October 20, 2003

1. Energy Situation in the World and EE & C in the International Trend

世界の省エネルギー情勢と省エネルギーの国際動向

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World Energy Trends and Conservation Measures

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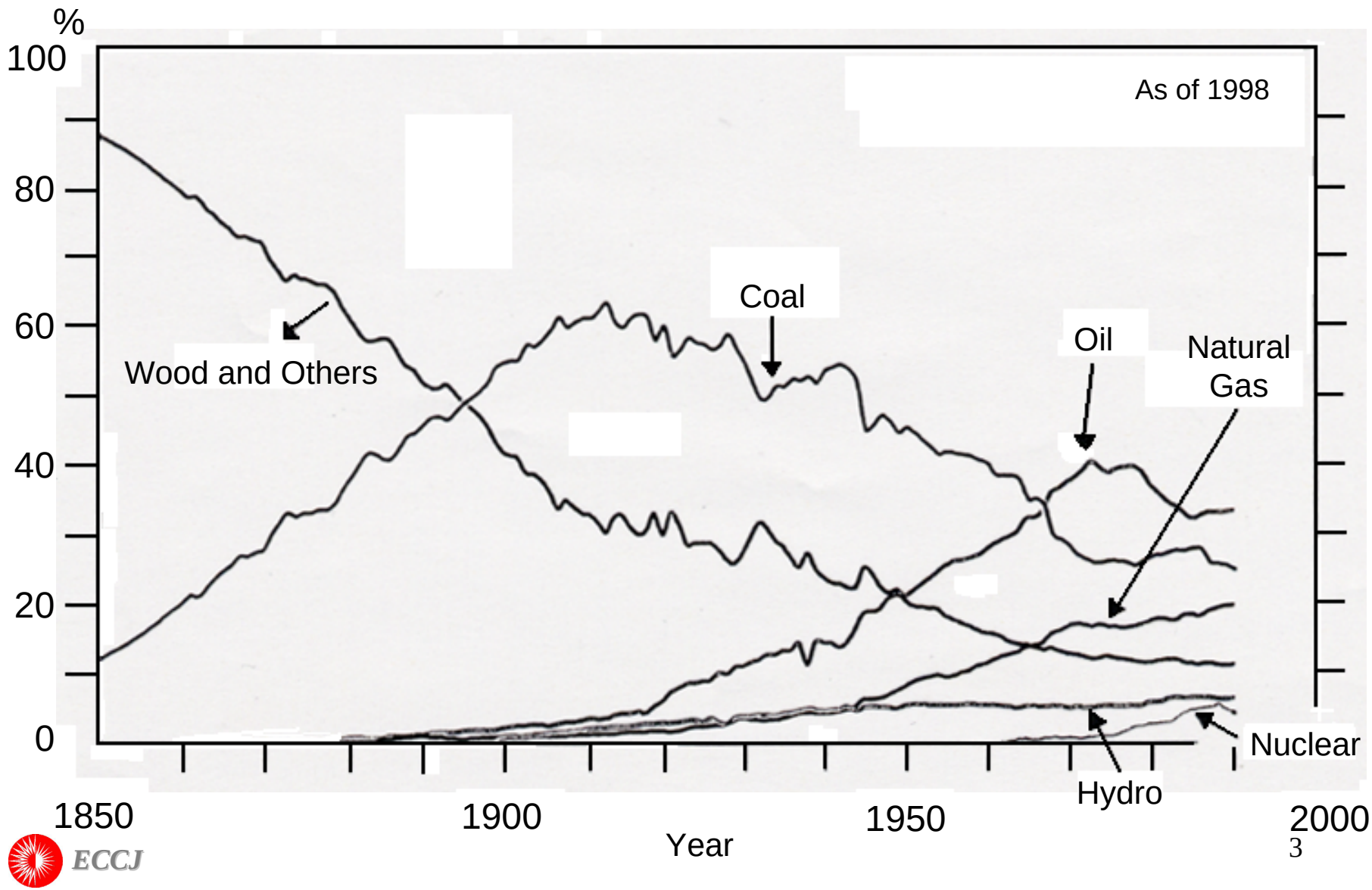
Contents

1. *World Energy Outlook 2002*
2. *Countermeasures to Global Warming*
3. *Current Energy Conservation Measures in Japan*
4. *Future Energy Conservation Measures in Japan*
5. *World Energy Conservation Policies*

1. World Energy Outlook 2002

Change of World Primary Energy Share



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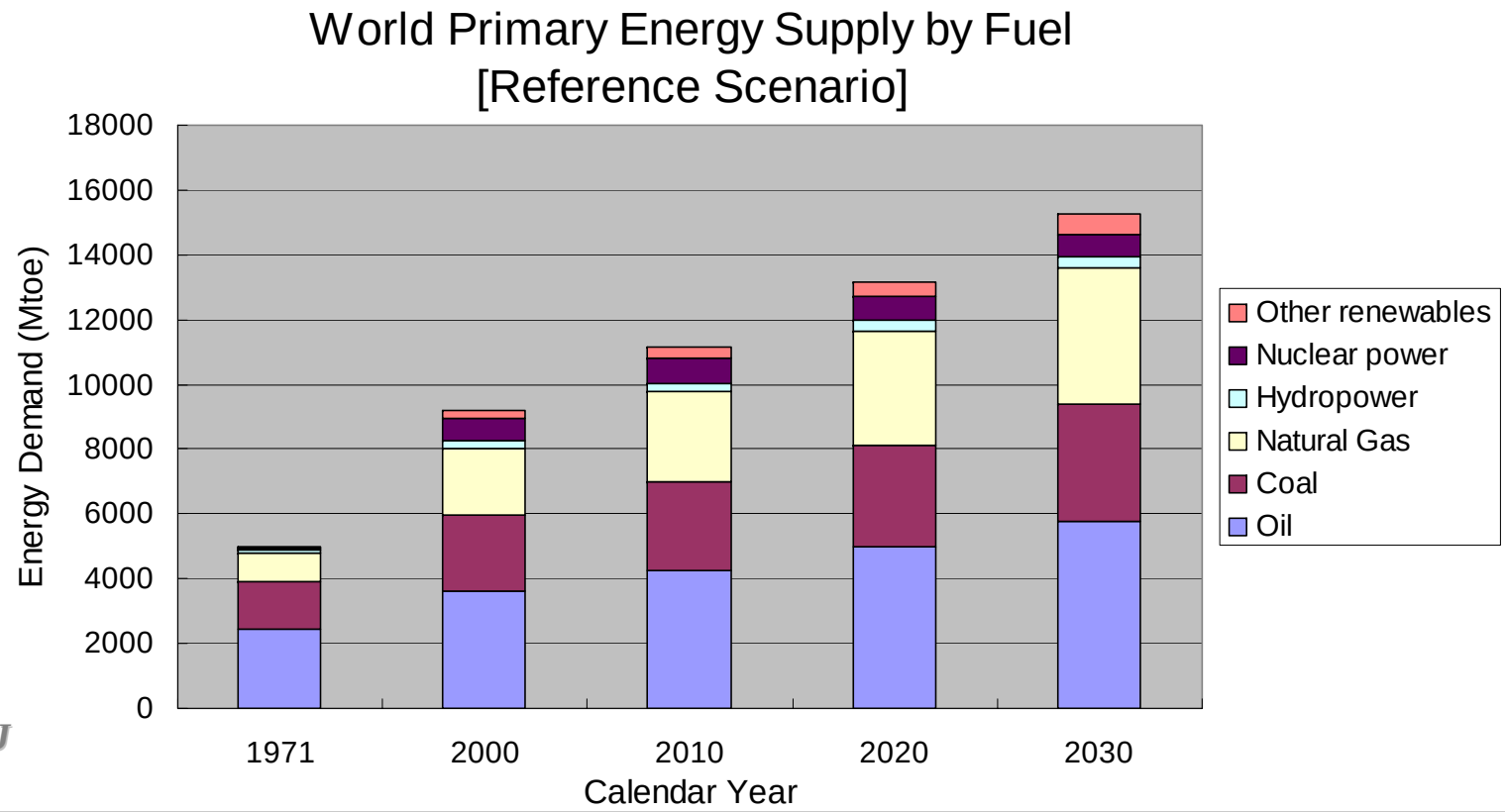
World Primary Energy Supply by Fuel
[Reference Scenario]

	Energy Demand (Mtoe)					Shares (%)					Growth Rates (% per annum)			
	1971	2000	2010	2020	2030	1971	2000	2010	2020	2030	1971-2000	2000-2010	2000-2020	2000-2030
Oil	2450	3604	4272	5003	5769	49%	39%	38%	38%	38%	1.3%	1.7%	1.7%	1.6%
Coal	1449	2355	2702	3128	3606	29%	26%	24%	24%	24%	1.7%	1.4%	1.4%	1.4%
Natural Gas	895	2085	2794	3531	4203	18%	23%	25%	27%	28%	3.0%	3.0%	2.7%	2.4%
Hydropower	104	228	274	327	366	2%	2%	2%	2%	2%	2.7%	1.9%	1.8%	1.6%
Nuclear power	29	674	753	719	703	1%	7%	7%	5%	5%	11.5%	1.1%	0.3%	0.1%
Other renewables	73	233	336	457	618	1%	3%	3%	3%	4%	4.1%	3.7%	3.4%	3.3%
World Total	4999	9179	11132	13167	15267	100%	100%	100%	100%	100%	2.1%	1.9%	1.8%	1.7%

Source: IEA's World Energy Outlook 2002



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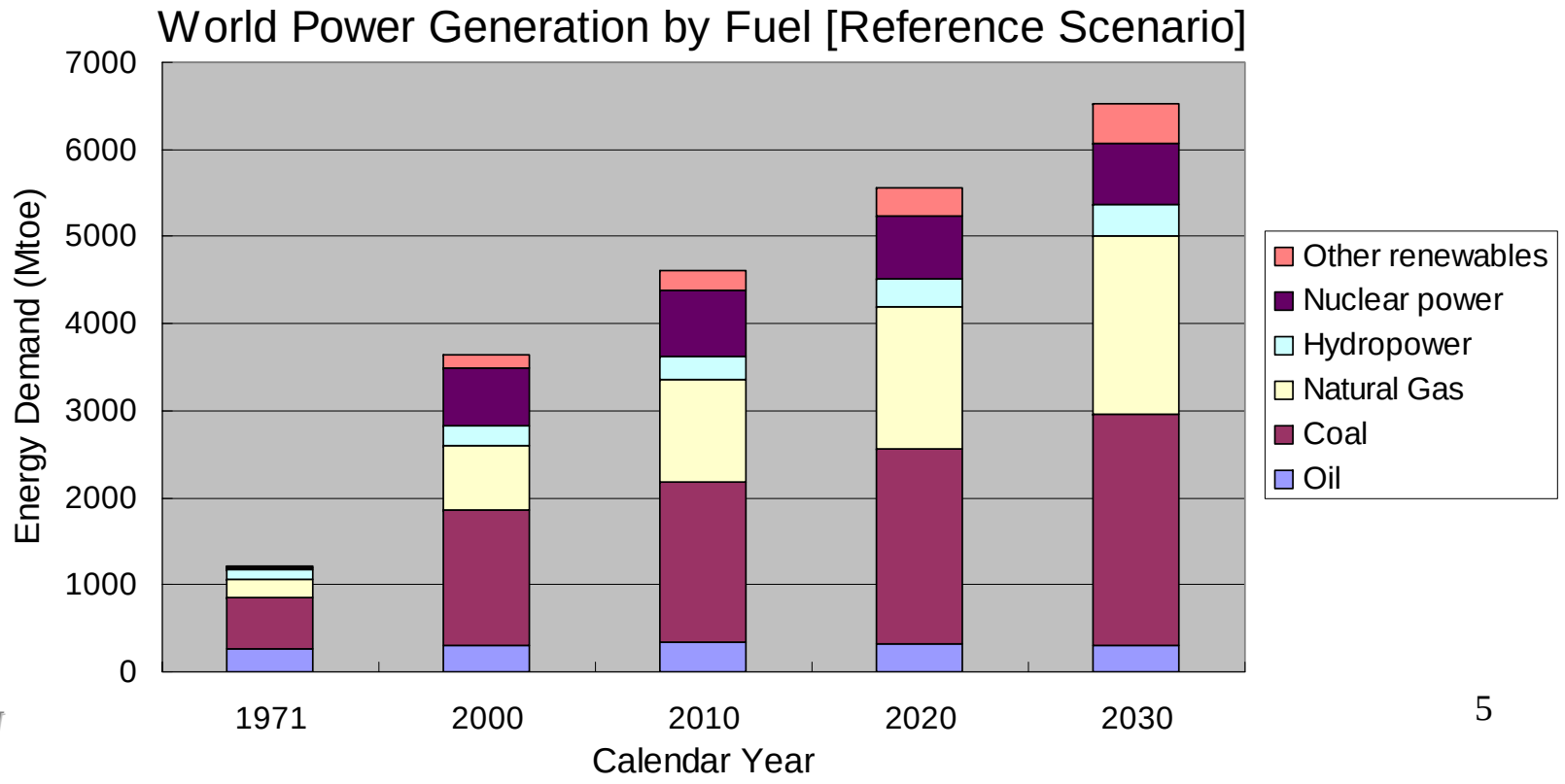
World Power Generation by Fuel
[Reference Scenario]

	Energy Demand (Mtoe)					Shares (%)					Growth Rates (% per annum)			
	1971	2000	2010	2020	2030	1971	2000	2010	2020	2030	1971-2000	2000-2010	2000-2020	2000-2030
Oil	270	310	332	329	311	22%	9%	7%	6%	5%	0.5%	0.7%	0.3%	0.0%
Coal	593	1555	1851	2224	2656	49%	43%	40%	40%	41%	3.4%	1.8%	1.8%	1.8%
Natural Gas	207	725	1170	1631	2032	17%	20%	25%	29%	31%	4.4%	4.9%	4.1%	3.5%
Hydropower	104	228	274	327	366	9%	6%	6%	6%	6%	2.7%	1.9%	1.8%	1.6%
Nuclear power	29	674	753	719	703	2%	19%	16%	13%	11%	11.5%	1.1%	0.3%	0.1%
Other renewables	7	144	228	329	466	1%	4%	5%	6%	7%	11.1%	4.7%	4.2%	4.0%
World Total	1290	3636	4608	5559	6535	100%	100%	100%	100%	100%	3.9%	2.4%	2.1%	2.0%

