Roles of Nuclear Power for Sustainable Development

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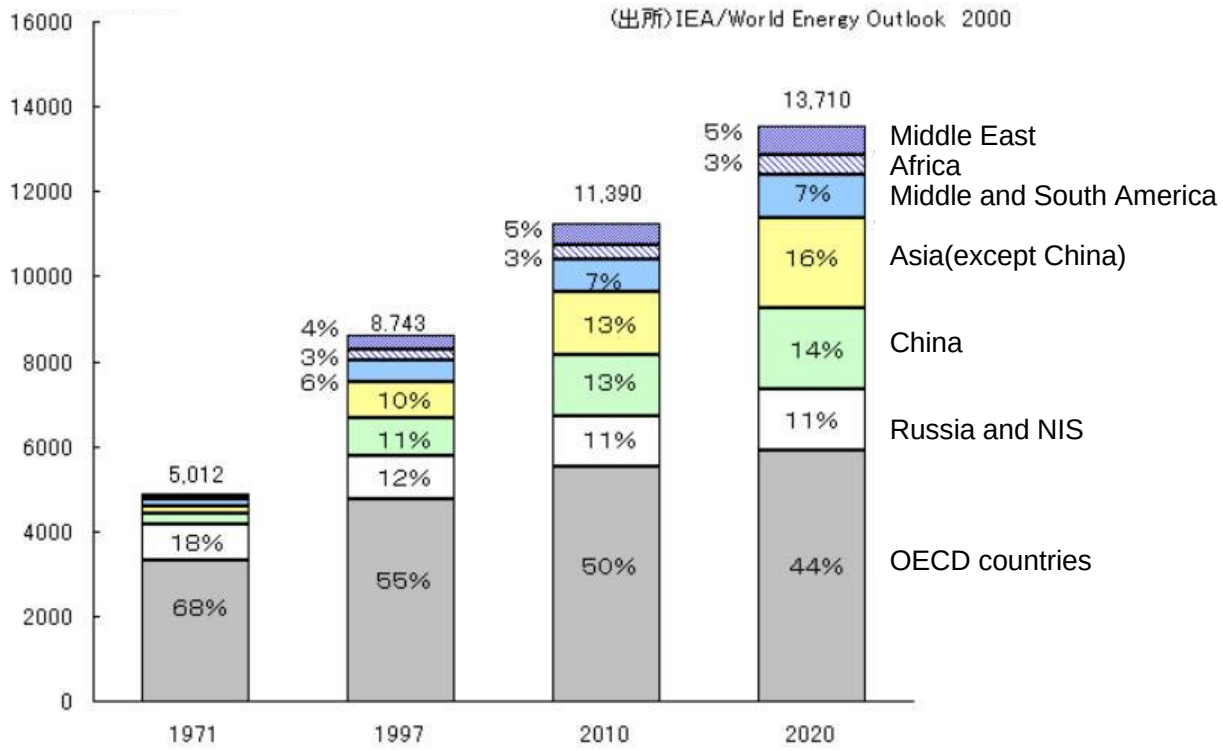
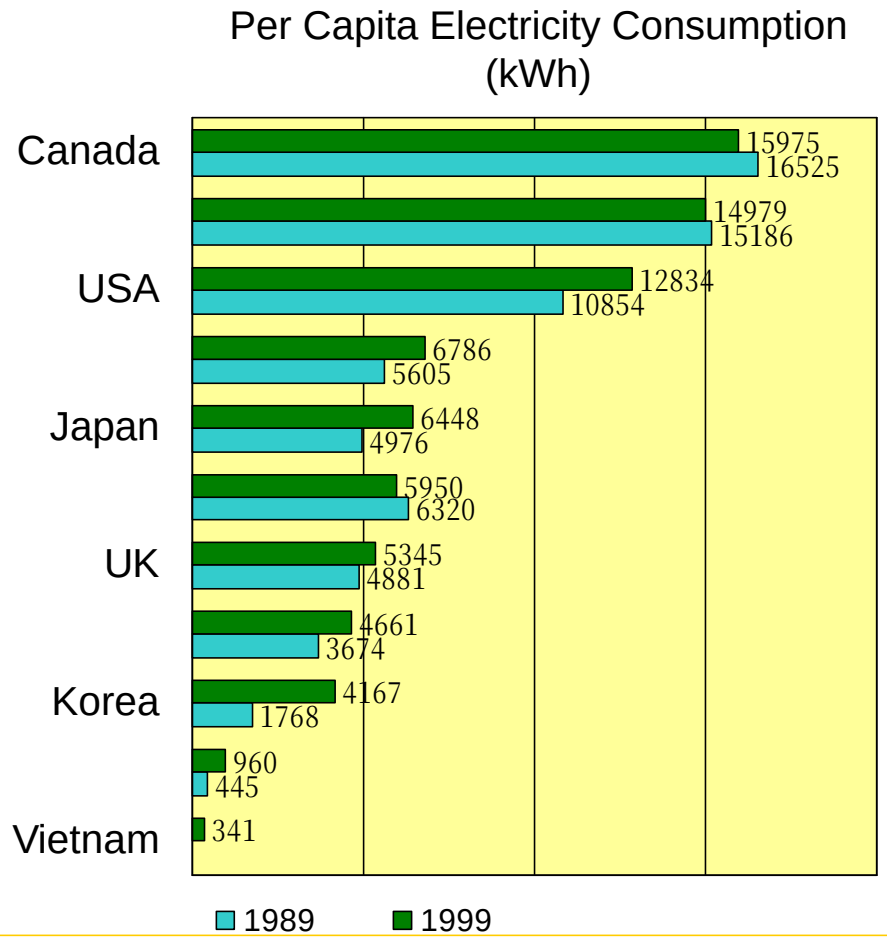
The Trend of the World Energy Consumption

