October 23, 2003

6. General Activities of ECCJ and International Cooperation in EE&C

省エネルギーセンターの概要と省エネルギー分野での国際協力

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JICA Energy Conservation Seminar

Energy Efficiency and Conservation for Central and Eastern European Countries

International Cooperation and General Activities of ECCJ

23 October, 2003

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I . Background /

Japan's Energy Conservation Policy and

Promotion System





Trend in Final Energy Consumption by Sector

(1999)





- 1. Regulation measures by Government (Energy Conservation Law)
- 2. Support and subsidy system by Government (finance, tax, subsidiary aid)
- 3. Cost reduction (enforcement of international competitiveness) and Self-help efforts by companies --- *investment*, *ZD*, *QC activity*, *Kaizen by Sho-shudan*, *TQM*, *etc*.

Mutual effect, Synergy effect

Japan became the first class in energy conservation technology with the rapid progress of energy conservation.

Today we are faced with the new problem of energy consumption growth in residential/ commercial and transportation sectors.











I International Cooperationby Japanese Government



<Back Ground of International Cooperation>

Japanese Official Development Assistance

ODA policy of Japanese government is this:

As the world second largest economy and the largest donor of ODA, Japan shoulders the important responsibility of contributing of sustainable and environmentally sound social and economic development in developing countries.

Additionally, this is a role through which Japan can win the confidence and appreciation of the international community, and that ODA plays a very significant role in ensuring Japan's own stability and prosperity by promoting Japan's best interests, including the maintenance of world peace and the importation of resources, energy, food, and other basic materials.

We should remember that when Japan lay almost in ruins immediately after the last world war half a century ago, foreign aid helped Japan to rebuild and lay the foundations for the prosperity it enjoys today.





Trends in Major DAC Countries' ODA

(net disbursement basis)



ODA/GNP Ratios of DAC Member Countries (2000)



Ratios of ODA applied to arrest measures for global worming against to ODA total amount by countries



<Reference: the report on ODA concerning Global Worming Arrest, by MOFA & Mitsubishi Research Institute, March 2002>





Cooperation Scheme through ECCJ

Governments (Developing Countries)



Ⅲ. International Cooperation by ECCJ

(1) Profile of ECCJ(2) International Cooperation Activity



<eccj's activity="" been<br="" has="">of the Energy Conservate</eccj's>	authorized by the supplement-resolution ion Law at the Diet in 1979>
Legal status :	* NPO 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 :	* 3,012 companies (as of April 2001)
Staff :	* 219 persons (as of March 2002)
Budget :	* 8,265 million yen in 2002FY
	(64 million U\$)
Fields of activity :	* Industrial, Residential/Commercial

History of ECCJ under Change of Energy-related Situation

<u>History of ECCJ</u> Heat-management Association established in Kinki district	<u>Year</u> 1947	<u>Change of Energy-related Situation</u> Heat-management Regulation enacted
Heat-management Association established in the other districts	1948	
Central Heat-management Conference started	1951	Heat-management Regulation enforced
Japan Heat Energy Technology	1972	
ASSOCIATION established	1973	1st Oil Crisis
ECCJ established	1978	2nd Oil Crisis
	1979	Energy Conservation Law enforced
International Dept. started	1981	
Examination Dept. started	1984	
ESCO Project Promotion Office started	1997	COP3 (Kyoto Protocol)
Training Course Dept. started	1999	Revised Energy Conservation Law enforced









Main Activities of ECCJ

Industry

- 1 Energy conservation audits services for factories
- 2 Education & training on energy conservation
- ③ State examination for energy managers (assigned by the Gov.)
- (4) Technological development
- **(5)** Disseminating (conference for successful cases of E-C activities, excellent energy conserving equipment, etc.)
- 6 ISO14001 seminar for environmental inspectors

Residential & Commercial

- 1 Energy conservation audits services for buildings
- ② Ranking catalogue for energy efficient appliances
- **③** Promotion of Energy labeling system
- (4) International energy star program implementation
- **(5)** Smart driving for energy conservation Stop idling –
- 6 Energy conservation "navi"
- O Establishment of "energy conservation republic"
- (8) ESCO research and development

Overall

- 1 Energy conservation campaign & exhibition (ENEX)
 - (2) Commendation (grand energy conservation prize)
 - **③** Information & data base
 - **④** Publicity and publishing
 - **(5)** Consulting service through e-mail
 - **6** International cooperation



(2) ECCJ's International Cooperation Activity







Main Fields of ECCJ's International Cooperation

<**Policy Proposal**>

*Investigation of energy and energy conservation policy.