Source: IEA's World Energy Outlook 2002



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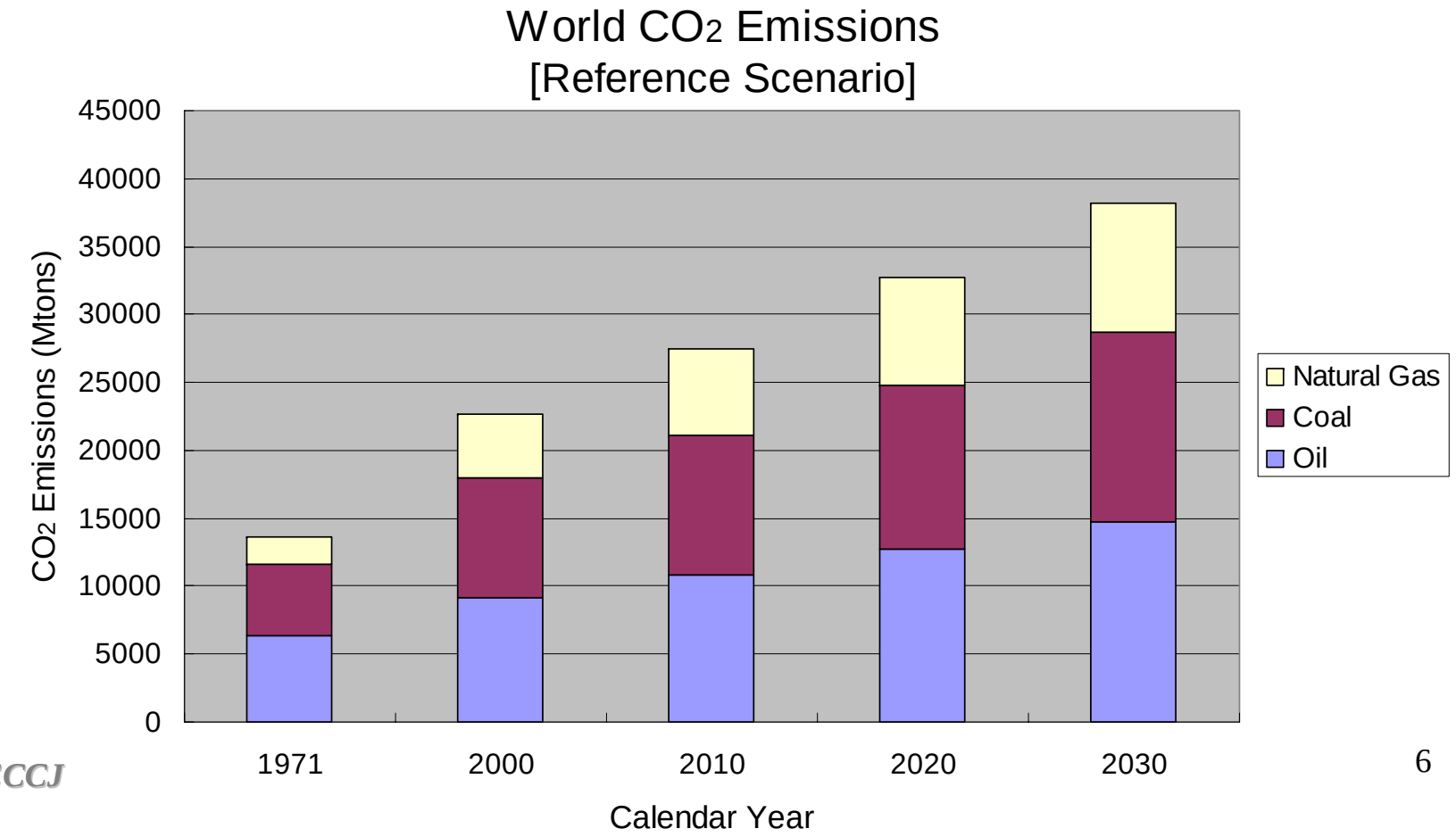
World CO_2 Emissions
[Reference Scenario]

	World CO_2 Emissions (Mtons of CO_2)					Shares (%)					Growth Rates (% per annum)			
	1971	2000	2010	2020	2030	1971	2000	2010	2020	2030	1971-2000	2000-2010	2000-2020	2000-2030
Oil	6360	9108	10881	12783	14794	47%	40%	40%	39%	39%	1.2%	1.8%	1.7%	1.6%
Coal	5236	8875	10276	11959	13850	38%	39%	37%	37%	36%	1.8%	1.5%	1.5%	1.5%
Natural Gas	2058	4656	6295	7986	9517	15%	21%	23%	24%	25%	2.9%	3.1%	2.7%	2.4%
World Total	13654	22639	27453	32728	38161	100%	100%	100%	100%	100%	1.8%	1.9%	1.9%	1.8%

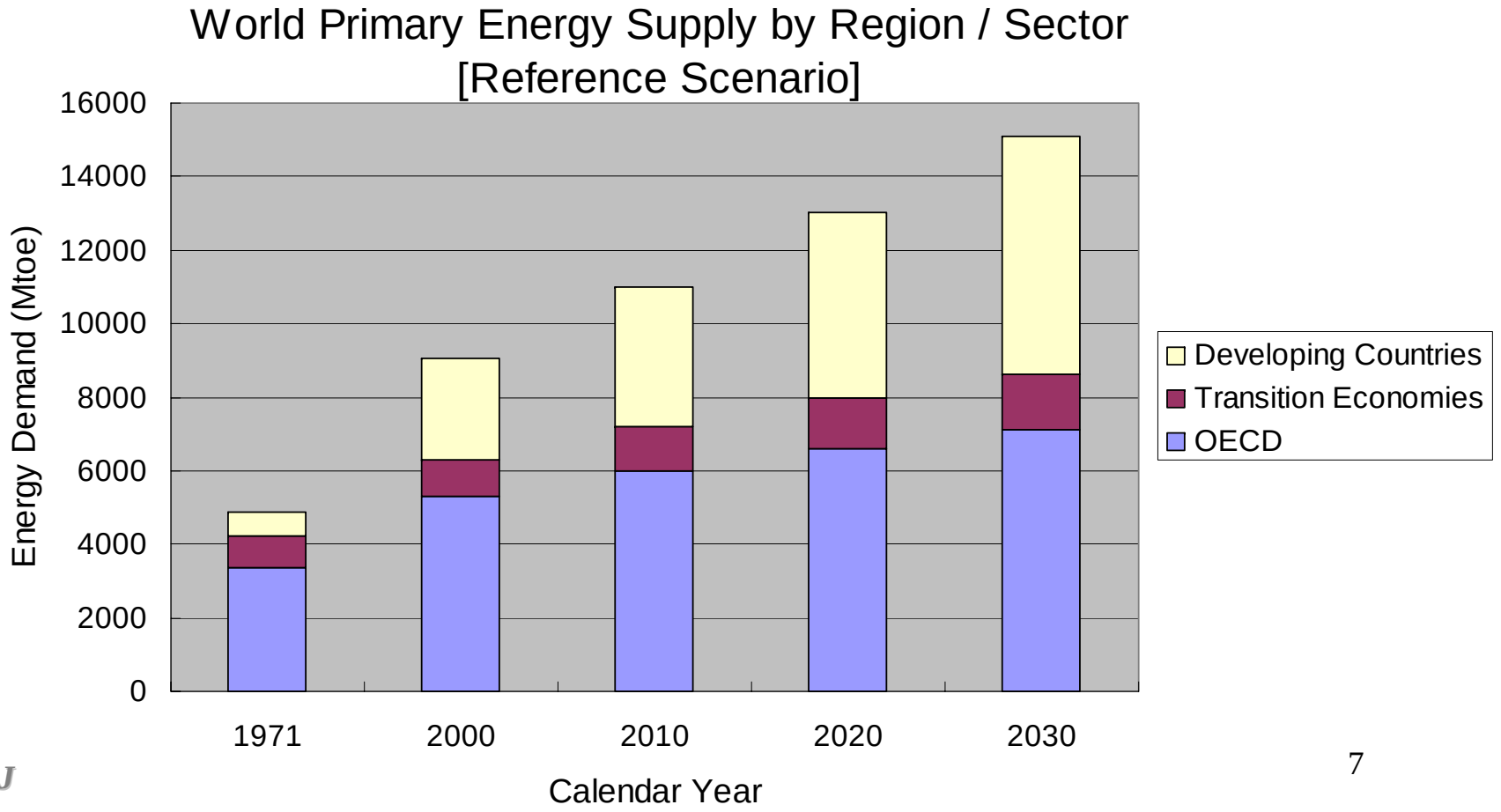
Source: IEA's World Energy Outlook 2002



World Primary Energy Supply by Region / Sector
[Reference Scenario]

	Energy Demand (Mtoe)					Shares (%)					Growth Rate (% per annum)			
	1971	2000	2010	2020	2030	1971	2000	2010	2020	2030	1971-2000	2000-2010	2000-2020	2000-2030
OECD	3365	5291	5994	6605	7117	69%	58%	55%	51%	47%	1.6%	1.3%	1.1%	1.0%
Transition Economies	865	1024	1220	1373	1488	18%	11%	11%	11%	10%	0.6%	1.8%	1.5%	1.3%
Developing Countries	657	2732	3772	5031	6487	13%	30%	34%	39%	43%	5.0%	3.3%	3.1%	2.9%
World Total	4887	9047	10986	13009	15092	100%	100%	100%	100%	100%	2.1%	1.9%	1.8%	1.7%

Source: IEA's World Energy Outlook 2002



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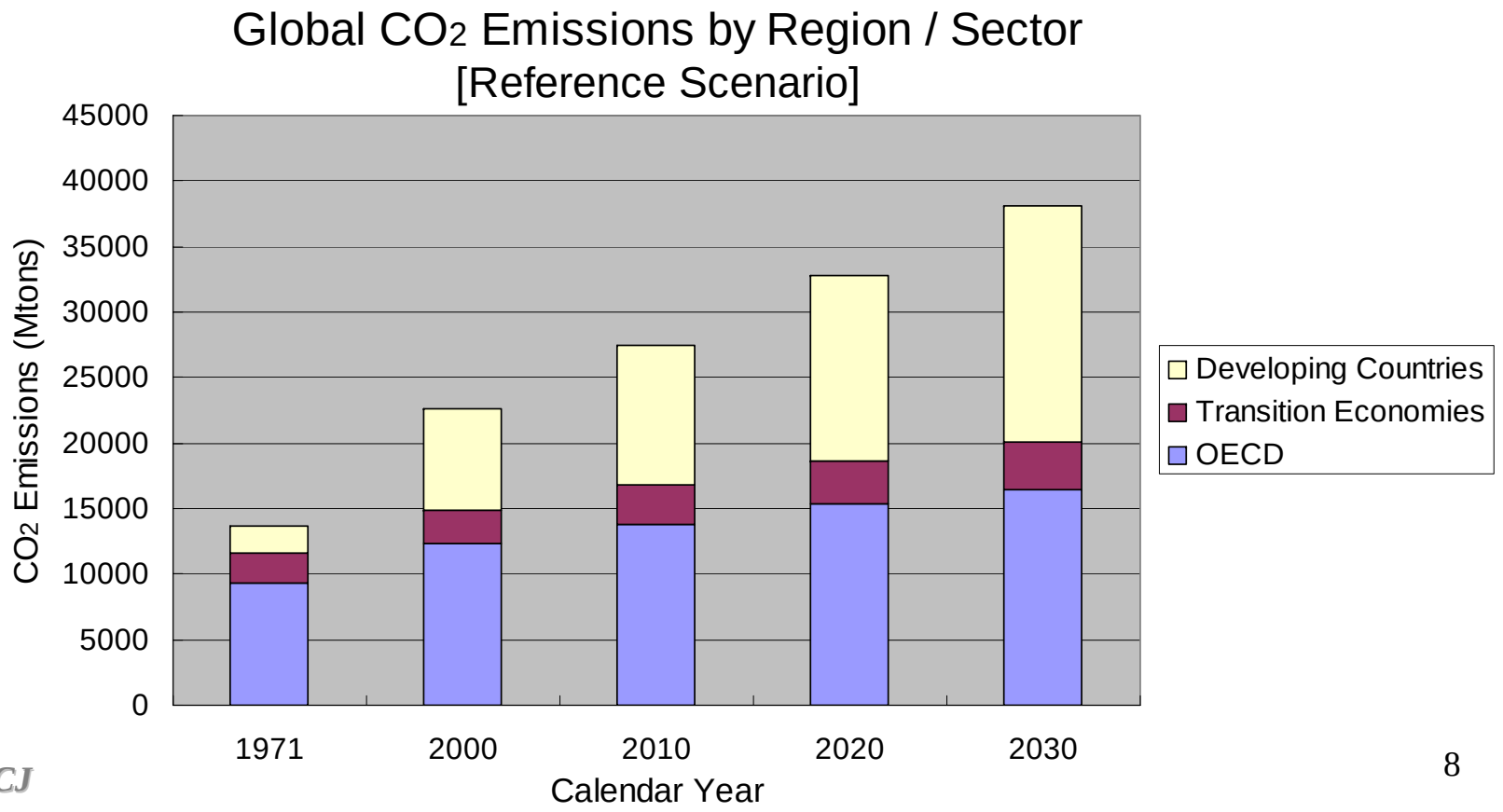
Global CO_2 Emissions by Region / Sector
[Reference Scenario]

	CO_2 Emissions (Mtons of CO_2)					Shares (%)					Growth Rates (% per annum)			
	1971	2000	2010	2020	2030	1971	2000	2010	2020	2030	1971-2000	2000-2010	2000-2020	2000-2030
OECD	9355	12369	13800	15311	16397	68.5%	55%	50%	47%	43%	1.0%	1.1%	1.1%	0.9%
Transition Economies	2281	2488	3041	3374	3646	17%	11%	11%	10%	10%	0.3%	2.0%	1.5%	1.3%
Developing Countries	2018	7782	10612	14042	18118	15%	34%	39%	43%	47%	4.8%	3.2%	3.0%	2.9%
World Total	13654	22639	27453	32727	38161	100%	100%	100%	100%	100%	1.8%	1.9%	1.9%	1.8%

Source: IEA's World Energy Outlook 2002



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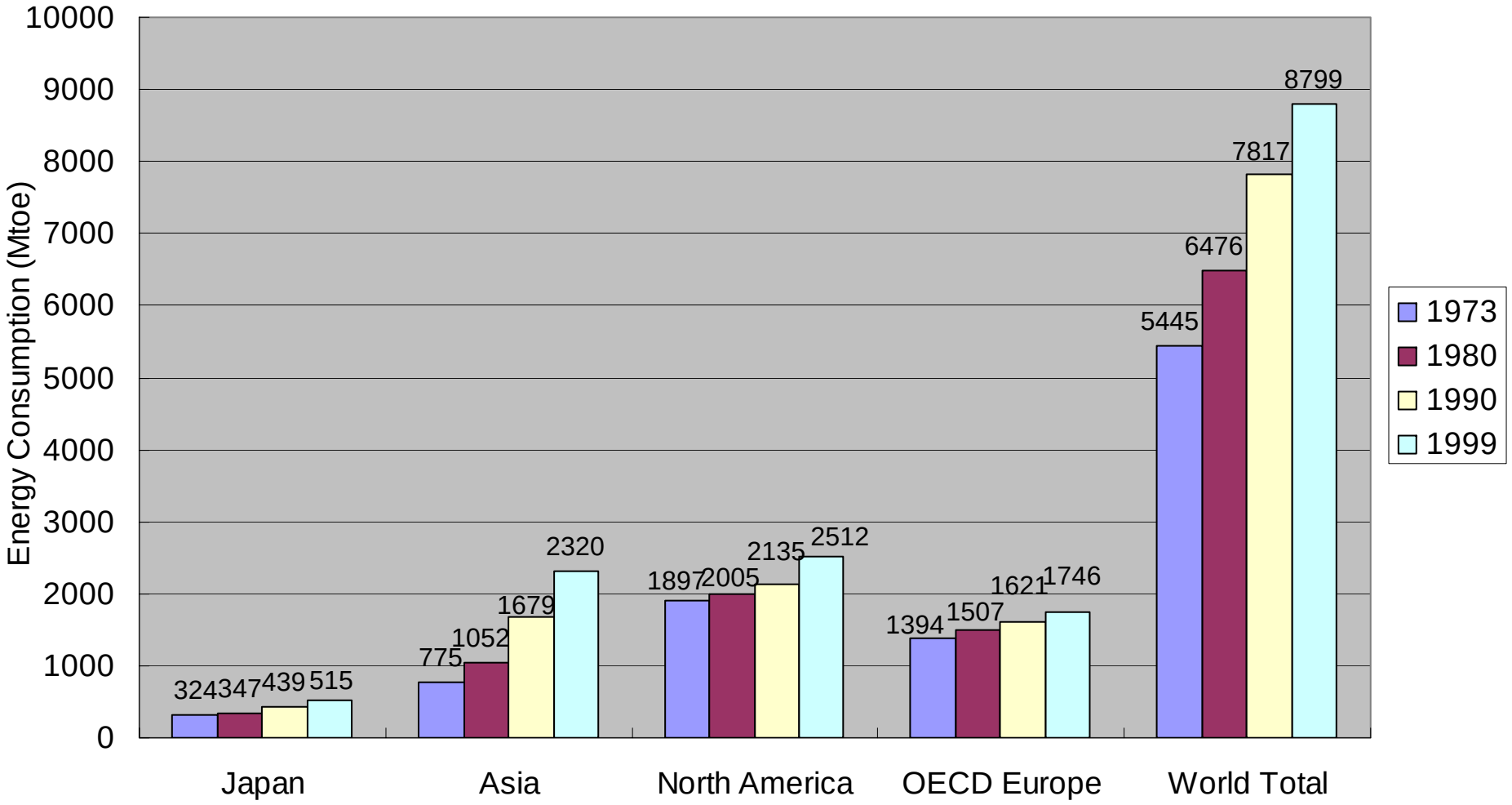
Primary Energy Consumption