Oil Equivalent (million tones)



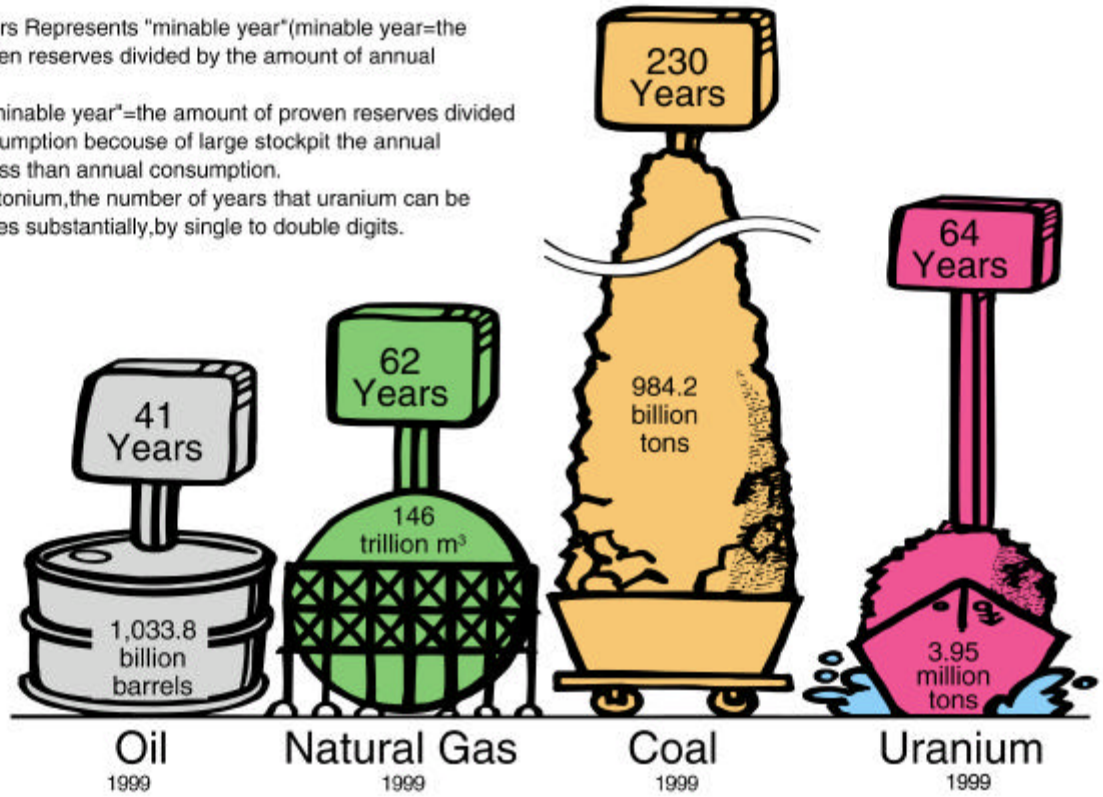
Electricity Consumption in Selected Countries