*Potential survey and feasibility study on energy conservation and reduction of GHG emission .

<Capacity-Building>

*Training course at home and abroad.

*Dispatching experts to overseas for seminars.

<Technical Cooperation>

*Factory diagnosis and improving advise based on measurements (plant survey, energy conservation audit)

*Cooperation and support for establishment and operation of Energy Efficiency & Conservation Centers or such organizations.



International Cooperation Energy & Environment Training Course of ECCJ

		in Japan	overseas			in Japan	overseas
Asia	Bangladesh	6	90	Europe	Poland	21	-
	China	49	30		Hungary	14	-
	Indonesia	26	60		Czech	10	-
	Korea	24	-		Bulgaria	30	-
	Malaysia	16	30	Middle East & Africa	Egypt	13	90
	Philippines	19	35		Turkey	20	30
	Thailand	51	160		Kenya	13	-
South America <mark>Brazil</mark> Mexico	Argentine	29	60	Other countries		91	-
	Brazil	16	-	Total		460	615
	Mexico	12	30			1,075	
* since FY 1982 - FY 2002					CCJ		

<Example of Training Course in Japan>

JICA / ECCJ Energy Efficiency and Conservation (general course)

<every year from 1986>

Duration: May 14, 2002 – July 4, 2002 (52 days)

Number of Participants: 12 (10 Countries)

Course Objectives: to understand

1. The energy situation and energy policy in Japan

2. The promotion policy for EE & C and its enforcement procedure

3. EE & C measures in the industrial, commercial and residential, and transport sector.

4. Energy management methods in buildings and factories.

Program: Lecture, Plant visiting to understand successful cases, Practical work (measurement of

energy consumption), and Workshop (discussion and presentation).







<u><Example of Training Course in Japan></u>

JICA /ECCJ Turkey Energy Conservation Project <Project: Aug. 2000 – July 2005>

Duration: November 17, 2002 – December 14, 2002 (28 days)

Number of Participants: 2 counterparts (experts)

Course Objectives: 1. Understanding the energy conservation policy and the Law, and energy

management methods in Japan.

2. Skill-up for the expert (auditor, trainer).

3. Plant visiting to understand successful cases .

Program: Lecture & observation on measuring instruments and training facilities (i.e. boiler,

furnace, inverter-controlled system, lighting etc.).

Training for audit technique (heat and electricity measurement, calculation, reporting etc.)

Participation to the practical on-site audit by Japanese experts (at manufacturing factories).











<Example of Establishment and Management of EE&C Center >

JICA/ECCJ Thailand Energy Conservation Project

Object: Establishment of State Training and Examination System for License of

Energy Manager

Duration: April 2002 – March 2005

Counter part: ECC Thailand (ECCT)

Department of Alternative Energy Development and Efficiency (DEDE)

Program: * cooperation to establishment of State Training and Examination

System.

* preparation of training texts and instruments & facilities.

* cooperation to start up the training course and state examination.

* cooperation to establishment of the supportive system for activities of

Energy Managers.

* Training of counter parts in Japan.

* Seminar in Thailand.



Energy Conservation Center in the Overseas

	Organization Name	Upper Organization				
Country			Personnel	Operation	Governmental support	Main activity
China	China Dalien Energy Conservation Training Center	Dalien City	Self	Self	Have not	Training
Argentine	The Rational Use of Energy Center	National Institute of Industrial Technology	Public	Self	Have not	Training Audit
Bulgaria	Energy Efficiency Center	Ministry of Industry	Public	Self (Public)	Have not	Audit
Turkey	The National Energy Conservation Center	Ministry of Energy ,Energy Efficiency Office	Public	Public(Self)	Have	Training Audit Policy, PR
Poland	Energy Conservation Technology Center	National Energy Conservation Agency	Self	Self	Have not	Training Audit
Malaysia	Malaysia Energy Center	Ministry of Energy, Communication & Multimedia	Public	Self	Have	Training Audit Policy, PR
Thailand	The Energy Conservation Center, Thailand	Ministry of Energy, DEDE	Self	Self	Have	Training Audit Policy, PR
Iran	Energy Efficiency Office / Azarbaijan Center(AIHER)	Ministry of Energy	Public	Public	Have	Training Audit Policy, PR