Source: EDMC Energy & Economic Statistics in Japan 2002

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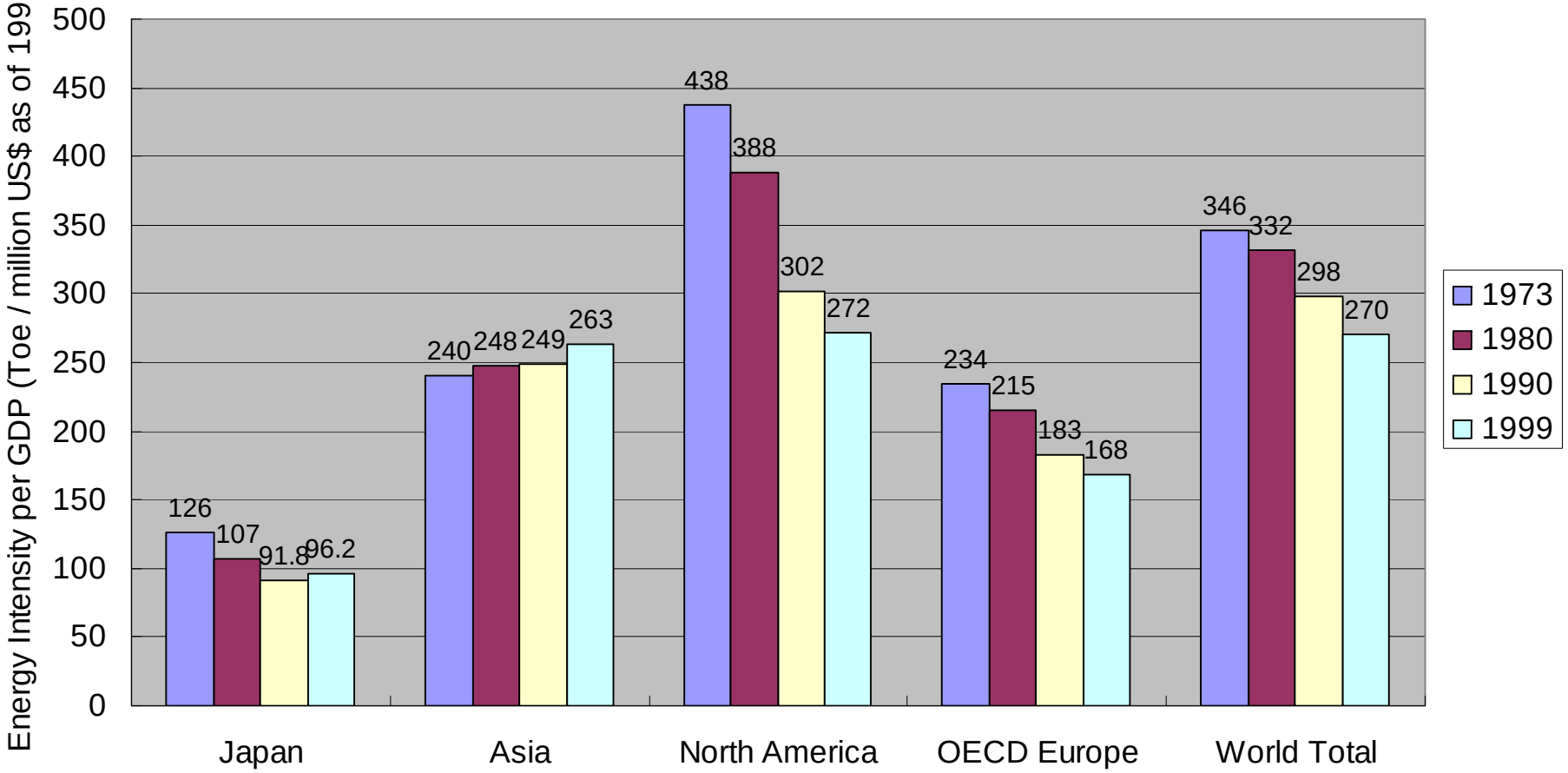
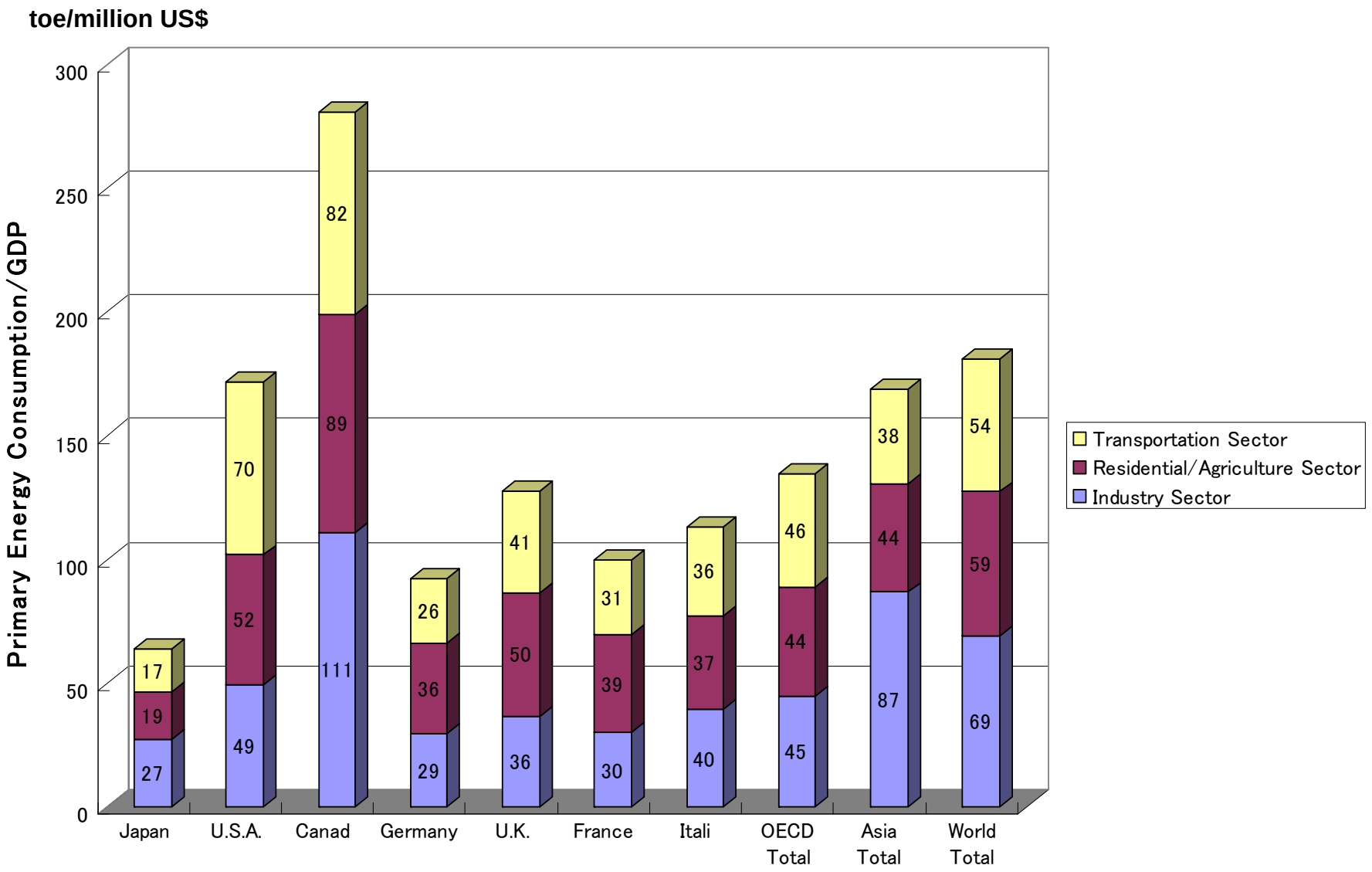
Primary Energy Intensity per GDP



Source: EDMC Energy & Economic Statistics in Japan 2002

Final Energy Consumption per GDP (1999)



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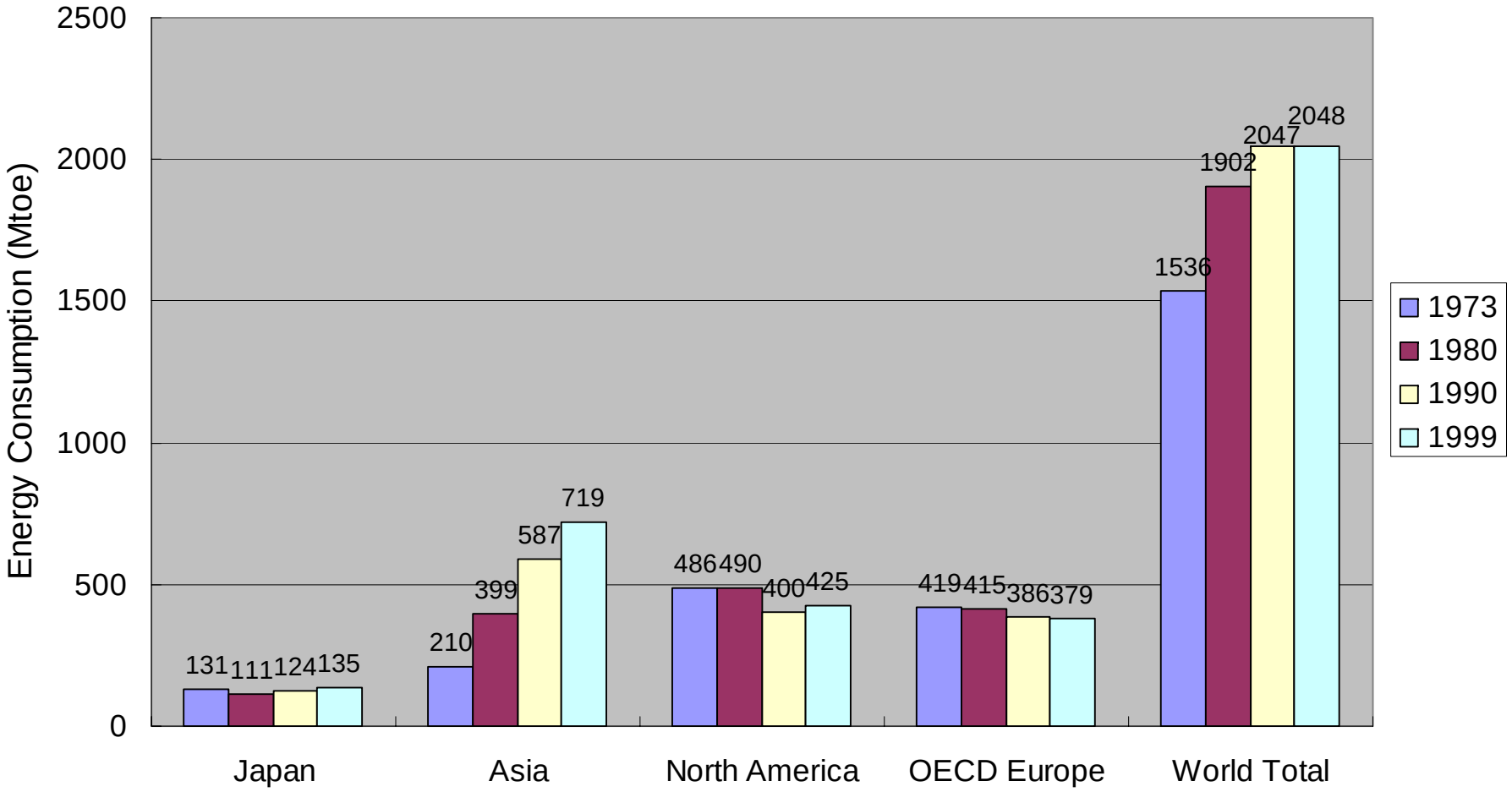
Final Energy Consumption in Industrial Sector



Source: EDMC Energy & Economic Statistics in Japan 2002

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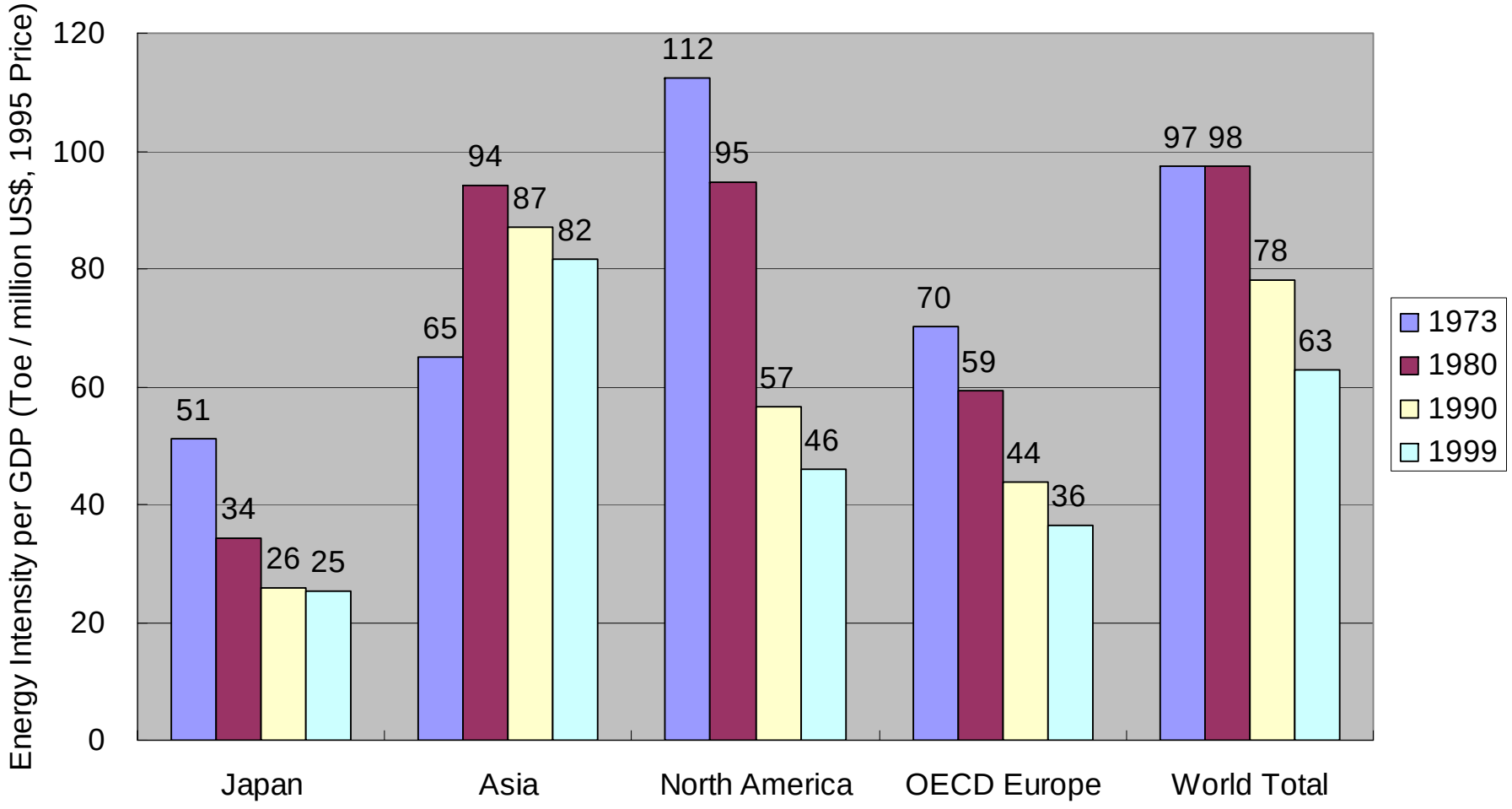
Final Energy Intensity per GDP in Industrial Sector