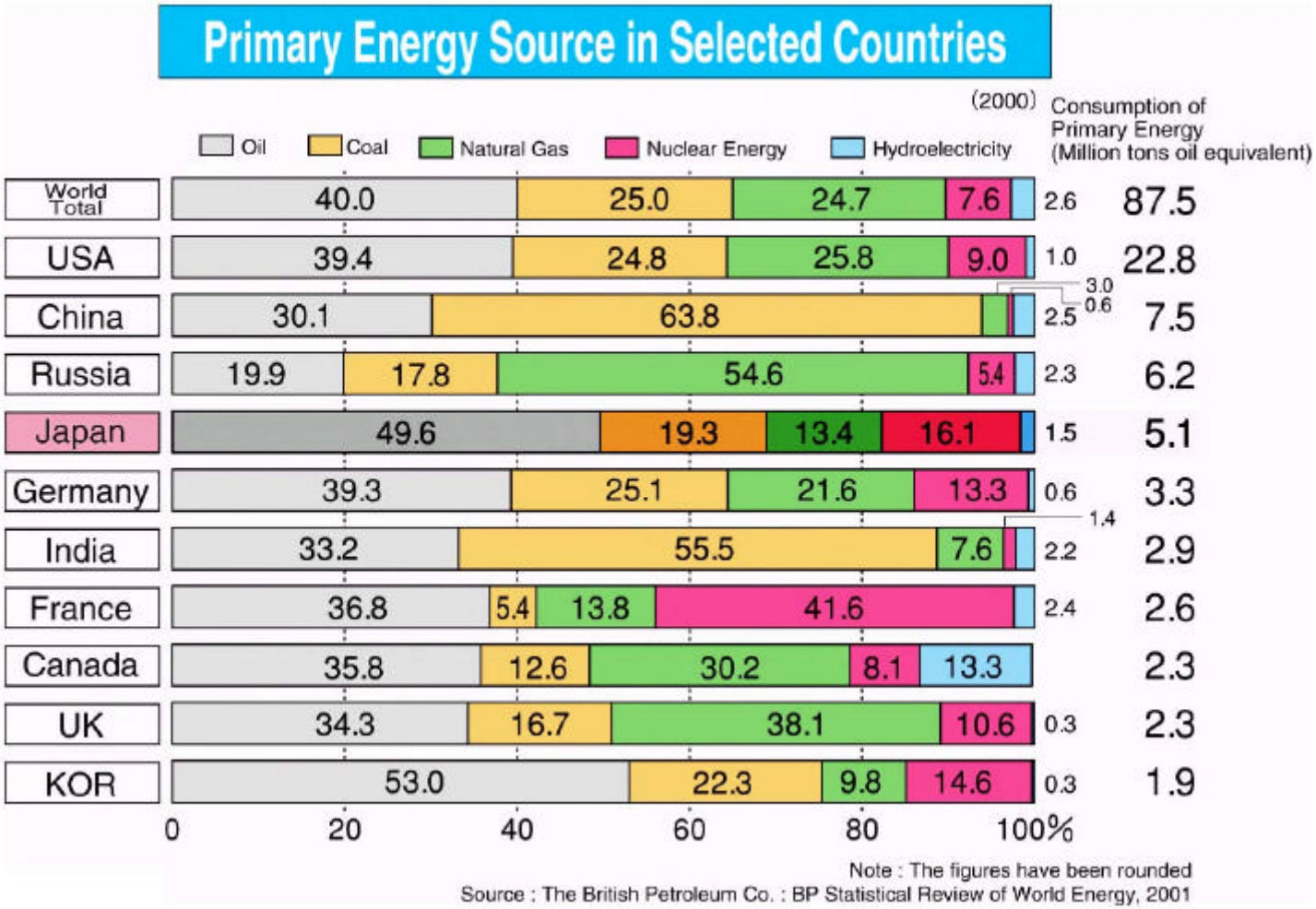
Ratio of 1999/1989	Power Consumed (100M kWh)
1.0	4,871
1.0	1,327
1.2	34,729
1.2	4,010
1.3	8,180
1.0	4,884
1.1	3,299
1.3	2,673
2.4	1,935
2.2	12,092

Proved World Energy Resources Reserves

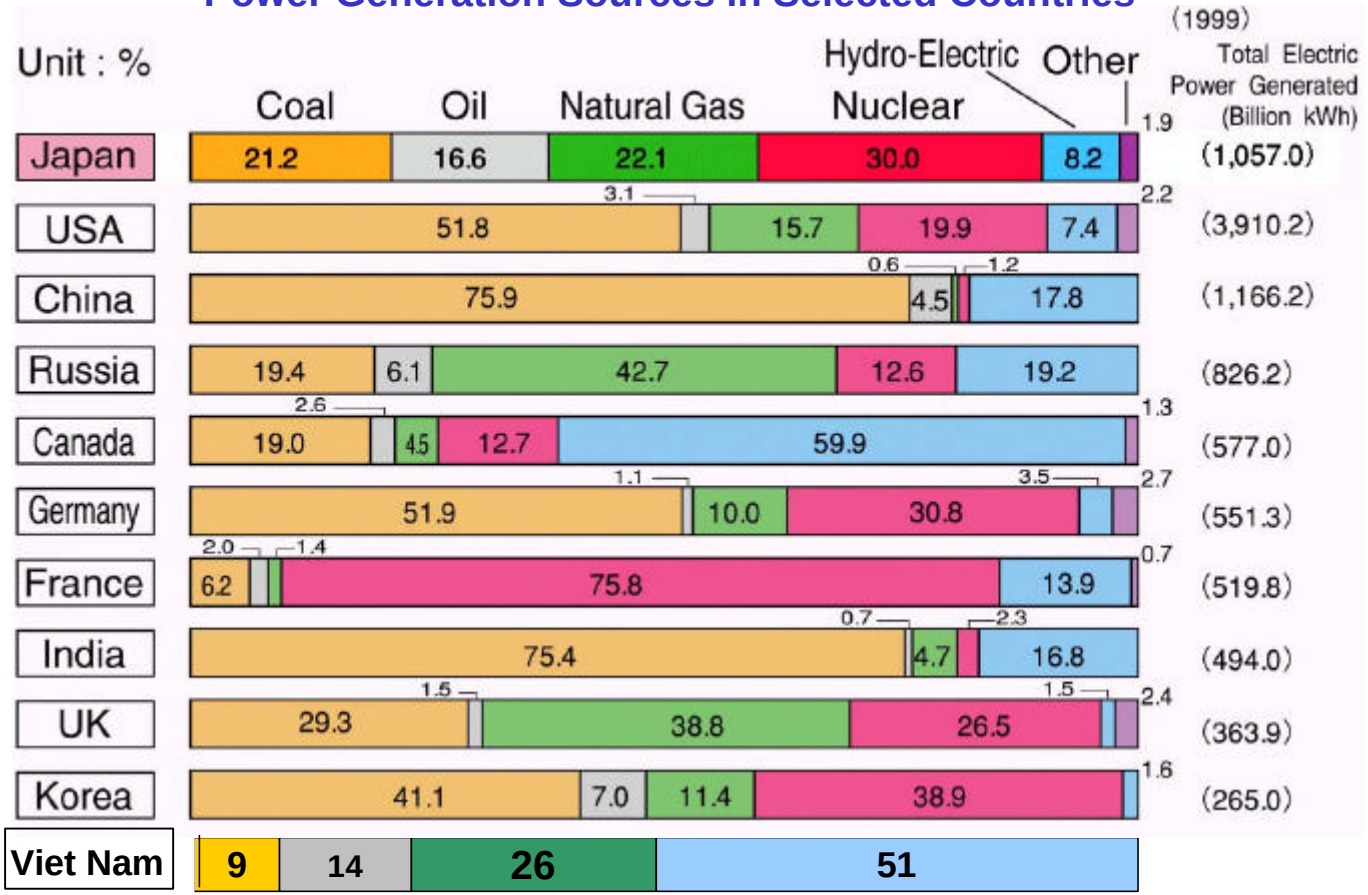
Note:1.Number of years Represents "minable year"(minable year=the amount of proven reserves divided by the amount of annual production.)
Note:2.For uranium,"minable year"=the amount of proven reserves divided by annual consumption becouse of large stockpit the annual production is less than annual consumption.
Note:3.By utilizing plutonium,the number of years that uranium can be utilized increases substantially,by single to double digits.



