction of new technologies           </div> <p style="text-align: center; color: red; margin-top: 10px;">70 factories/year</p>	METI / NEDO



We have made public the proposed measures & expected effects for other factories' reference.

# Training Courses for energy management

15

## 1. Symposium , Top management seminar

- Symposium for energy managers ··· Specified for Type 1
  - Symposium for energy management officer ··· Specified for Type 2
  - Energy-related lecture meetings (at each branch), etc.
- } Communication of the latest information on and trends of laws and management technologies

## 2. Technical training

- Practical training courses for energy conservation (5 courses)
  - Training of beginners in energy management to the backbone engineers (500 people/50 times/year)
- Technical training courses for energy conservation
  - Personnel in charge of practical energy management / lectures, practices, and field trips
- Training in energy management technologies
  - Energy managers / training in the latest management technologies

## 3. Correspondence training

- Correspondence course for energy managers

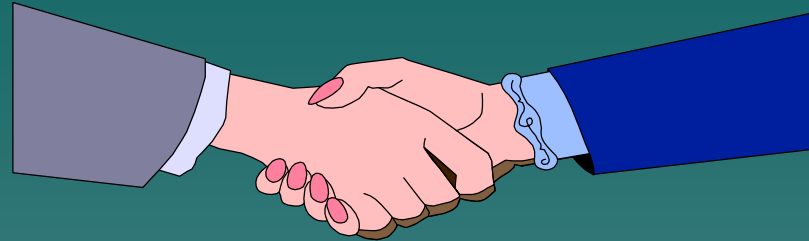
## 4. Preparatory training for national exam.

- Long-term preparatory training course for national exam
  - Short-term preparatory training course for national exam
- } preparing for national exam of Energy managers / acquisition of technical knowledge

# Summary

1. Thorough Energy Management is the first important step toward EC in the industrial sector.  
Philosophy: EC can be realized only by the daily continuous practices of workers on site.
2. “Kaizen by Shoshudan Approach (Small Group Activities)” is a practical and effective way toward best practices for Energy Management.
3. Japanese firms follow the tradition to cooperate mutually for their common benefits, while having stiff competition each other. EC is the example for such common benefits to be pursued by the whole industries.
4. Industrial associations and public services corporations like ECCJ have been acted as catalysts for overall EC promotion.

*Thank you*



**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)**

*The Energy Conservation Center, Japan*