Source: EDMC Energy & Economic Statistics in Japan 2002

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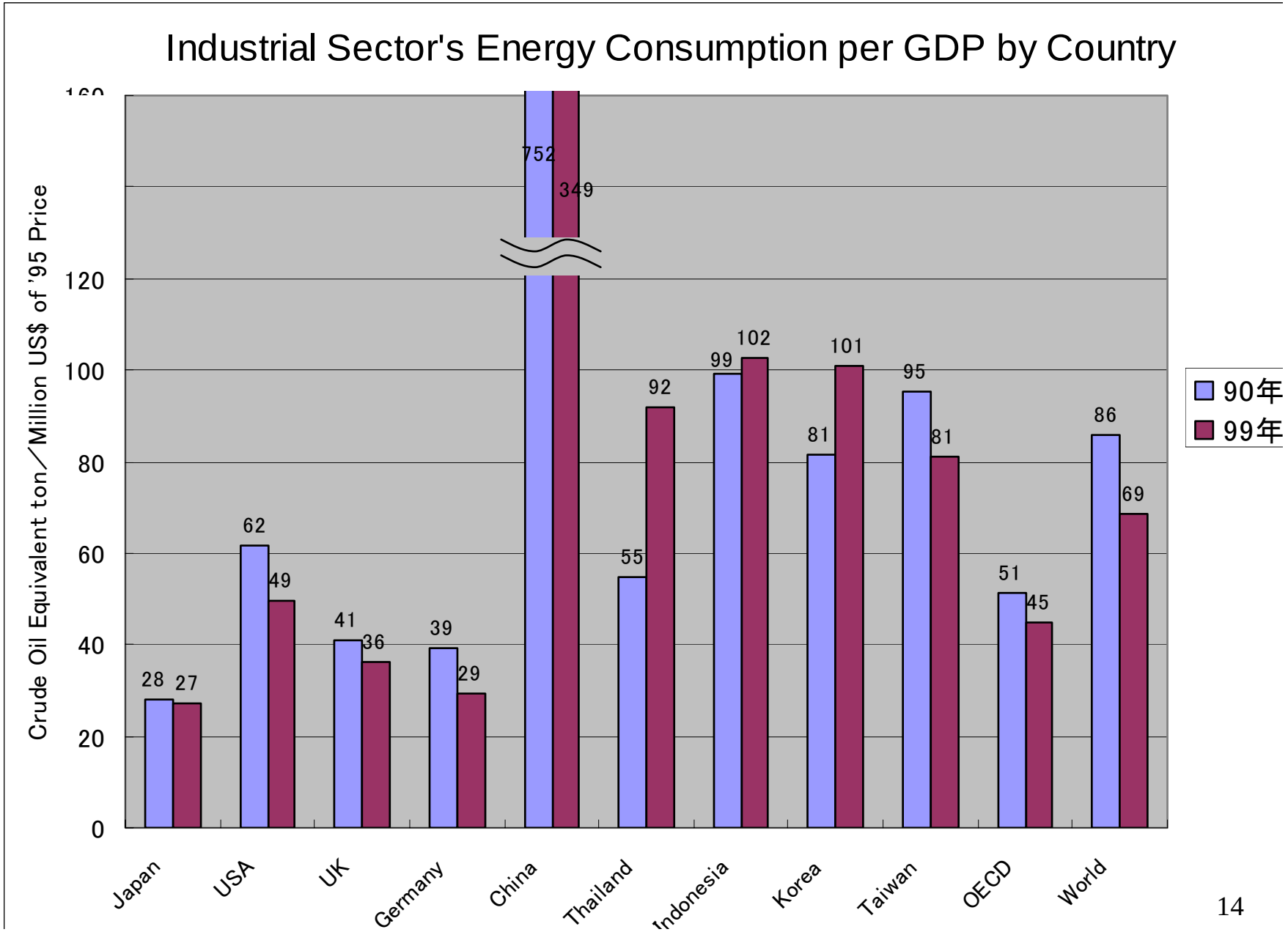
Source : IEA Statistics / World Bank Statistics



World Energy Resource Reserves

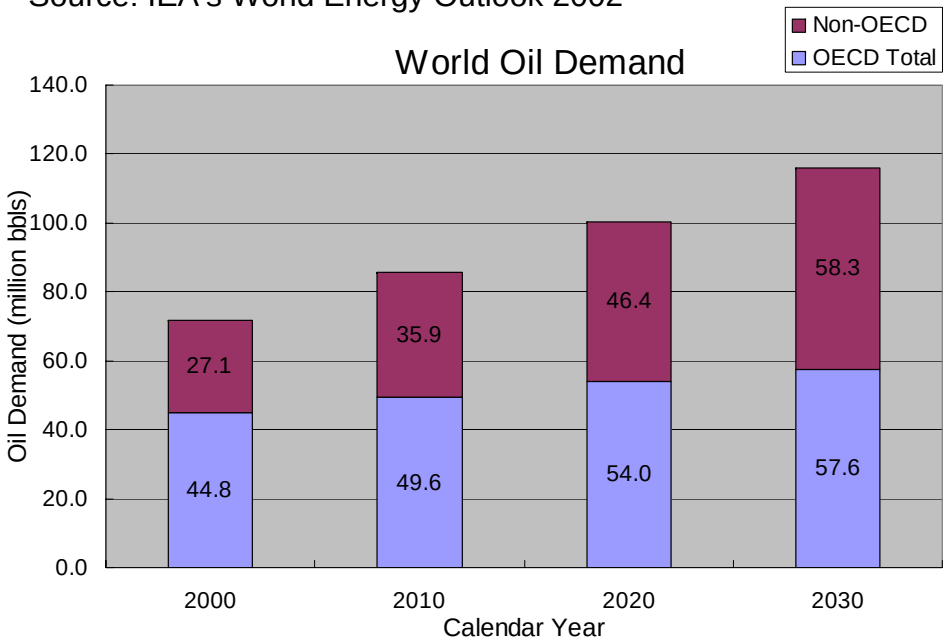
	Oil	Natural gas	Coal	Uranium
Proved Reserves	At the end of 2000	At the end of 2000	At the end of 2000	As of 1995
	1.05 trillion bbls	150 trillion kl	984 billion tons	4.15 million tons
Reserves by Area (%)				
North America	6	5	26	17
Latin America	9	5	2	6
Western Europe	2	3	12	3
Middle East	65	35	0	0
Asia Pacific	4	7	30	24
Africa	7	7	6	17
Eastern Europe & CIS	6	38	23	33
Annual Production	As of 2000	As of 2000	As of 2000	As of 1994
	72 million bbls/day	2.46 trillion kl/year	4.47 billion tons	31 thousand tons
Recoverable Year	As of 2000	As of 2000	As of 2000	As of 1994
	40 years	61 years	231 years	73 years

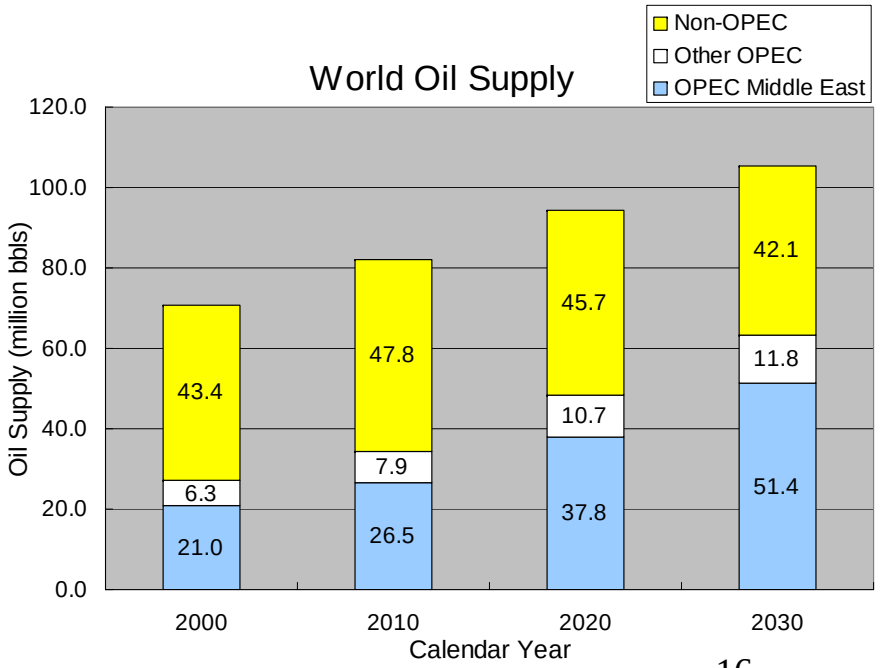
Source: EDMC Energy & Economic Statistics in Japan 2002

World Oil Balance [million barrels per day]

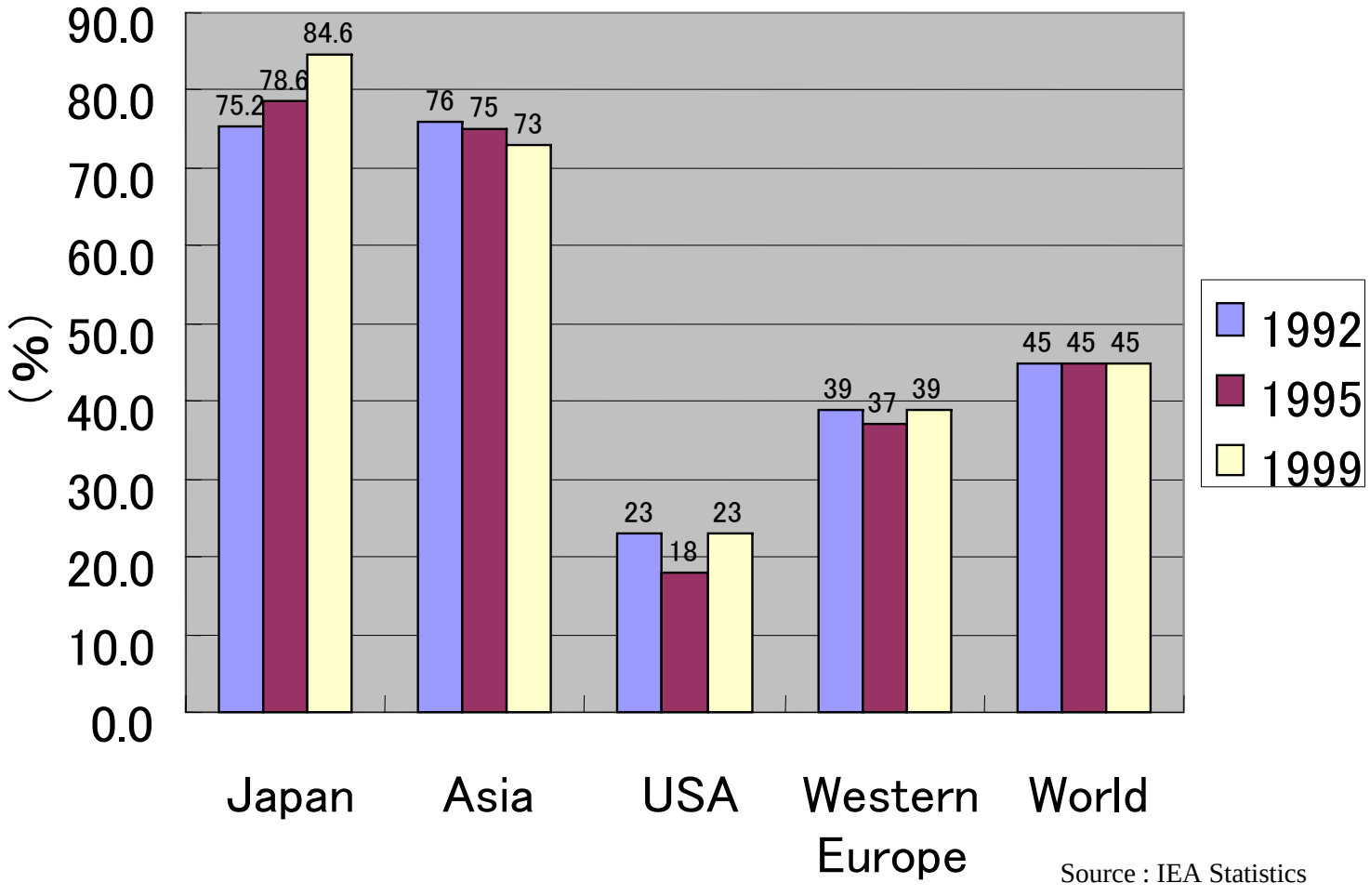
	million barrels per day				Average growth 2000-2030 (% per annum)
	2000	2010	2020	2030	
Total Demand	75.0	88.8	104.0	120.0	1.6%
OECD Total	44.8	49.6	54.0	57.6	0.8%
Non-OECD	27.1	35.9	46.4	58.3	2.6%
Total Supply	75.0	88.8	104.0	120.0	1.6%
Non-OPEC	43.4	47.8	45.7	42.1	-0.1%
OPEC	28.7	35.9	50.2	64.9	2.8%
OPEC Middle East	21.0	26.5	37.8	51.4	3.0%
Other OPEC	6.3	7.9	10.7	11.8	1.9%
OPEC Share (%)	38.4%	40.4%	48.3%	54.1%	1.2%
OPEC Middle East Share (%)	28.1%	29.8%	36.4%	42.9%	1.4%