Source : Natural Resources and Energy Agency : General Energy Statistics,2000


Primary Energy Source in Selected Countries
(2000)
Consumption of Primary Energy (Million tons oil equivalent)
Oil
Coal
Natural Gas
Nuclear Energy
Hydroelectricity
World Total 40.0 25.0 24.7 7.6 2.6 87.5
USA 39.4 24.8 25.8 9.0 1.0 22.8
China 30.1 63.8 3.0 0.6 2.5 7.5
Russia 19.9 17.8 54.6 5.4 2.3 6.2
Japan 49.6 19.3 13.4 16.1 1.5 5.1
Germany 39.3 25.1 21.6 13.3 0.6 3.3
India 33.2 55.5 7.6 1.4 2.2 2.9
France 36.8 5.4 13.8 41.6 2.4 2.6
Canada 35.8 12.6 30.2 8.1 13.3 2.3
UK 34.3 16.7 38.1 10.6 0.3 2.3
KOR 53.0 22.3 9.8 14.6 0.3 1.9
0 20 40 60 80 100%
Note : The figures have been rounded
Source : The British Petroleum Co. : BP Statistical Review of World Energy, 2001

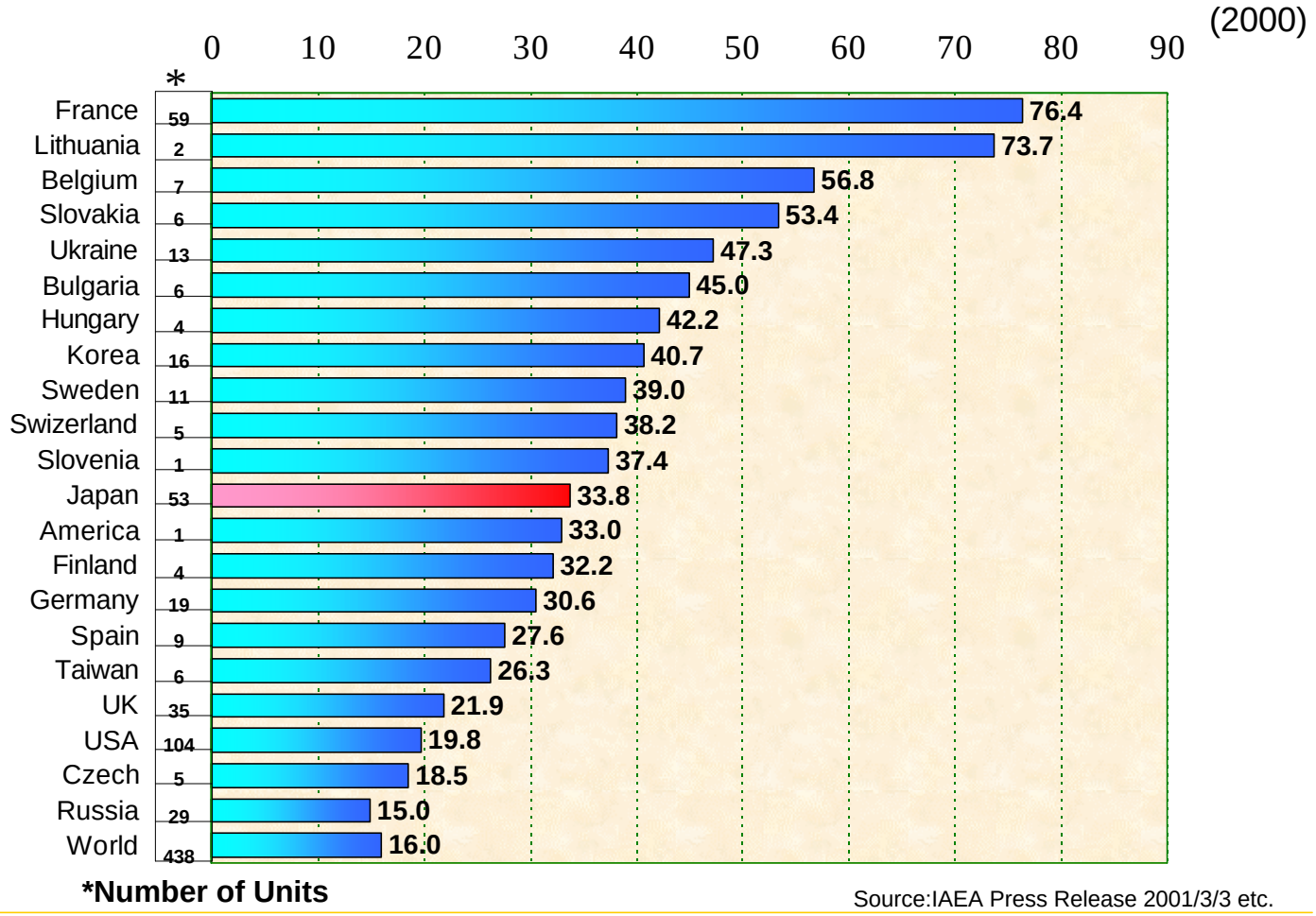
Power Generation Sources in Selected Countries



