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# 23. Model Country – Workshop on Energy Conservation Policies Planning

ワークショップ

Model Country

— Workshop

on Energy conservation Policies Planning —

#### 1. Outline

Overview of the economy :

The national economy has been recovering since 1995.

The plants and equipment of energy supply and demand sectors are rather old and their energy efficiency is low.

Technical energy loss in both the supply and demand sectors is large and a substantial non-technical loss is also seen. Price liberalization has not been introduced yet for coal, electricity and heat.

(1) Population : 10 million

(2) Area : 100,000 km<sup>2</sup>

(3) Climate :Mean air temperature in winter  $-5^{\circ}$ C and that in summer  $22^{\circ}$ C

(4) GDP :

					(Dimon OD\$)
Fiscal year	1990	1995	1998	2000	2010
GDP	40.0	38.0	42.2	45.5	55.4

#### (5) Balance of Trade

(Billion US\$)

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Fiscal year	1990	1995	1998	2000	2010
Export	11.9	12.3	16.3	16.5	19.8
Import	-17.7	-16.7	-18.7	-18.8	-23.0
Balance of Trade	-5.8	-4.4	-2.4	-2.3	-3.2

(6) Energy Consumption ratio per GDP

(toe\* / Million US\$)

Fiscal year	1990	1995	1998	2000	2010
Energy Consumptio n ratio per GDP	1,000	921	972	1,011	1,083

\*toe : ton oil equivalent

#### (7) CO<sub>2</sub> Emission per GDP

#### (CT / Million US\$)

Fiscal year	1990	1995	1998	2000	2010
CO <sub>2</sub> Emission per GDP	710	640	670	680	650

#### 2. Energy Conservation Scheme

#### (1) Organization

There is no government office which integrally controls the whole energy policies and problems of the entire nation.

#### (2) Law

There is no systematic law for promoting energy conservation in the entire nation.

#### (3) Pricing

There are ministerial ordinances concerning subsidies for energy price (coal, electricity and heat). Individual measuring system on electricity and heat is not still established.

In addition, unpaid electricity bill is growing into a serious problem.

(4) Tax incentives and financial aid

There is no tax incentive for investment into energy efficiency & conservation equipment and system. There is no preferential import duty for energy conservation equipment and system. Private banking system has not developed enough to finance long term big projects. There is no low-interest loan for investment into energy efficiency & conservation equipment and system.

(5) Energy conservation technology R&D

There is R&D center conducted on energy efficiency and conservation technologies but without enough money.

(6) Dissemination and publicity activities

There is no dissemination or publicity activity for energy efficiency and conservation.

(7) Development of human resources

There is no scheme or organization for raising competent staff for energy efficiency and conservation promotion.

3.	Government	Offices	Concerned	with Energy	
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No.	Name of ministry	Major activities
1	Prime Minister's Office	Comprehensive coordination of activities among
		respective government offices
2	Ministry of Finance	Planning, control and coordination of tax revenue,
		expenditure, etc.
3	Ministry of Industry	Industrial promotion, acquisition of raw materials
		and security of energy supply
4	Ministry of Energy	Supply-demand plans of electricity and heat, coal, oil
		and gas, and price control of them
5	Ministry of Construction	Security of energy supply for construction
6	Ministry of Transport	Security of energy supply for transportation
7	Ministry of Agriculture,	Security of energy supply for agriculture, forestry
	Forestry and Fisheries	and fisheries
8	Ministry of Environmental	Environmental protection

#### 4. Outline of Tax Scheme



#### 5. International Support

Grants-in-aid (2million US\$ per each year) and technical aid for energy-conservation measures is to be extended to this model country from EU member nations and others over the next three years.