Source: IEA's World Energy Outlook 2002



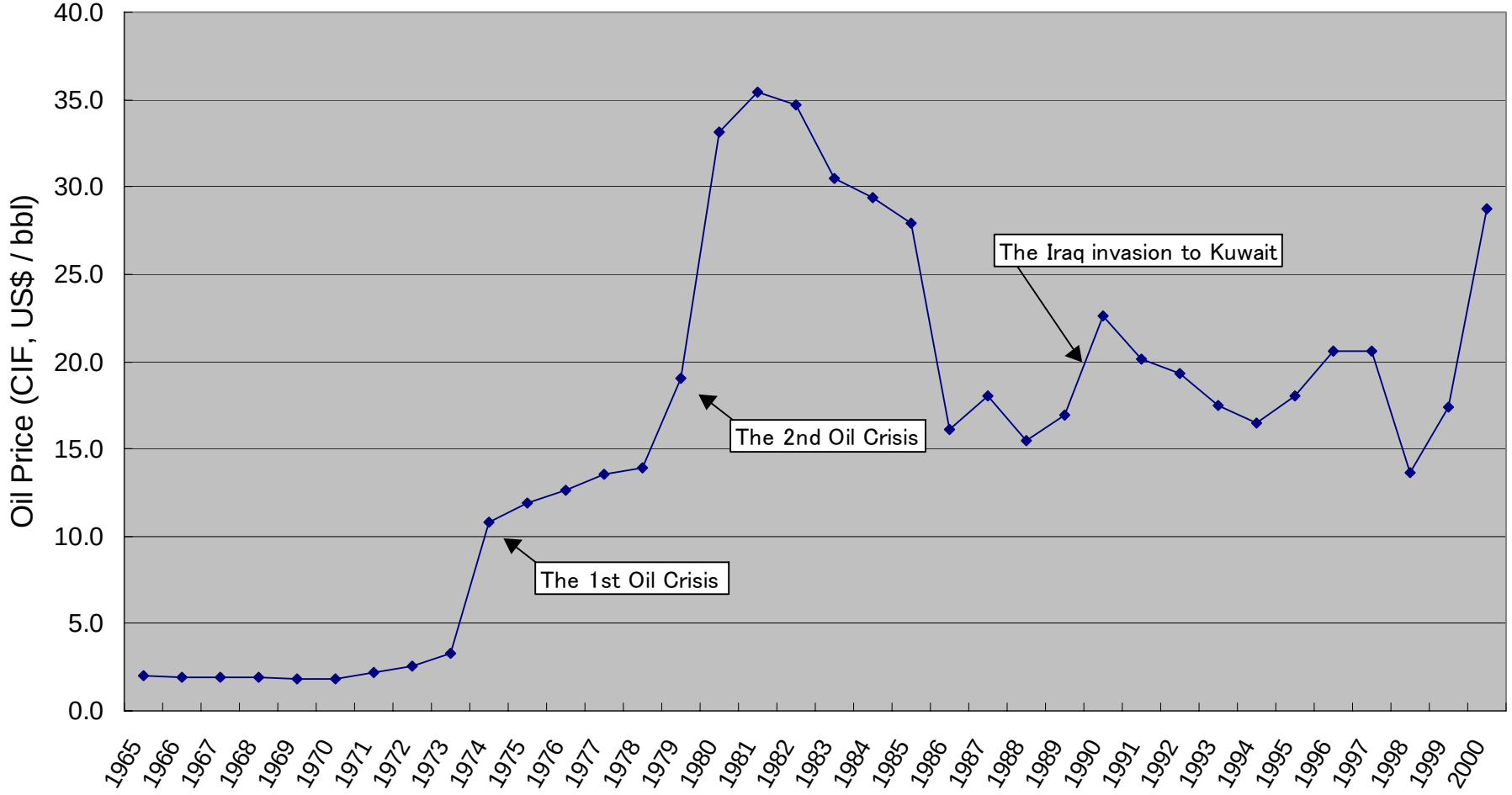


Dependence Rate of Middle East's Source in Crude Oil Import by Country



Source : IEA Statistics

Trend of Oil Price
[CIF, Import in Japan]



Source: EDMC Energy & Economic Statistics in Japan 2002

2. Countermeasures to Global Warming

International Countermeasures to Global Warming (1)

Regarding global warming, accumulation of scientific knowledge is performed in IPCC (Intergovernmental Panel on Climate Change) until now, and meanwhile arguments on its international countermeasures have been made in COP (Conference of the Parties) of UNFCC (United Nations Framework Convention on Climate Change) in terms of supplementing mutually the related issues.

IPCC - Accumulation of Scientific Knowledge :

IPCC is a body organized by scientists in the world which WMO (World Meteorological Organization) and UNEP (United Nations Environment Program) founded jointly as a place of the study about the global warming problem of a government level in November, 1988. In the report compiled for 1995, IPCC analyzed the climate change since the 19th century to find that global warming has been already occurring due to increasing amount of emitted greenhouse gases after the Industrial Revolution etc.

International Countermeasures to Global Warming (2)

UNFCC – Study of International Countermeasures :

As IPCC being a place to accumulate scientific knowledge, on one hand we have UNFCC as a place to discuss and perform international countermeasures to a climate change. In UNCED (United Nations Conference on Environment and Development: commonly named “Earth Summit”) held in Rio de Janeiro in Brazil in June, 1992, a large number of the countries including Japan signed UNFCC. The purpose of this treaty is stabilizing the concentration of greenhouse gases in the atmosphere, accordingly it is required that the amount of emitted greenhouse gases should be controlled or cut down. UNFCC was ratified by 50 countries and went into effect in March, 1994. Based on its effectuation, following COP1 held in Berlin and COP2 held in Geneva, COP3 was held in Kyoto to adopt "Kyoto Protocol" which defined the reduction targets of greenhouse gases in the period from 2008 through 2012.

Global Warming

Increase of CO_2 % in the Air :

★ 265 - 285 ppm before the Industrial Revolution (1750 - 1800)

★ 365 ppm in 1996

★ Over 600 ppm estimated by the end of 2100

Rising of the Earth's Average Temperature :

★ 0.3 - 0.6 ℃ has risen over the past 100 years.

★ 1.4 - 5.8 ℃ will rise between 1990 - 2100.

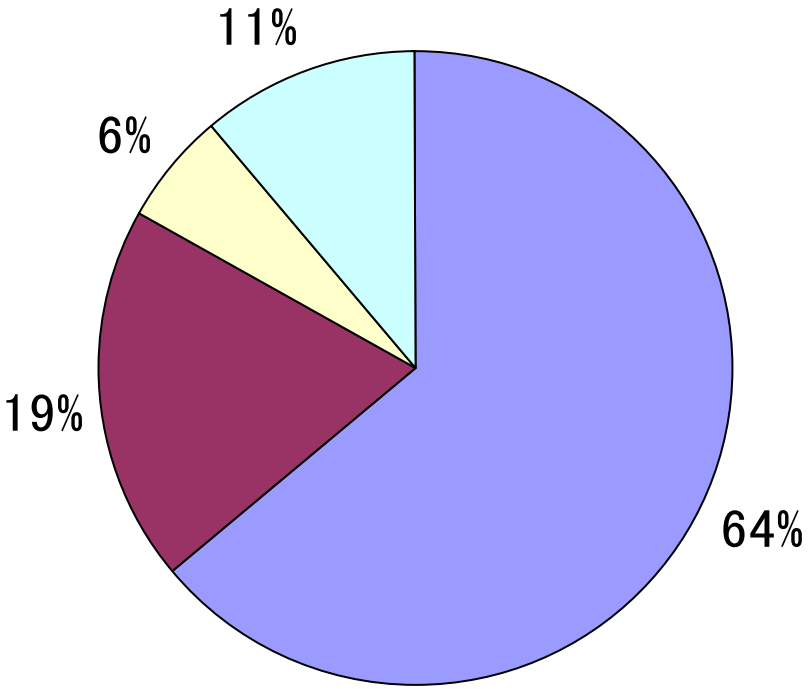
Rising of Sea Levels :

★ 10 - 25 cm has risen over the past 100 years.

★ 9 - 88 cm will rise between 1990 - 2100.

Source : IPCC Report in 2000

Influences of Green House Gases on Global Warming (1850 - 1990)



	Coefficient to Global Warming
CO2	1
Methane (CH4)	21
Nitrous oxide (N2O)	310
Fluorides & Others	3,800 (CFC-11)

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COP3 Outline of the Kyoto Protocol (1)

The 3rd Conference of Parties of the UN Framework Convention on Climate Change (December 1 - 11, 1997)

Target gases	:	CO_2, CH_4, N_2O, HFC, PFC, SF_6
Target year	:	2008 - 2012
Reduction target (Base year: 1990)	:	At least 5% for all Annex I(or B in Protocol) parties -5% Croatia -6% Japan, Canada, Hungary, Poland -7% US -8% Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Liechtenstein, Luxembourg, Monaco, Netherlands, Portugal, Spain, Sweden, UK, Switzerland, Bulgaria, Czech, Estonia, Latvia, Lithuania, Rumania, Slovakia, Slovenia
Sinks	:	GHG reduction subject to afforestation is inclusive into calculation for the commitments.

COP3 Outline of the Kyoto Protocol (2)

Kyoto Mechanism

Emission Trading (ET)	:	Parties in Annex I may participate in the Emission Trading in order to achieve their commitments.
Joint Implementation (JI)	:	For the purpose of meeting its commitments, Parties in Annex I may transfer to or acquire from, emission reduction units, any other parties in Annex I .
Clean Development Mechanism (CDM)	:	The purpose of CDM mechanism is to assist Parties not included in Annex I in achieving sustainable development and to contribute the Protocol, while Parties in Annex I may use the certified emission reductions accruing from such projects.

COP3 Outline of the Kyoto Protocol (3)

Enforcement and Effect

Enforcement : The Convention shall become effective 90 days after 55 or more parties to the UNFCCC, incorporating Annex I parties of which total CO_2 emission in 1990 is 55% or more of total CO_2 emissions of all Annex I parties, ratify the Protocol.

Effect : When no Protocol exists, the global CO_2 emission in 2010 will increase by 24% compared with 1990.

When the Protocol is enforced in 2000, the global CO_2 emission in 2010 will reduce by 5.2% compared with 1990.

COP6 Results and Progresses

The 6th Conference of Parties of the UNFCCC was held in Hague, the Netherlands (Nov. 13 - 25, 2000) and its Part-2 Conference was held in Bonn, Germany (July 16 - 27, 2001)

Major issues : ① Financial & technical assistance from developed countries to developing countries to help them manage their emission and adapt to climate change.

② Implementation of the Kyoto Mechanism :
- International Emission Trading (ET)
- Joint Implementation (JI)
- Clean Development Mechanism (CDM)

③ Utilization of carbon sequestration techniques “Sinks”

④ Compliance, with its related issues of reporting, international governance and penalties

Results/Progresses : No consensus has reached for the major issues at the Hague conference, but the Bonn conference has succeeded in making the Kyoto Protocol ratifiable, with expectation to accelerate the transition phase to the implementation phase at COP7.

COP7 Results and Consensus

The 7th Conference of Parties of the UNFCCC was held in Marrakech, Morocco on Oct. 29 - Nov. 9, 2001.

Results : Essential points of Bonn Agreement have been maintained. Kyoto Mechanism and its rule were confirmed and agreed as Marrakech Accord. The U.S. was not substantially involved with the conference under the influence of a declaration made by President Bush of the secession from Kyoto Protocol on March,2001.

Consensus :

① Establishment of 2 funds for technology transfer and financial support to developing countries.

② Implementation of the Kyoto Mechanism :
- ET, JI and CDM shall be supplementary measures to domestic ones.
- Emission constraint by Nuclear Power is not counted in.
- Purchase of emission shall be less than 10% of total emission pledged by country.

③ Carbon sequestration techniques “Sinks” :
- Conditions by country shall be taken into consideration.

④ Penalty to carry over 1.3 times of the non-achieved target.

⑤ CDM Executive Board is set up for smooth promotion.

COP8 Results and Progresses

The 8th Conference of Parties of the UNFCCC was held in New Delhi,India on Oct. 23 - Nov.1, 2002.

The Delhi Ministerial Declaration on Climate Change and Sustainable Development was adopted at COP8.

- Strong encouragement of the Protocol ratification to Parties that have not done yet.

- Recognition with the concern of the findings of the IPCC Third Assessment Report (TAR) which confirms the necessity of significant cuts in global emissions for the ultimate objective of the Convention.

- Note to current mitigation actions by both Annex 1 and non Annex 1 countries and emphasis on mitigation of GHG emissions to combat climate change as continuing high priority under the provisions of the Convention.

- Promotion of informal exchange of information on actions relating to mitigation and adaptation among Parties for more effective and appropriate responses to climate change.

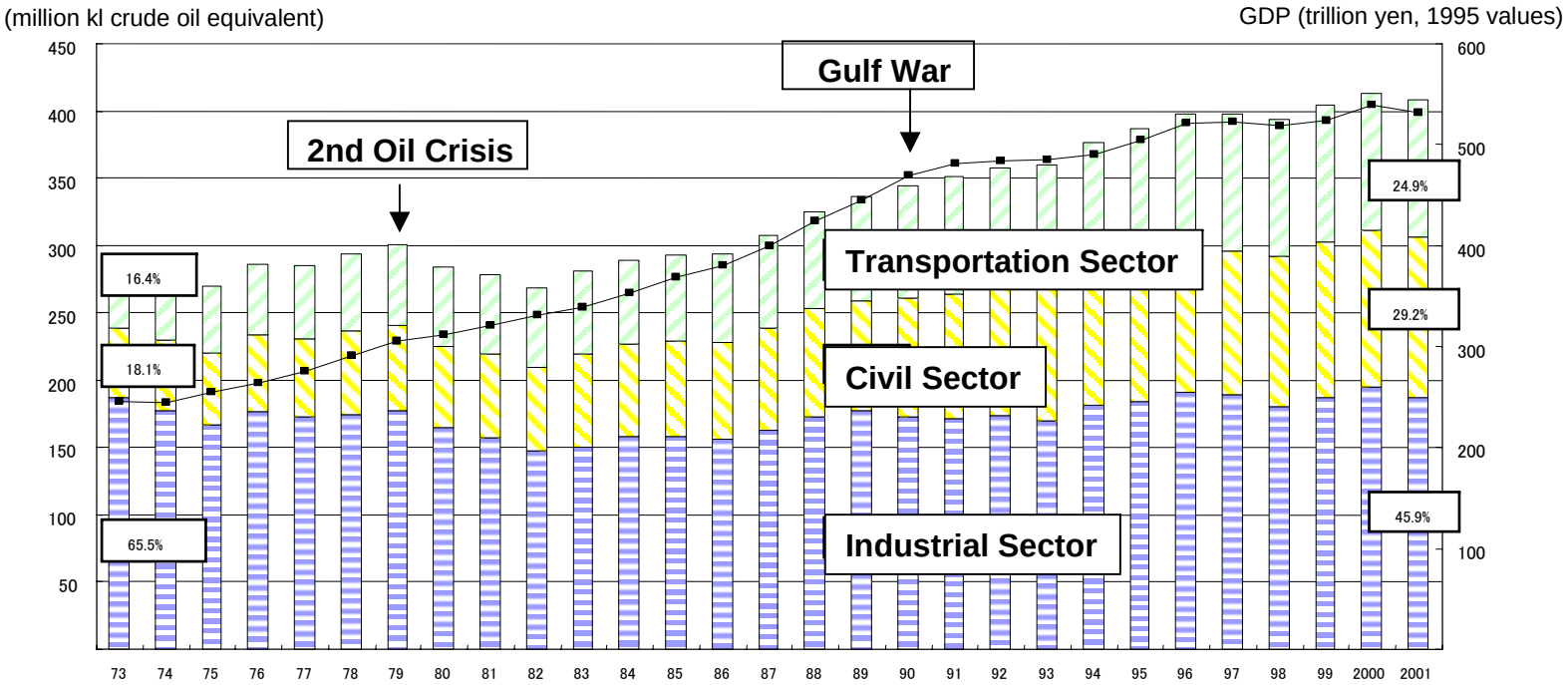
- Take Urgent actions at all levels to substantially increase the global share of renewable energy sources.

Next step : COP 9 is tentatively scheduled in Italy in December,2004.