*VAEC Report

Note : China,India,Russia=Values in 1998
Note : The figures have been rounded.
Source : OECD : Energy Balances of OECD Countries 1998-1999

Ratio of Nuclear Power to Total Power Generation by Country

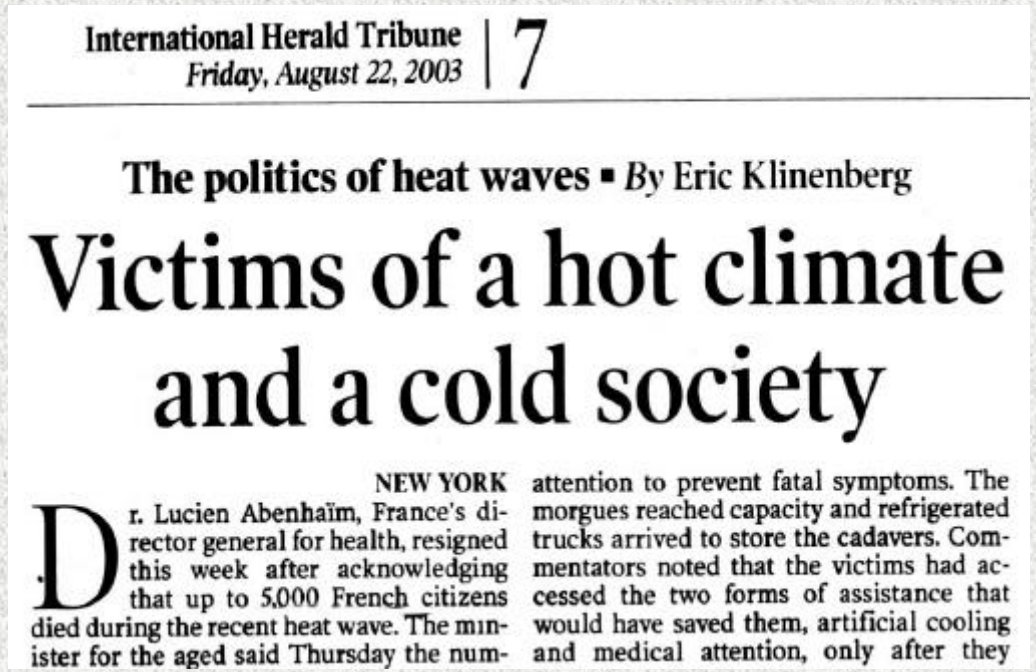


***Number of Units**

Source:IAEA Press Release 2001/3/3 etc.

“Hot Climate and Global Warming”

“5000 Died in France Hot Summer at 40ºC in 2003”



International Herald Tribune | 7
Friday, August 22, 2003

The politics of heat waves ▪ *By* Eric Klinenberg

Victims of a hot climate and a cold society

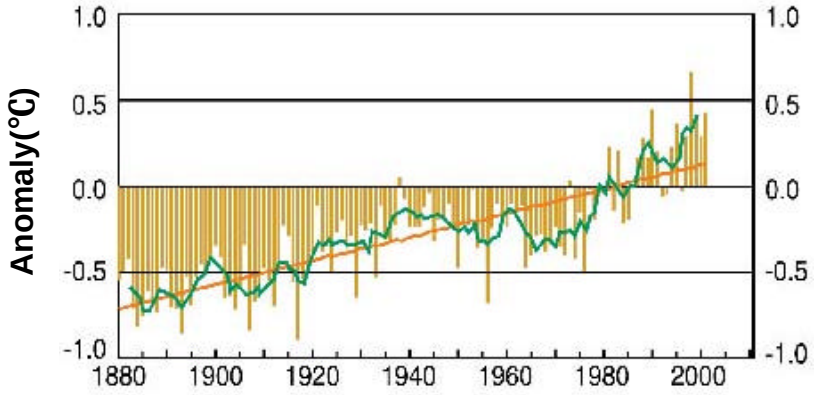
NEW YORK

Dr. Lucien Abenhaïm, France's director general for health, resigned this week after acknowledging that up to 5,000 French citizens died during the recent heat wave. The minister for the aged said Thursday the number attention to prevent fatal symptoms. The morgues reached capacity and refrigerated trucks arrived to store the cadavers. Commentators noted that the victims had accessed the two forms of assistance that would have saved them, artificial cooling and medical attention, only after they

“Abnormal Climate in Japan in Summer 2003 Significantly Reduced Rice Production.”