<Example of abroad factory diagnosis and improving advise

based on measurements (energy conservation audit of plants, potential survey of sectors)>

NEDO/ECCJ Survey Project on the Energy Conservation in the Industrial Sector in the People's Republic of China <started in 2001>

Objectives: to evaluate the energy saving potential in the chemical industry sub-sector. to fined the energy conservation counter measures by carrying out energy audit. to offer the above mentioned measures and to make them to be disseminated over the sub-sector.

Duration: July 22, 2002 – January 25, 2003 (1st step:10 days, 2nd step:3 weeks, 3rd step:10 days) Factories for auditing survey: 天津大沽化工厂、 沈陽化工厂

Program: 1st step: pre survey (general information on energy consumption, preparation for the full-scale audit)

2nd step: The auditing survey. Discussion of the audit results and tentative counter measures.

3rd step: Submission and presentation of the survey report to the Chinese Government. Following up the implementation of the tentative counter measures, and recommendation of the final counter measures at the surveyed factories.







Technology Transfer

" Transferred technology should be modified suitably "



Approach to implementation of energy conservation

Key factor for best approach

- Infrastructure
- Capacity building
- Public information
- technology





ECCJ International Chronicle ------ some extracts

1. Dispatch of Survey Team

1) Thailand	Energy Conservation Project	1982. 8-1985. 1	JICA
2) Malaysia	Factory Energy Conservation Project	1983. 3-1983.12	UNIDO
41) Bulgaria	Expert Survey on Energy Conservation Center F	Project 1995. 5	JICA
42) China	Survey on Energy Conservation Training Center	Project 1995. 6	JICA
45) Indonesia,	FS on the Efficient Use of Municipal Solid Waste	2000.11-2002. 3	NEDO
Malaysia	in ASEAN Countries		
2. Dispatch o	f Experts		
1) Thailand	Energy Conservation Project	1981. 3	JICA
87) Turkey	Short Term Expert on Public Relation of Energy	Conservation2002. 3	JICA
	/Energy Conservation Project		
4. Reception	of Overseas Trainees		
1) Thailand	National Energy Administration (NEA)	1982.11 6W	JICA
90) Cambodia	Ministry of Industry, Mines and Energy	2001. 6 0.2M	NEDO
5. Training Co	ourse in Overseas		
11. Model Proj	ect for Energy Conservation in Overseas		
2) India	Demonstration Project on Direct Reduction Iron	1995.12-	NEDO

Others — You can see in ECCJ's Web site



IV. Other Activities of ECCJ

(Domestic Activities)



Main Activities of ECCJ

Industry

- 1 Energy conservation audits services for factories
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Results of energy audit for factories

Number of factories audited: **1,340** (Fiscal years 1997 – 2001) (Details)

Electromechanical apparatus manufacturing	267 (19.99	%)
Chemical industry	127 (11.19	%)
Food manufacturing	121	
Transport equipment manufacturing	112	
Plastic products manufacturing	106	
Metal product manufacturing	94	
General machinery and apparatus manufacturing	67	
Ceramic/Cement product manufacturing	59	
Precision machinery and apparatus manufacturing	54	
Nonferrous metal manufacturing	45	
Textile industry	38	
Pulp, paper manufacturing	20	
(Others)		
		13



<u>Energy-saving effect by audit</u>

(Average energy-saving rate by industry)





Dissemination & Spillover of Excellent Successful Cases in Energy Conservation Activity

(Example 1) <Successful case in pulp and paper manufacturing> Level : step 1 Optimization of Bleaching Conditions

by "suppon group" at KP section, Jujo Paper Co., Ltd.

Problem to be improved: in Bleaching Process,

•variance in brightness

•higher unit consumption of steam and chlorine dioxide

<fiber line of kraft pulp>

Wood chip→digester →washers→ <u>bleaching process</u>→cleaning→paper machines <*Steaming mixer and Stock pump were renewed.>



Results of "Suppon group"s activity

1. Investigation results:

They were afraid of clogging of the stock pump due to unfamiliarity with the new equipment, so they <u>increased the dilution water</u> gradually.