3. Current Energy Conservation Measures in Japan

Transition of Final Energy Consumption and GDP

Transition of Japan's Final Energy Consumption and Actual GDP

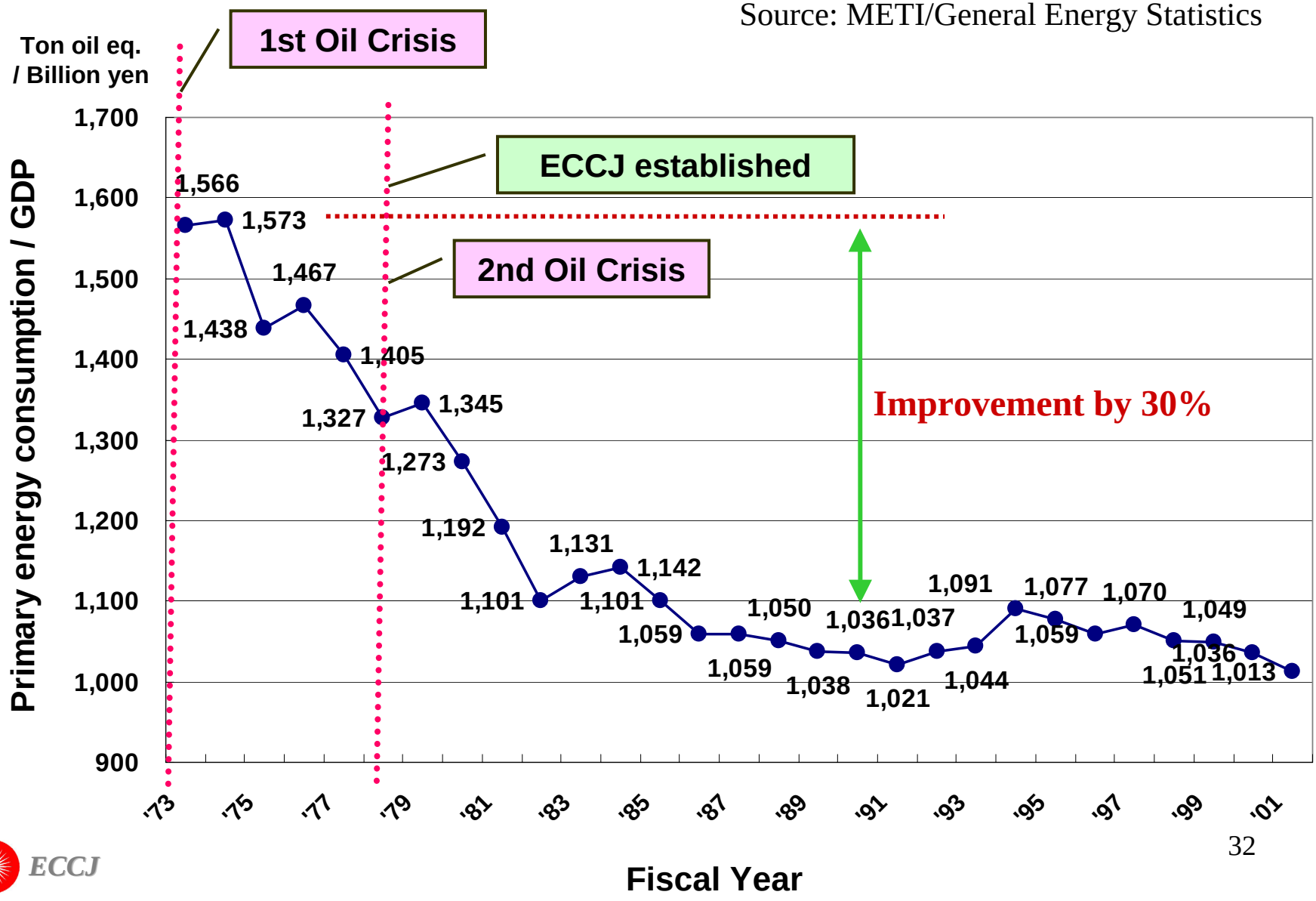


Source: General Energy Statistics

- **Japan's final energy consumption has consistently increased since the mid 1980s, excluding the year-on-year decrease in FY1998 and FY 2001.**
- **The ratios of industrial, civil and transportation sectors have shifted from 4:1:1 (oil crisis) to 2:1.5:1 (2001).**

Trend of Primary Energy Intensity per GDP in Japan

Source: METI/General Energy Statistics



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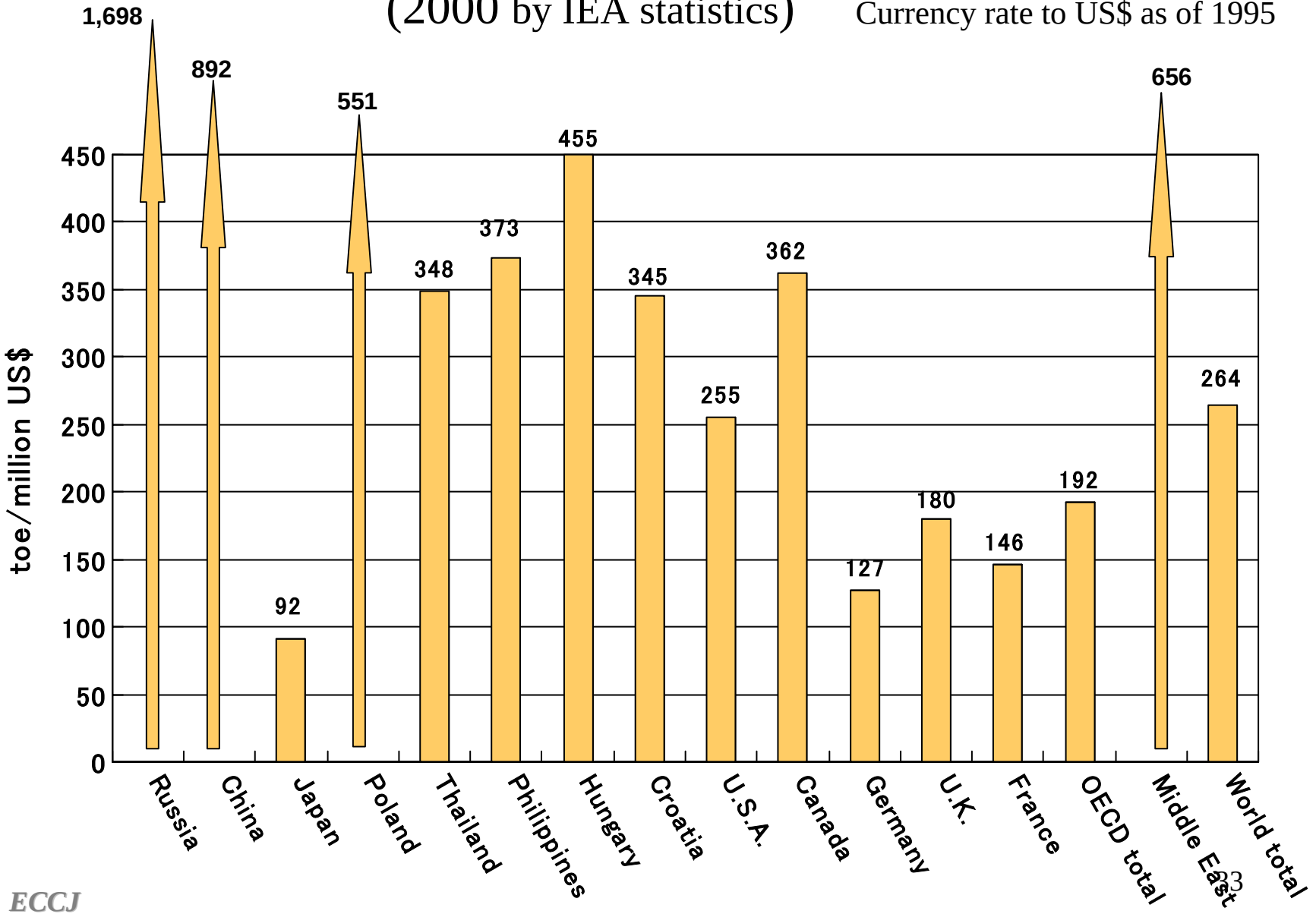
Primary Energy Intensity per GDP

(2000 by IEA statistics)

Currency rate to US$ as of 1995



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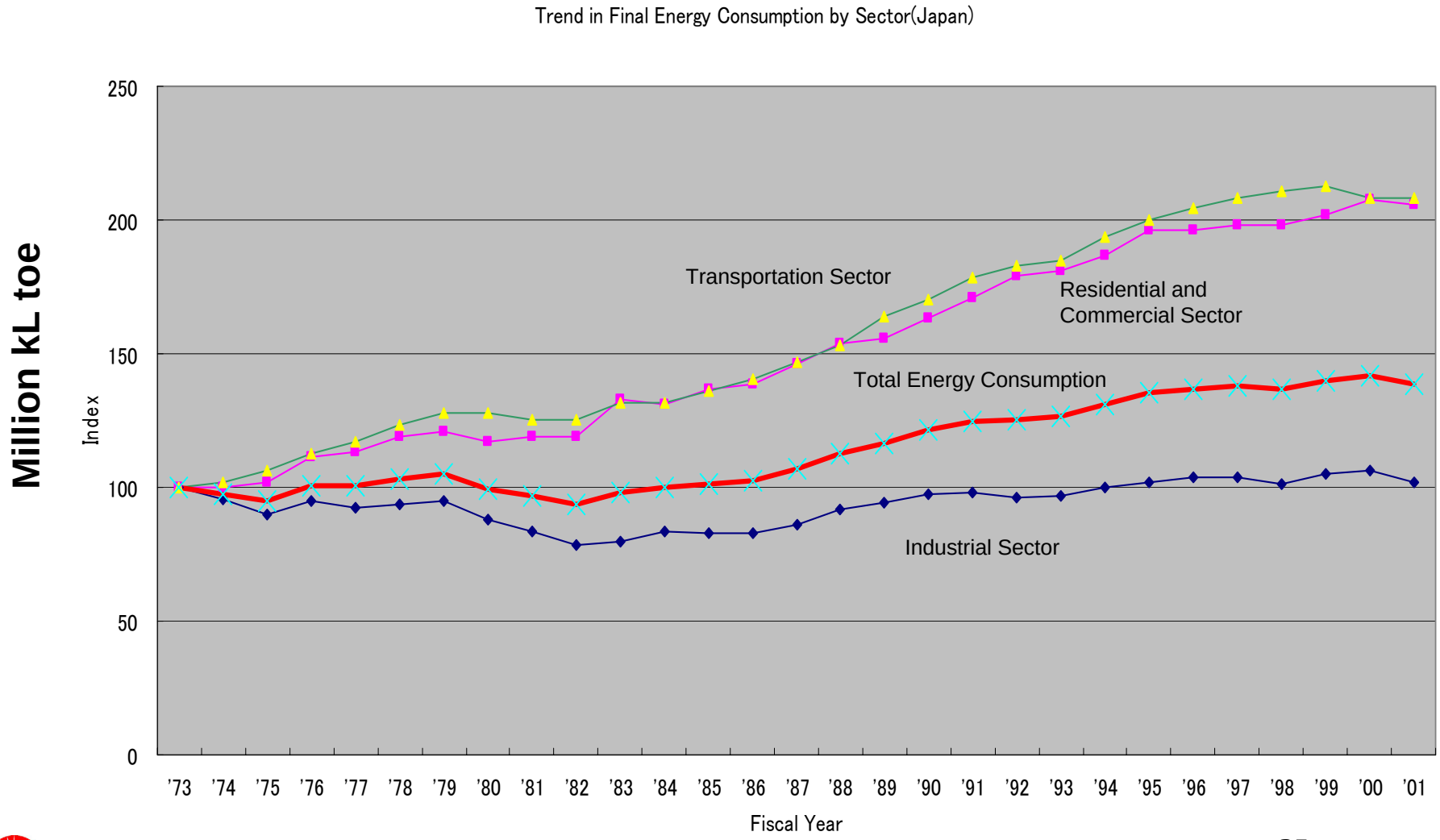
Effect of Measures and Dissemination Rate of Typical Equipment for Energy Conservation

Industry	Improved Energy Intensity (94/73)	Typical Energy Conservation Equipment	Dissemination Rate as of 1998
Iron & Steel	81 %	Continuous caster (CC)	100 %
		Blast furnace top gas pressure recovery equipment (TRT)	100 %
		Coke dry quenching equipment (CDQ)	91 %
Petrochemical	58 %	High-efficiency naphtha cracking reactor	100 %
		High efficiency compressor	100 %
		Gas turbine	100 %
Cement	65 %	SP, NSP kiln (Heat recovery)	100 %
Paper & Pulp	61 %	Continuous digester	100 %

Source : ECCJ

Final Energy Consumption by Sector (Japan)