Change in Global Average Temperature

Anomaly(℃) from the 1961-90 average of land surface temperatures in the world between 1880 and 2000

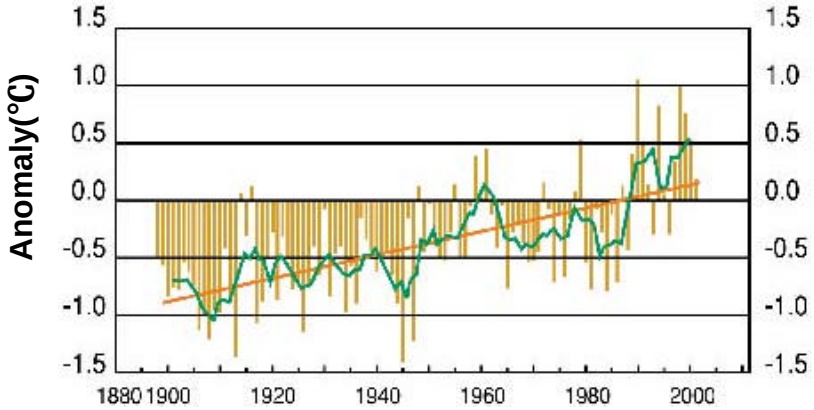


Bar graph: data of each year

Line graph: five year period moving average

Straight line: long range trend

Anomaly(℃) from the 1961-90 average of land surface temperatures in Japan between 1898 and 2000



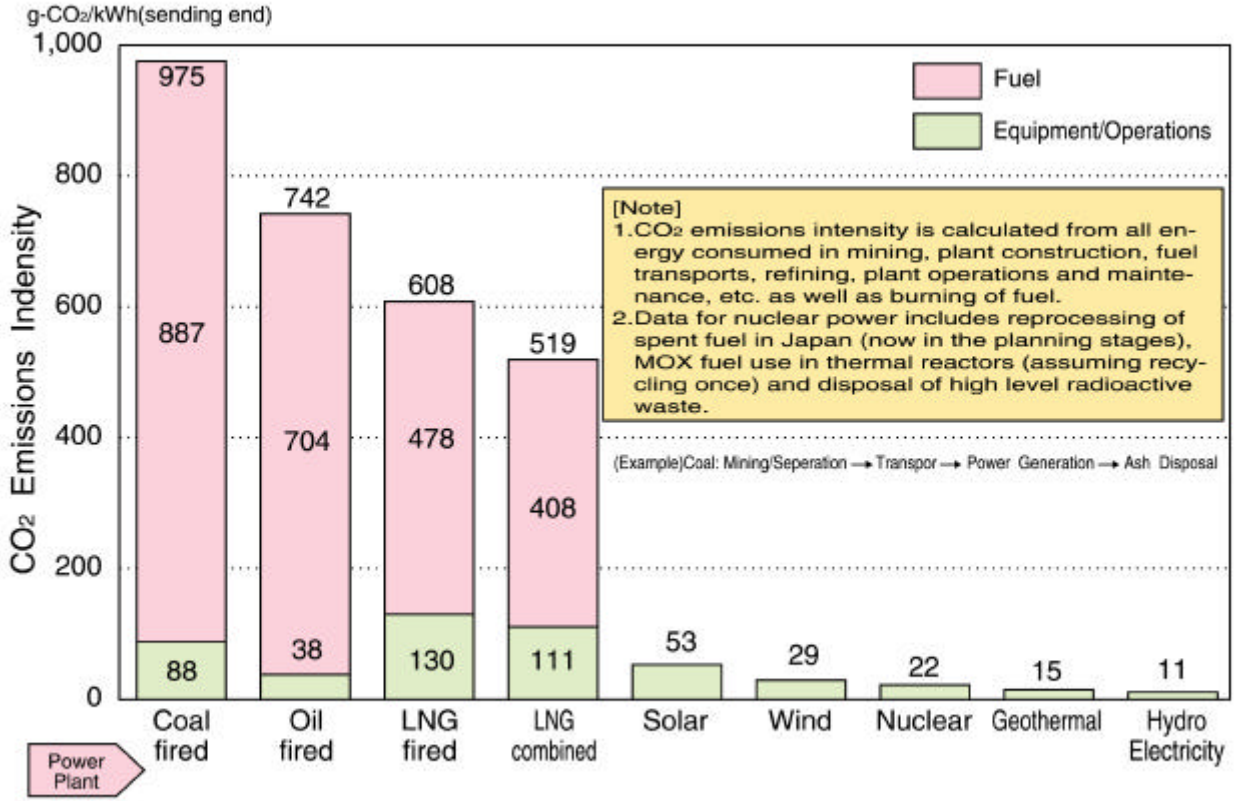
Bar graph: the average of 15 points in Japan