They increased the steam consumption to keep reaction temperature higher.

They increased the chemicals consumption to keep reaction rate.

2.Improvements:

reduced the dilution water step by step, while watching the load of the stock pump;

33 to $6 \text{ m}^3/\text{h}$

decreased the steam consumption , to lower the temperature at the steaming mixer;

over 70 to 60 °C

results; brightness increased and has kept the standard value.

pulp density increased, so the consumption of chlorine dioxide has decreased.

3.Effect of improvements:

steam reduction: 63 t/day chemicals reduction: 27 m³/day







Power Recovery System for Fluid Catalytic Cracking Process (FCC)



Training Courses for energy management

1. Symposium, Top management seminar

–Symposium for energy managers •••• Specified for 1st Class /

–Symposium for energy management officer \cdots Specified for 2nd Class \checkmark

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

••• 1st Class, 2nd Class, and ESCO business (4,600 participants / 11 places)

-Energy-related lecture meetings (at each branch), etc.

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

ECS hort-term preparatory training course for national exam

Energy managers preparing for national exam / acquisition of technical knowledge



trends of laws and management technologies them

information on and

Communication of the latest

National Examination

License of Energy Manager

(Heat/Electricity)

* energy managers system have contributed greatly to carry out the energy conservation in industrial sector

1. National qualifying examination (assigned by the government)

- Once a year
- ✤ 1 day, 4 subjects

Applicant 7,405

Succeeded 1,948

(in 2001 year)

2. Training seminar

- Once a year
- ✤ 6 day training & 1 day examination
- Background : education + experience

the Number of Energy Managers required by the Law :

(1st-class designated factories)

1~4 managers (according to the amount of energy consumption)



Technology R & D

(assigned from NEDO:New Energy and Industrial Technology Development Organization)

1. Eco-energy city project (New Sunshine Program) <Ended in 2000>

- 2. High temperature Air combustion technology
- 3. High efficiency waste heat recovery system (high-temperature thermoelectric system)
- 4. Supercritical fluid technology

[high efficient decomposition system of PCB & DXN]

5.Optimal Control System for Energy Conservation in Factories, Shops, Offices and Houses



Energy Conservation Promotion in Residential & Commercial Sector





Energy Conservation Performance Catalogue

(Comparison of energy conservation performance by ranking)

Target products: Air conditioners,TVs, VCRs, Refrigerators, Cloths washers, Lighting equipment, Copiers (7 products in total)

	(Sumple: Telev	<i>i</i> sion 25ir/	nch Stand	ard Model)			<2003 St	ummer version>	3	
				Energy Cons	sumption		Achievment			
			Price			"e"	rate of Ene.	Electricity	Electricity	
Rank	Manufacturer	Model	(Yen)	Operation	Stand-by	mark	Conservation	consumotion	cost	
				(W)	(W)		Standards(%)	(kWh/Y)	(Yen/Y)	
1	Funai	TV-25RS1	open	85	0.70	C	107	115	2,645	
2	Toshiba	25S99	open	100	0.40	C	102	121	2,783	
2	Hitachi	25CL-FS3	53,000	110	0.10	C	123	121	2,783	
2	Mitsubishi	25T-D102	open	110	0.10	C	122	121	2,783	
5	Sanyo	C-25A80	open	109	0.17	C	121	122	2,806	
6	Sony	KV-25DA55	open	122	0.07	C	116	127	2,921	
										Γ
22	Sony	KV-25DR1	open	163	0.40		84	212	4,876	
Maximum Value			163	1.04		123	212	4,876		
Average Value				121	0.36		110	137	3,157	
Minimum Value			85	0.07		74	115	2,645		
FCCI									54	

Energy Star Logo Program

(joint project Japan-U.S.A. for reduction of standby electricity)



International energy star logo is displayed on energy-saving OA equipment.

(on products themselves, as well as boxes, catalogs, advertisements, etc.)

* Voluntary program started in October 1995

* Registration service by ECCJ



<smart Driving > Promotion of Stopping Idling While Vehicles Are Stationary

• Idling while loading/unloading or waiting for the traffic light to turn green consumes gasoline as much as standby electric power consumed by home appliances.