Source: METI/General Energy Statistics



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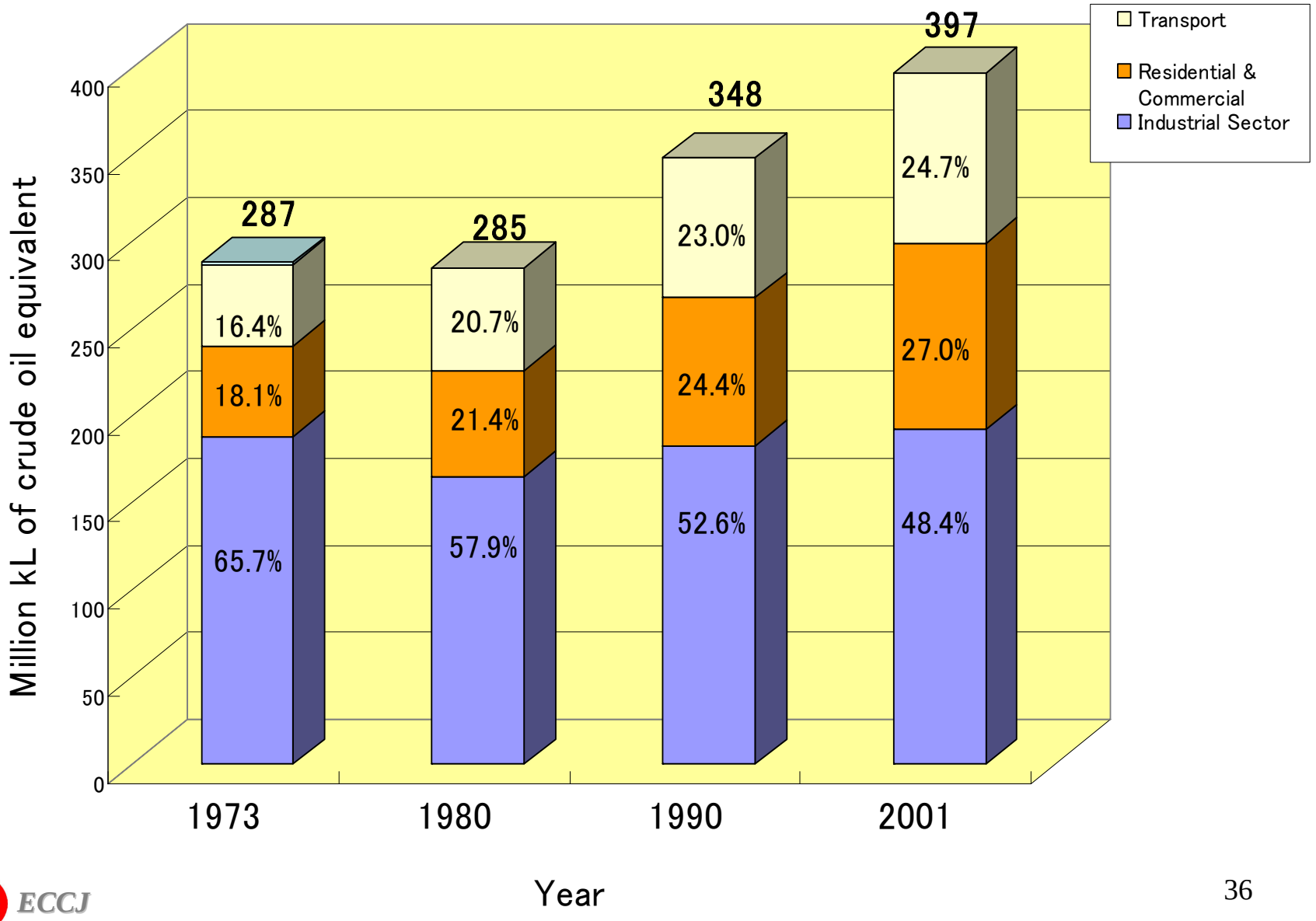
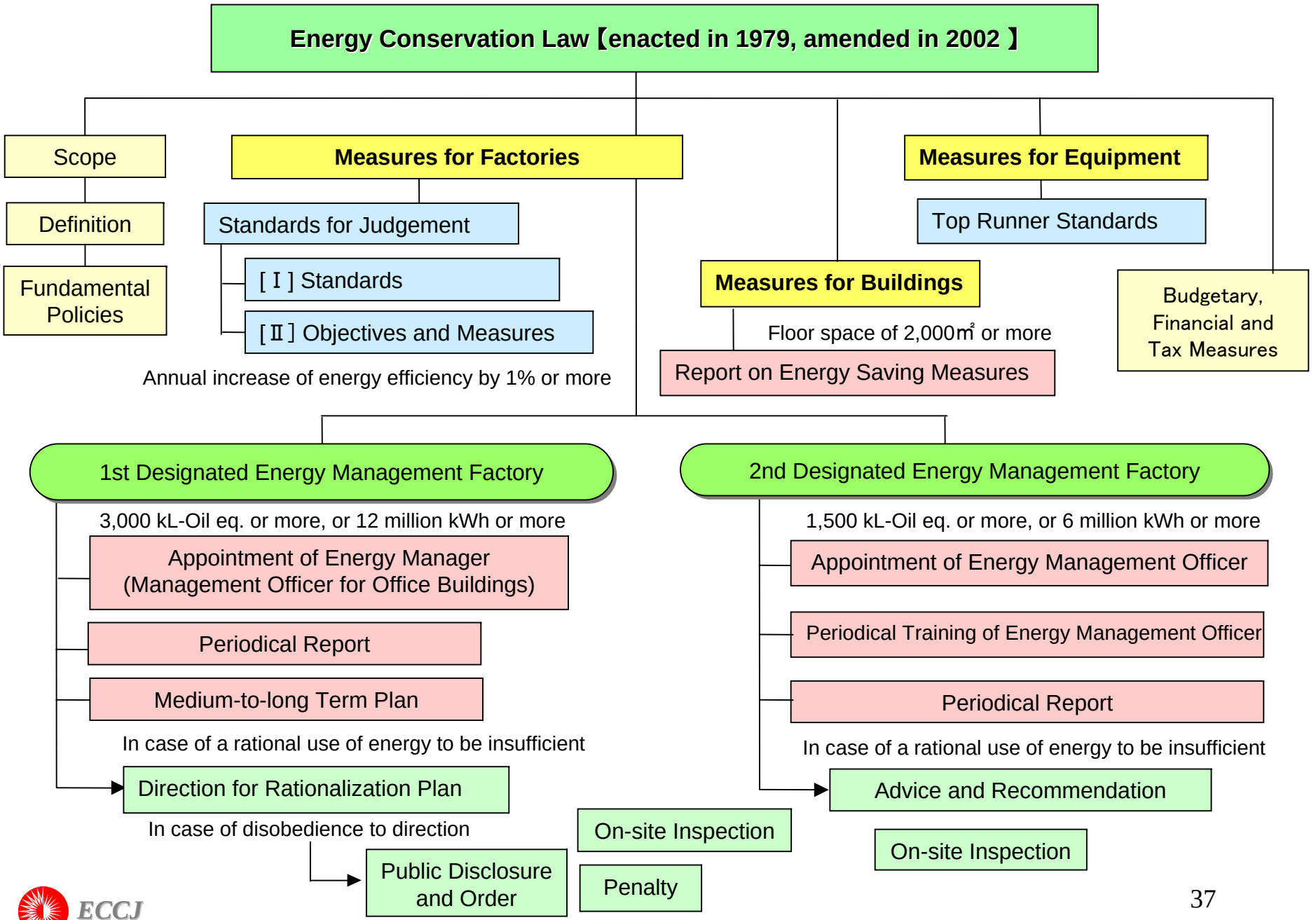
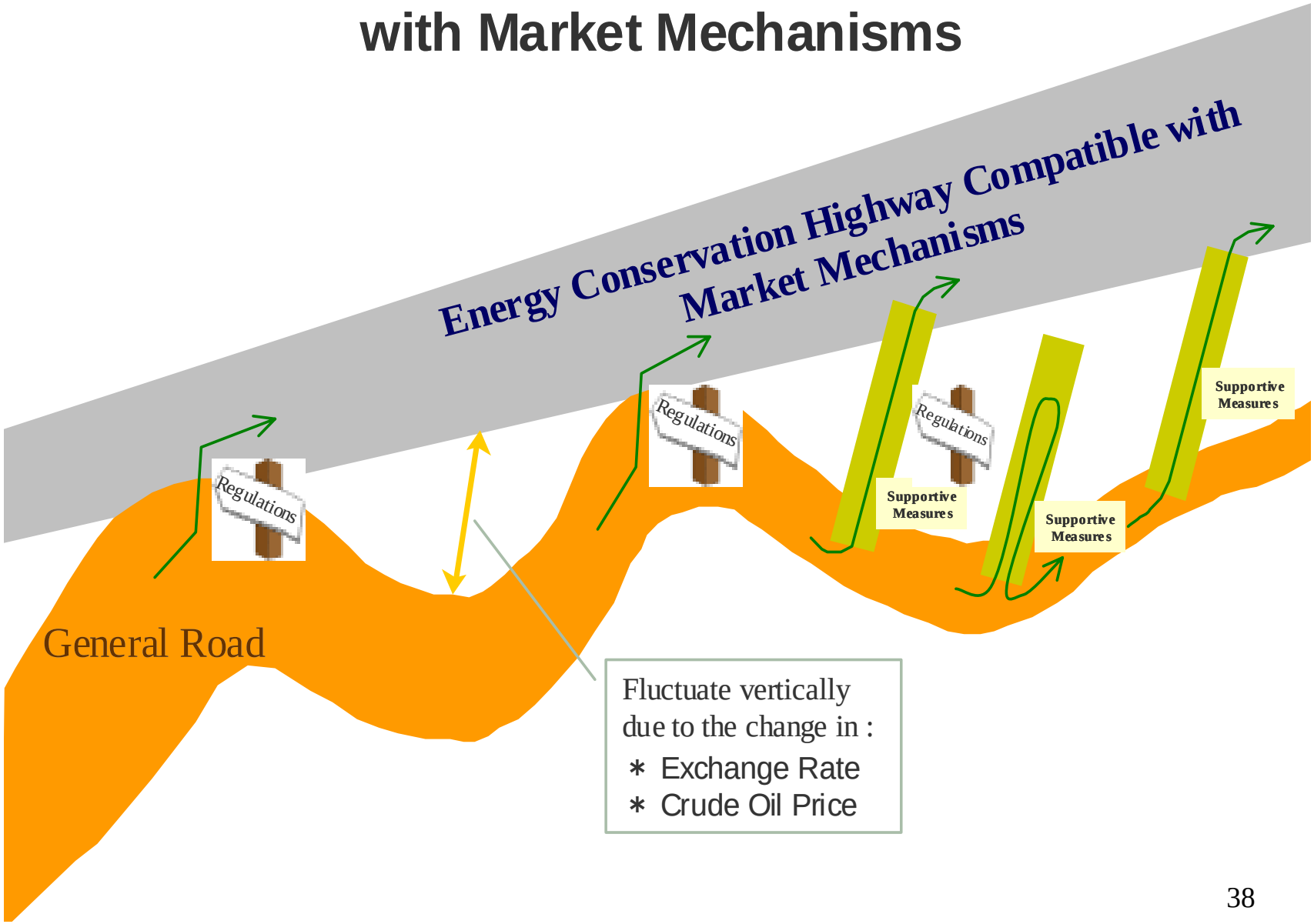
Final Energy Consumption by Sector




Energy Conservation Law【enacted in 1979, amended in 2002 】
Scope
Definition
Fundamental Policies
Measures for Factories
Standards for Judgement
[Ⅰ] Standards
[Ⅱ] Objectives and Measures
Annual increase of energy efficiency by 1% or more
Measures for Equipment
Top Runner Standards
Measures for Buildings
Floor space of 2,000㎡ or more
Report on Energy Saving Measures
Budgetary, Financial and Tax Measures
1st Designated Energy Management Factory
3,000 kL-Oil eq. or more, or 12 million kWh or more
Appointment of Energy Manager (Management Officer for Office Buildings)
Periodical Report
Medium-to-long Term Plan
In case of a rational use of energy to be insufficient
Direction for Rationalization Plan
In case of disobedience to direction
Public Disclosure and Order
On-site Inspection
Penalty
2nd Designated Energy Management Factory
1,500 kL-Oil eq. or more, or 6 million kWh or more
Appointment of Energy Management Officer
Periodical Training of Energy Management Officer
Periodical Report
In case of a rational use of energy to be insufficient
Advice and Recommendation
On-site Inspection

Energy Conservation Policies Compatible with Market Mechanisms



Financial Supports for Energy Conservation Investment

1. Installation of Facilities

   (1) TAX Exemption

   (2) Low Interest Loan

2. Subsidies to Development of New Technologies & Equipment

Tax Exemption System for Investment of Energy Conservation Facilities

< Effective from April 1992 till March 2004 >

1. Deduction for Corporate Tax in the Invested Year (Small and Mid-Size Enterprises)

7% of Equipment Procurement Cost (Upper Limit : 20% of Corporate Tax)

Or

2. Special Depreciation in the Invested Year

Up to 30% of Equipment Procurement Cost in Addition to Ordinary Depreciation

Energy Conservation Measures for Equipment

Top Runner Program – Concept –

Old energy efficiency standard

Fuel efficiency (km/L)

Old energy efficiency standard (more than average)

New energy efficiency standard

Fuel efficiency (km/L)

New energy efficiency standard ((A)is the top runner.)

Concept of Top Runner System

(1) Target Standards (Standards for energy consumption efficiency):

Standards on “energy consumption efficiency” for the appliances which manufactures and concerned importers have to attain. The standards are set up based on the concept of the so-called “Top-Runner”.

(2) Category：

Product category which is sought to achieve the same target in the same product category.

(3) Target year：

The term aimed to achieve target standards (fiscal year). Development period of appliances, the prospect of future technical development, etc. are taken into account when set up. 4 - 8 years are considered to be required as the target.

(4) Judgment of achievement

It is judged based on the weighted average of each product category by each manufacturers in a target fiscal year. (weighted harmonic average for vehicles and air conditioners)

(5) Measuring Method：

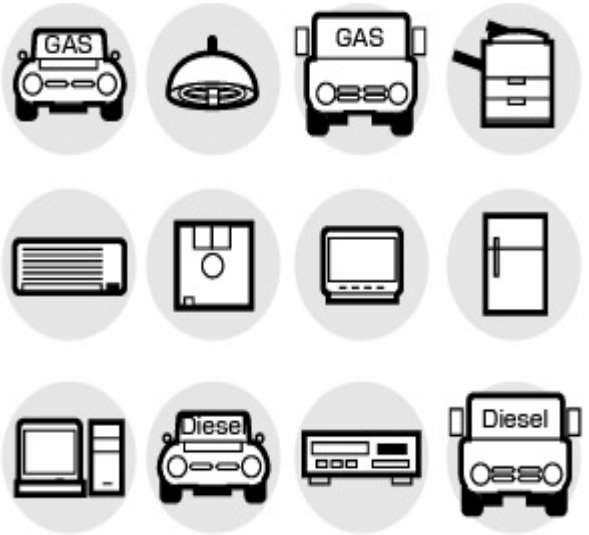
The JIS standard is mainly applied correspondingly.

(6) Display：

It is mandatory that the energy consumption efficiency of appliances regarding top runner standard shall be displayed in their catalogs, on the product bodies, etc.

Machinery & equipment subjected to the Top Runner System

- Passenger car (gasoline/diesel-fueled)
- Air conditioner
- Fluorescent lamp luminary
- Television receiver
- Videocassette recorder
- Photocopier
- Computer
- Magnetic disk drive
- Truck (gasoline/diesel-fueled)
- Electrical refrigerator
- Electrical freezer
- Stove (gas/oil)
- Gas cooker
- Gas hot water system
- Oil hot water system
- Electric toilet seat
- Vending machine
- Transformer (molded)



18 appliances

Top Runner Program and Items Subject to Labeling

Product categories under Top Runner Program

	Target year	Energy efficiency effect vs base year
Air conditioners (for use in both cooling and heating)	2004 (partially 2007)	63% vs '97
Television receives	2005	17% vs '97
Video cassette recorders	2003	59% vs '97
Fluorescent lamp luminaries	2005	17% vs '97
Copiers	2006	30% vs '97
Electronic computers	2005	83% vs '97
Magnetic disk drives	2005	78% vs '97
Gasoline-fueled passenger cars	2010	23% vs '95
Gasoline-fueled trucks	2010	13% vs '95
Diesel-powered passenger cars	2005	15% vs '95
Diesel-powered trucks	2005	7% vs '95
Electric refrigerators **Electric freezers**	2004	30% vs '98

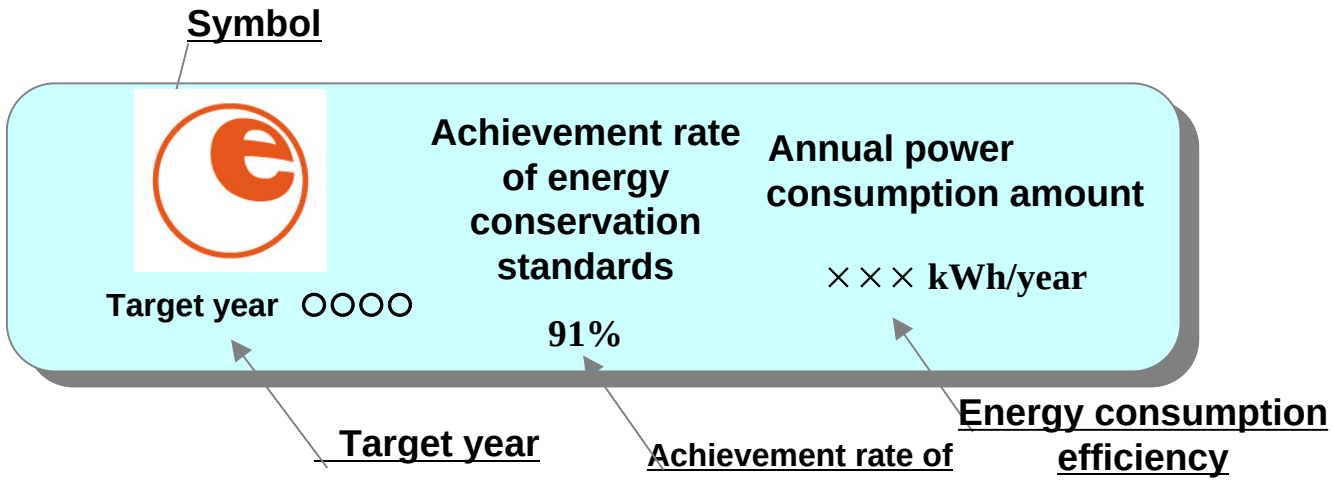
Energy Labeling items

(5 Items)	Labeling indications	Note
Air conditioners	**Target year**	**Official gazetting on August 21, 2000**
Television receivers		
Fluorescent lamp luminaries	**Achievement rate of energy standards efficiency**	**Voluntary measure based on JIS**
Electric refrigerators	**Annual power consumption**	**Generally used in product catalog, not necessarily on actual product**
Electric freezers		

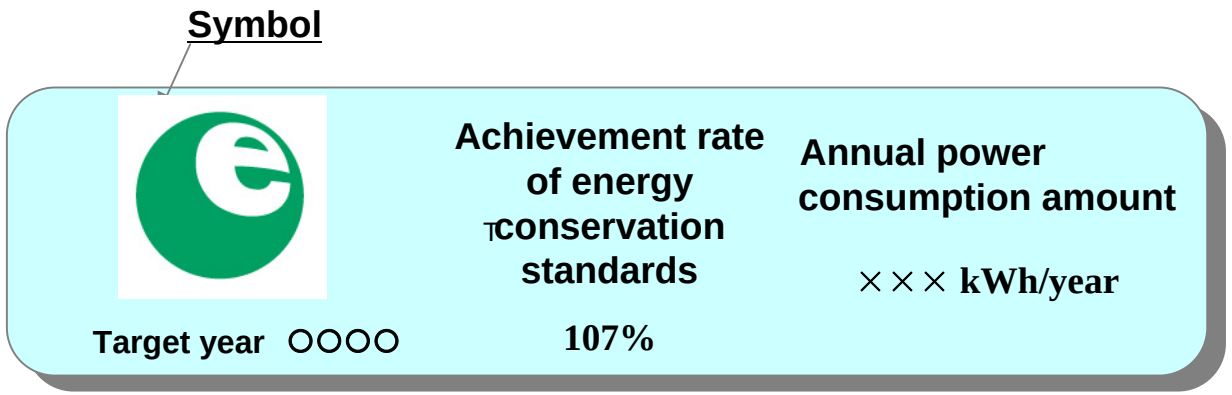
Voluntary Labeling Items

Method of Indication

☆ Case 1: Target still not achieved



☆ Case 2 : Target achieved



* The label size differs depending on the space available for indication etc.