Line graph: five year period moving average

Straight line: long range trend

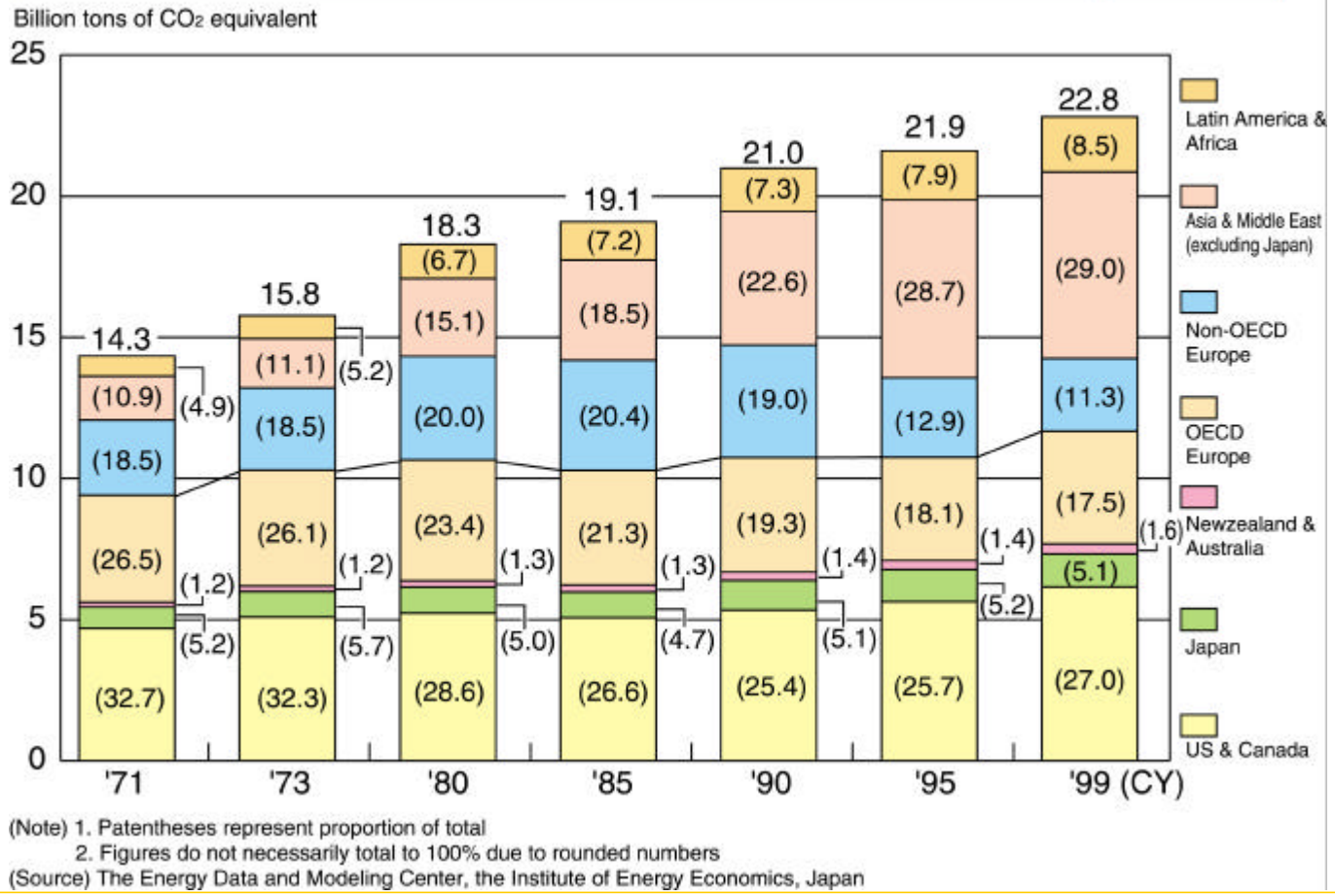
Source: Qualith of the Environment in Japan 2001

Japan's Lifecycle Assessment CO_2 Emissions Intensity by Source



(Source) Central Research Institute of Electric Power Industry Report etc.

Historical Trend of World's CO_2 Emissions by Area



(Note) 1. Patentheses represent proportion of total
2. Figures do not necessarily total to 100% due to rounded numbers
(Source) The Energy Data and Modeling Center, the Institute of Energy Economics, Japan