## 6. Energy Prices (for End-user)

		(US\$)
Energy	Domestic price	International market price
Fuel oil	0.2/kg	0.2/kg
Gasoline	0.5/1	0.5/1
Natural gas ( 41MJ/m <sup>3</sup> )	$0.05/m^3$	$0.07/m^{3}$
Coal (26MJ/kg)	0.024/kg	0.048/kg
Electricity (household)	0.06/kWh	0.14/kWh
Electricity (industrial)	0.08/kWh	0.12/kWh
Heat (Hot Water, household )	0.83/GJ	_
Heat (Steam, industrial)	6.0/GJ	9.0/GJ

### 7. Energy Data

(1) Energy Balance Table (2000)

						· · · · · ·
	Gas	Oil	Coal	Hydro	Renewable energy	Total
Domestic Production	1.0	1.1	13.4	4.7	3.7	23.9
Import	8.8	10.4	2.9	0.0	0.0	22.1
TotalPrimaryEnergySupply	9.8	11.5	16.3	4.7	3.7	46.0
Export,etc.	-0.9	-0.6	0.0	0.0	0.0	-1.5
Domestic Primary Energy Supply	8.9	10.9	16.3	4.7	3.7	44.5

(Million toe)

(2)Primary energy supply



## (3) Import dependence of primary energy supply

					(%)
Fiscal Year	1990	1995	1998	2000	2010
Natural gas	80.0	83.0	84.0	90.0	90.0
Oil	78.0	82.0	85.0	90.0	92.0
Coal	20.0	19.0	18.5	18.0	18.0
Renewable energy	0.0	0.0	0.0	0.0	0.0

## (4) Final energy consumption $(1998 \rightarrow 2000)$

	19	98		20	00
	(Million toe)	(%)		(Million toe)	(%)
Industrial sector	13.6	40		14.3	37
Residence/commerce	12.9	38	$\rightarrow$	13.5	35
Transportation sector	5.1	15		7.7	20
Others	2.5	7		2.8	8
TOTAL	34.1	100		38.3	100

(5) Energy consumption in industrial sector  $(1998 \rightarrow 2000)$ 

	1998			20	00
	(Million toe)	(%)		(Million toe)	(%)
Manufacturing industry	9.60	71		10.58	74
Construction industry	1.96	14	$\rightarrow$	2.00	14
Agriculture, forestry and fisheries	1.20	9		1.29	9
Mining	0.84	6		0.43	3
TOTAL	13.60	100		14.30	100

(6) Energy consumption in manufacturing industry  $(1998 \rightarrow 2000)$ 

	199	98
	(Million toe)	(%)
Food processing	1.44	15
Iron and steel	1.92	20
Chemistry	1.92	20
Paper and pulp	0.96	10
Ceramics, Bulding Materials	1.25	13
Metals and machinery	0.77	8
Non-ferrous metals	0.38	4
Others	0.96	10
TOTAL	9.60	100

2000	
(Million toe)	(%)
1.88	18
2.12	20
2.02	19
0.83	8
1.33	13
1.16	11
0.36	3
0.88	8
10.58	100

Propose possible energy-conservation policies to improve the energy situation in the model country indicated above. The study from the following points of view is preferable to make the energy situation of the model country better.

Oa desirable administrative organization

- Oplanning of regulations concerning energy conservation (the possibility of lawmaking, essence of the regulations, advisable steps to implement the regulations, etc...)
  - roles of both energy suppliers and the government(whether energysupplying company should be privatized or not)
  - · energy-conservation policies of energy suppliers
  - energy pricing mechanism (electric power, heat, gas, gasoline and others)
  - the standard of energy price(Care for poor people shall be taken into consideration)
- Othe solution to the problem of unpaid electricity bill
- Othe policies drafted out for each three section; industry,
  - residential & commercial and transportation
  - the policies prioritized definitely within the each section
  - advantage and disadvantage of each policy
- $\bigcirc\ensuremath{\mathsf{planning}}$  about the intended purpose of the grants-in-aid and technical
  - aid from EU member nations and others
- $\bigcirc$  measures to reduce CO<sub>2</sub> emission