•Stationary time of vehicles during traveling accounts for 48 percent of the entire traveling time, and time that idling can be stopped accounts for as much as 35%.

•Drivers who manually turn the engine off while waiting for the traffic light to turn green account for less than 4% of all drivers surveyed.

• If a device to automatically turn the engine off or on when waiting for the green signal is popularized, idling will be easily stopped.

<Source: Survey results of Energy Conservation Center >



Fig. Results of running test by a monitor car (Survey by Energy Conservation Center))

< A case of saving of gasoline: A saving of 7% of gasoline consumption was achieved in the running test in the urban areas!! ... JAF's report >

Effect that is expected of cars :

Saving of gasoline 1,530,000kl/year (in terms of oil, equivalent to 1,390,000 kl/year)

•This figure is equivalent to 8.2% of the goal (reduction of 16,900,000 kl) of the energy conservation activity in the transportation sector, and idling stop is expected to produce great results.



<Based on trial calculation by Eco-driving Society 55

Measures : • Activity to educate drivers to manually stop idling while vehicles are stationary

Popularization of hybrid vehicles (vehicles equipped with the idling stop system)
Popularization of a device to automatically turn the engine off

Demonstration caravan ••• Traveling through the Japanese Islands from north to south

<Education of people to promote stopping idling by actual traveling, symposiums, and test driving > August 3, 2002 (started from Wakkanai City) to August 23 (arrived at Kagoshima City)
3 sedans -2,000 cc version (2 sedans equipped with a device to turn the engine off and 1 ordinary sedan)



Effect of gasoline saved by idling stop : 15%

Symposiums participated by citizens and test driving: 5 times (Sapporo, Sendai, Kanazawa, Okayama and Kumamoto)







This "E-Co Navi" can express the comparison of the consumption with the target figures or the preceding year's consumption. In this way, this makes it easier for everyone to carry out energy consumption reduction and thereby contributes to total energy conservation.

Since November 1998, the "E-Co Navi" were installed at 800 houses every year across the country. In 2003^{Fy}, approximately 30,000 have been installed .







Publicity (1)

1. Exhibition (ENEX 2001)

Tokyo ; 40,658 visitors Kyushu ; 12,486 visitors <exhibitors: 163>

2. Symposium

Energy conference, Convention for successful cases, etc.

- 3. Poster & essay contest
- 4. Promotion Poster & video
- 5. Pamphlet & goods

Ranking catalogue, Smart life, etc.

6.Newspapers and magazines

Ene-Con Ambassador, monthly magazine, etc.





<u>Commendation</u> (2001FY)

1. Grand prize for high energy efficiency appliances

* for home use & business(commercial) use * Grand prize : 22 (93 applied)

containing 5 grand prizes honored by METI minister

1 Hot water supply system

(CO2 refrigerant heat pump)

- **② High efficient refrigerator**
- **③ Hybrid system car**

(4) Ceramic metal halide lamp



5 Switching power source devise

2. Factories & persons contributed to energy conservation

• 121 factories/persons were commended.



Information & Data Base

As of December 31, 2001



News PAIPER

This Ene Con ambassador edited the tabloid paper which <u>four times a year ECC</u> published to home page version. This page has introduced energy

ECCI 6 Index

conservation activity of local NGO groups in Japan. The energy conservation center, Japan has expected that foreigner readers understand the present situation of local energy conservation activity in Japan by this page. This page is translated in English from Japanese by machine translation software (NOVA PC-Transer/je2000 for Windows). When meaning of English writings is not understood, please read Japanese writing in the side-by-side translation sentence that is displayed when a **J?E** mark is clicked. This English translation sentence is the output only machine translation software, and a translated sentence is not proofreaded.



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Interview

Display System

· Introduction of Ene Con Ambassadors

· <u>Support Group List</u> (1999, 1998)

• Ene Con Republic / <u>Now Recruit</u>

• <u>Report</u>

Four times a year published

Newest: No.26 on 28 July 2003



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Monthly magazine & books







V. More Information < ECCJ Web Site>

- You can find information regarding ECCJ's activities as well as trends of energy efficiency and conservation in Japan through accessing ECCJ's Internet Home Page:
- URL:

http://www.eccj.or.jp/index_e.html