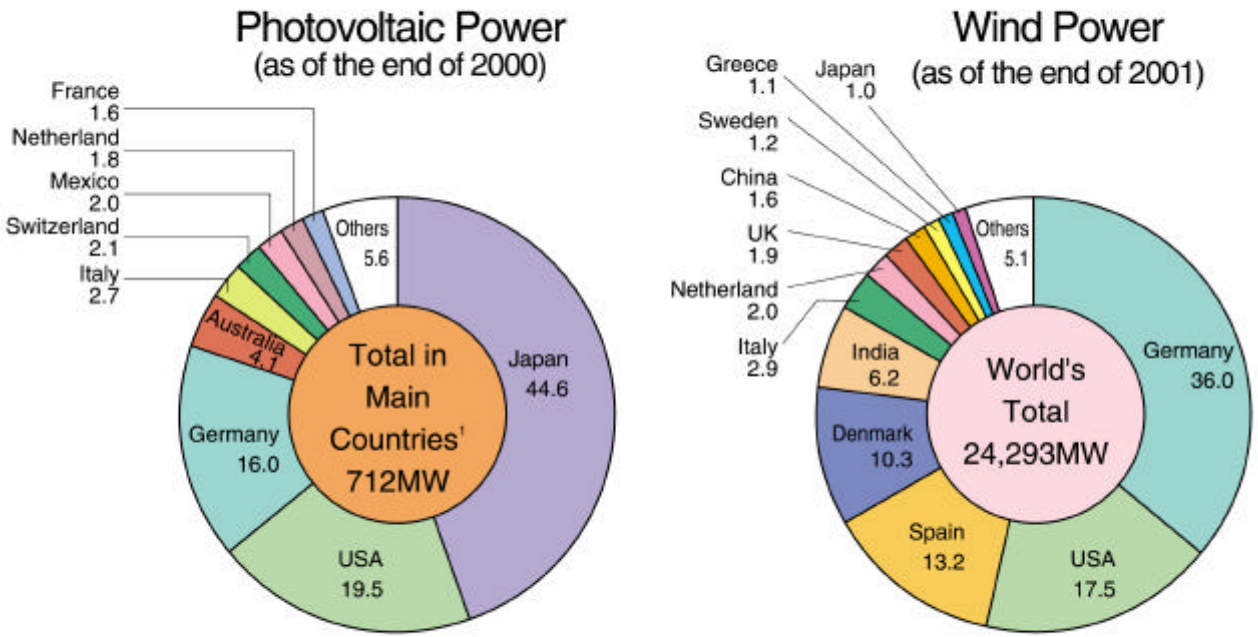
Economic Performances of Renewable Energy in Japan

	Photovoltaic Power	Wind Power
Power Generation Cost (*)	[Residential] •Average：¥66/kWh [Non Residential] •Average：¥73/kWh	[Large Scale] •¥10~14/kWh [Middle and Small Scale] •¥18~24/kWh
Site Area (**)	Area to generate as much power as a nuclear plant with a capacity of 1GW	
	[Commercial] •Approx. 67km^2 [Residential] •1.9million houses	•Approx.248km^2
Operation Rate (**)	•12%	•20%

Source: Report of New and Renewable Energy Subcommittee, Advisory Committee for Natural Resources and Energy (June, 2001)*
Brochure of Agency of Natural Resources and Energy (March, 2002)**

Generating Capacity of Photovoltaic and Wind Power by Country

(Unit : %)



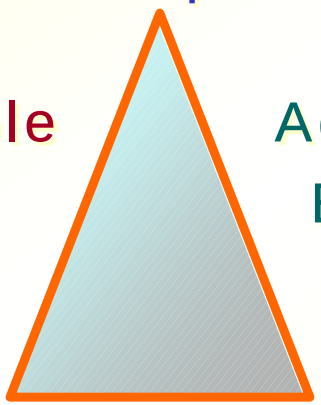
(Note) 1. Total of 20 countries participating IEA's Photovoltaic Power Systems Programme
2. Figures do not necessarily total to 100% due to rounded numbers
(Source) IEA

Basic Law on Energy Policy of Japan

(effective 14 June, 2002)

Three basic policies

Security of Stable Energy Supply



Adaptation to Environment

Free Market Principle

- The Government is responsible for planning and implementation for energy supply and demand
- The Government has formulated the basic plan for energy supply and demand

Supply of Power Up to 2010

Trend and Outlook of Power Generation

(billion kWh)

	1990		1999		2010			
					Current framework		Target	
Energy Resource		%		%		%		%
Thermal	446.6	60.5	506.3	55.2	507.4	49.3	468.0	47
Coal	71.9	9.7	152.9	16.7	235.1	22.8	159.9	16
LNG	163.9	22.2	240.5	26.2	234.1	22.7	254.9	26
Oil etc.	210.8	28.6	112.9	12.3	38.3	3.7	53.3	5
Nuclear	201.4	27.3	316.5	34.5	418.6	40.7	418.6	42
Hydro	88.1	11.9	89.3	9.7	96.6	9.4	95.2	10
Conventional	78.8	10.7	76.9	8.4	80.3	7.8	80.3	8
Pumped	9.3	1.3	12.3	1.3	16.3	1.6	14.9	1
Geothermal	1.5	0.2	3.4	0.4	3.7	0.4	3.7	0.4
Renewable etc.	-	-	2.1	0.2	2.9	0.3	11.5	1
CO2 emission per kWh (g-c/kWh)	101.9		89.9		82.6		73.6	

Energy and Nuclear Policy of Japan

1. Nuclear power meets the basic power load
2. Nuclear power is indispensable for energy security
3. Nuclear power is only feasible energy source not emitting GHG
4. 3 NPPs are under construction and 8 NPPs are under planning
5. Establishment of fuel cycle is national policy