Appliances subjected to Labeling System

Subjected appliances (10 appliances)	:	Air conditioner
		Fluorescent lamp luminary
		Television receiver
		Electrical refrigerator
		Electrical freezer
		Stove (gas/oil)
		Gas cooker
		Gas hot water system
		Oil hot water system
		Electric toilet seat

4. Future Energy Conservation Measures in Japan

Kyoto Commitment

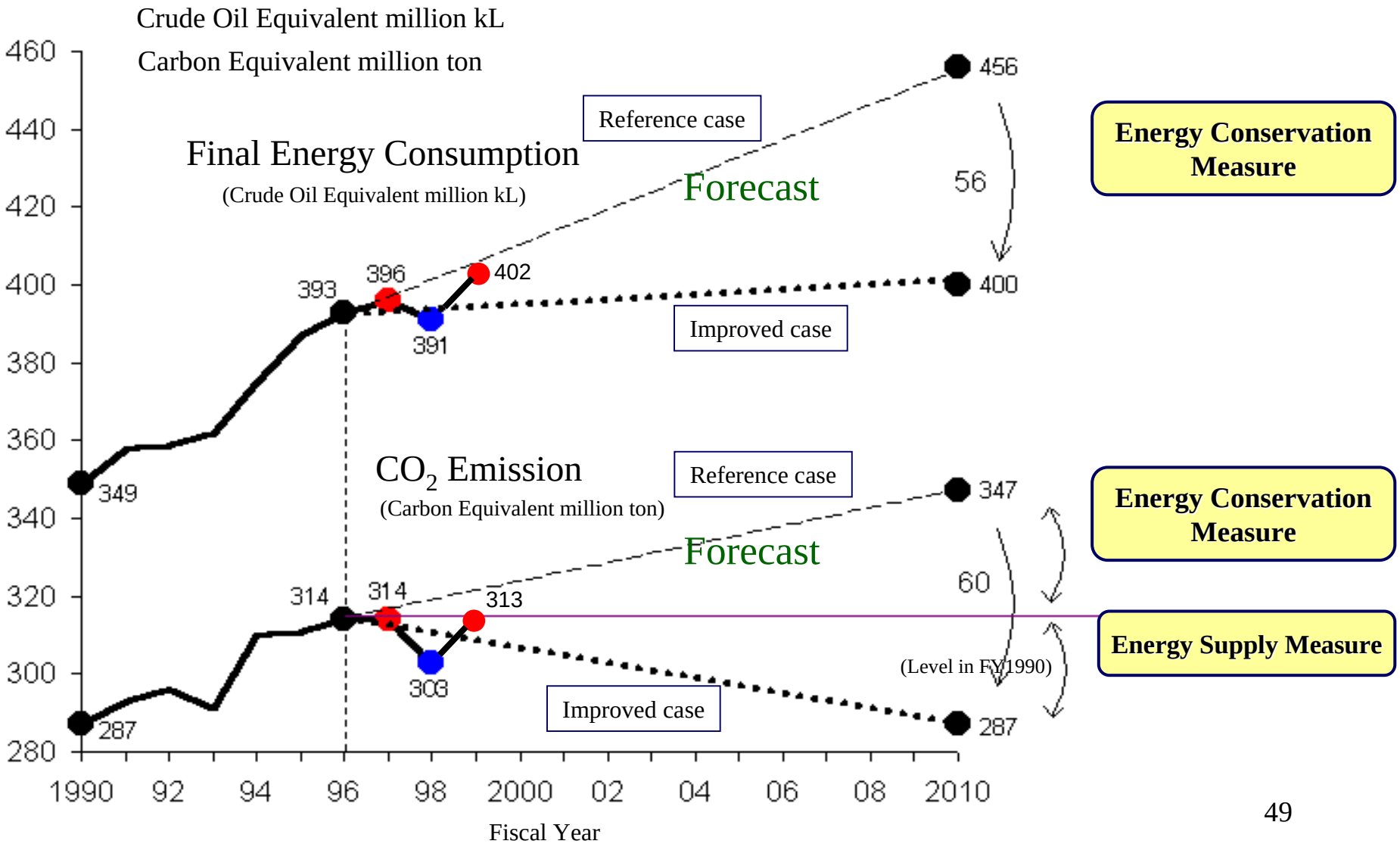
▲6% of GHG emissions below 1990 level

Stabilization of CO_2 emissions at 1990 level

▲2.5%	Emission Reduction of CO_2, CH_4 and N_2O 0% : CO_2 from Energy Origin ▲ 0.5% : Emission Reduction of CH_4, N_2O ▲ 2.0% : Innovative Technologies etc
▲3.7%	Sinks(Land Use Change and Forestry)
+ 2.0%	HFC, PFC, SF_6
▲1.8%	Kyoto Mechanism (Emission Trading, J I, CDM)
▲6.0%	Total

Forecast and Target for Energy Consumption and CO_2 Emission

- To attain the GHG Emission Reduction Target Committed at COP3 -



Forecasted Effects of Future Energy Conservation Measures

5700万kl

Breakdown:

Industrial Sector: 20. Million kℓ　　Civil Sector: 18.6 million kℓ

Transportation Sector: 16.9 million kℓ

Cross-sector Measures: 1 million kℓ

* The amount will surpass the total energy annually consumed in all the households (approx.. 55 million kl).

Outline of Measures to Prevent Global Warming

★ **Energy Demand Side**

■ **Promotion of Energy Conservation**

- Still more improving Energy Intensity (Industry Sector)
- Expanding Top Runner Program (Residential/Commercial Sector)
- Others (Transport, Building, Lifestyle etc)

★ **Energy Supply Side**

■ **Promotion of less CO_2 Emission Energy**

- Nuclear
- Natural Gas
- Renewable

Energy Conservation Program towards 2010 (1)

Industrial Sector:

1. Voluntary Action Program of KEIDANREN
2. 1% energy conservation per every year in all factories
3. Energy audit & Follow up in designated factories
4. Supportive measures (Tax, Loan, Subsidy) for introducing energy efficient equipment and facilities
5. Capacity building (Energy Manager)
6. Commendation of excellent energy managing factories
7. Domestic emission trading

Voluntary Action Program of KEIDANREN

* Participants : 142 groups from 41 industries (Coverage Ratio : 75%)

* Implementation of Energy Conservation Measures Aiming at the Target by each Industry

Target in year 2010:

To reduce CO2 emission from Industrial and Energy-Converting Sector below the amount in 1990

< To make the predicted increase of energy consumption (21 Mil kL/year) zero >

☆ **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

Energy Conservation Program towards 2010 (2)

Residential & Commercial Sector:

1. Expanding Top Runner Program for other products

   Gas burning space heater, Oil burning space heater, Gas cooking appliance, Gas burning water heater, Oil burning water heater, Electric toilet seat, Vending machine and Transformer are 8 items will be added.

2. Energy Labeling

3. Reduction of Stand-by Power consumption

4. Information service about energy-efficient products

   (Clothing, Food, Living), ex: Ranking Catalogue for Energy Efficient Appliances

5. Change of Life Style "Smart Life"

   a) "Energy Saving Navigation" system for house and building

   b) Establishment of "Energy Conservation Republic"

   c) Support for Grass-root people's activities for energy conservation

   d) Support for schools for energy conservation education to school children

6. Dissemination of HEMS & BEMS

7. Supporting ESCO Activities

Energy Conservation Program towards 2010 (3)

Transportation Sector:

1. Improvement in Fuel Efficiency of cars
   (Accelerated introduction of Top Runner Program)
2. Spread of Clean Energy cars including hybrid models
3. Pervasion of Idling Stop cars
4. Energy saving measures related to Traffic Systems
   - Developing PTPS (Public Transportation System) utilizing IT
   - Information service about Road Traffic Data to private sectors
   - Supporting TDM (Traffic Demand Management)

Cross Sector:

1. Energy conservation by Technological Development
2. Introduction of High Performance Cogeneration system

Towards the Energy Conserved Lifestyle for 2010

○ Home appliances, oil / gas equipment

* Purchase products compliant with energy conservation standard

Achieved percentage of energy conservation standard: 107 %

Annual power consumption: 140kwh/年 year

Target Fiscal Year FY XXXX

Utilization of Energy Conservation Labeling, etc.

Energy saving of Approx. 16%(TV) - 63%（Heating & Cooling Air-conditioner)

○ Measures of Total Energy Demands

* Install Home Energy Management system.
  →Energy saving by automatic controlling machinery / equipment
  →Cost Display of Energy consumption

Energy saving of approx. 10% in household power consumption

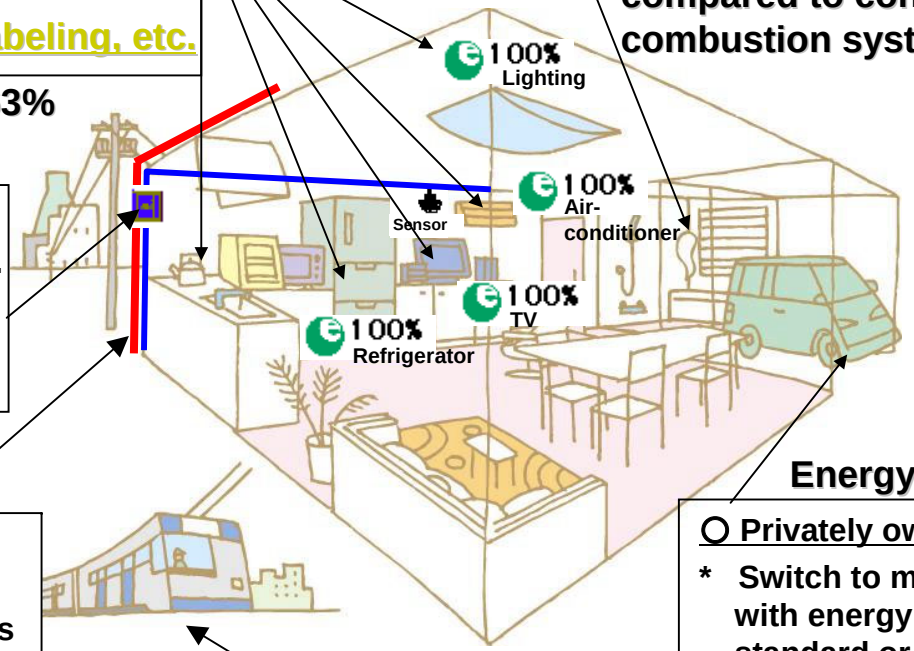
○ Heat Insulation Improvement

* Construction / renovation of residence compliant with next-generation standards

Energy saving of approx. 20% for heating-cooling air conditioner vs. the conventional standard

○ Install high-efficiency hot water systems

Energy saving of approx. 15-30% compared to conventional combustion system



Energy saving over 23%

○ Privately owned car

* Switch to modes compliant with energy conservation standard or clean energy cars

○ Utilization of public transport and bicycle

The total energy saving expected from public cooperation to these activities is estimated

approx. 1400万kl

5. World Energy Conservation Policies

Challenge for Sustainable Development -1

for less CO2 emission and reducing the threat of diminishing or uncertain oil supplies

Fuel Diversification:

1. Switch from Oil to Gas/LNG
2. Switch from fossil fuels to renewables

Power Generation :

1. Co-generaton (Combined heat and power)
2. Natural gas fired technology (Micro gas turbine)
3. Fuel cells
4. Solar energy
5. Distributed energy system (on-sight power source)

[Using 1, 2, 3, 4 and biological mass energy]

Challenge for Sustainable Development -2

for less CO2 emission and reducing the threat of diminishing or uncertain oil supplies

General Policy-making:

1. **Removal of negative distortions from energy markets**

   [e.g.. Oil price subsidies harmful for the challenge]

2. **Regulations and incentives**

   [Energy conservation law with effective supportive measures]

3. **Establishment of the organization to promote energy conservation based on the government policies**

4. **Foster diffusion of more efficient technologies in developing countries under the supports of developed countries**

5. **Driving the change of life style through grass-roots activities**

Energy Conservation Policies in Developed Countries

Item		Japan			Germany			U.K.			Sweden			U.S.A.		
GHG reduction target ratio		△6% (COP3)			△21% (EU)			△12.5% (EU)			△4% (EU)			△7% (COP3)		
Carbon tax		N			✓			from 2001			✓			△		
Sector		R	I	T	R	I	T	R	I	T	R	I	T	R	I	T
Law		✓	✓	✓	N	N	N	✓	N	✓	✓	✓	✓	✓	N	N
Local regulation		✓	✓	✓	✓	✓	N	✓	N	N	✓	N	N	✓	N	✓
Voluntary plans in sectors		✓	✓	✓	N	✓	✓	N	✓ (partly)	N	N	✓	N	✓	✓	N
Incentives	Tax exemption	✓	✓	✓	✓	N	✓	N	N	N	N	N	N	△	N	N
	Low interest loan	✓	✓	✓	✓	✓	N	N	N	N	N	N	N	N	N	△
	Subsidy	✓	✓	✓	✓	N	N	✓	✓	N	✓	✓	N	△	✓	N
Other assistance	Audit, Consulting	✓	✓	N	✓	N	N	✓	N	N	✓	✓	N	✓	✓	N
	ESCO	✓	✓	N	✓ (partly)	N	N	N	N	N	N	N	N	✓	✓	N
	Monitoring	✓	✓	✓	N	✓	N	N	✓	✓	✓	✓	✓	✓	✓	✓

Source : IEA Homepage

R : Residential Sector I : Industrial Sector T :Transportation Sector

✓ : Have △ : under deliberation N : None

Example in India (1)

Action Plan for Energy Conservation and Efficient Use of Power

- **Oct.2001 Energy Conservation Act 2001 was enforced.**
- **Mar.2002 BEE(Bureau of Energy Efficiency) was established.**

Thrust Area

1. Indian Industry Program for Energy Conservation (15 Sectors)
2. Demand Side Management
3. Standards and Labeling Program
4. Energy Efficiency in Buildings and Establishments
5. Energy Conservation Building Codes
6. Professional Certification and Accreditation
7. Manuals and Codes
8. Energy Efficiency Policy Research Program
9. School Education
10. Delivery Mechanisms for Energy Efficiency Services

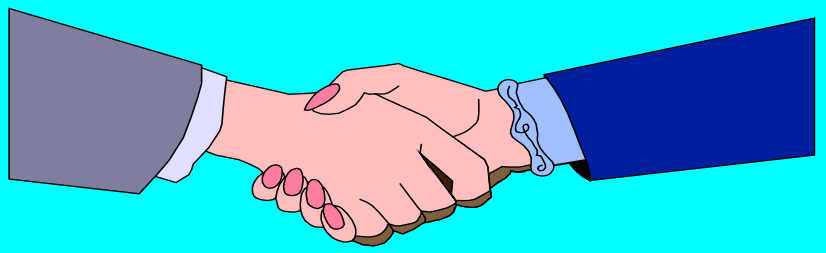
Example in India (2)

Policy Guidelines based on the industry survey

Immediate Attention of Industry is needed.

1. Top Management Commitment
2. Energy Management Cell
3. Small Group Activities
4. Capacity Building - Training and Motivation
5. Monitoring and Targeting - Benchmarking
6. Budget for Energy Conservation
7. Role of Industry Association and Task Force

Thank you



The Energy Conservation Center, Japan