CH.4 “Energy Supply”

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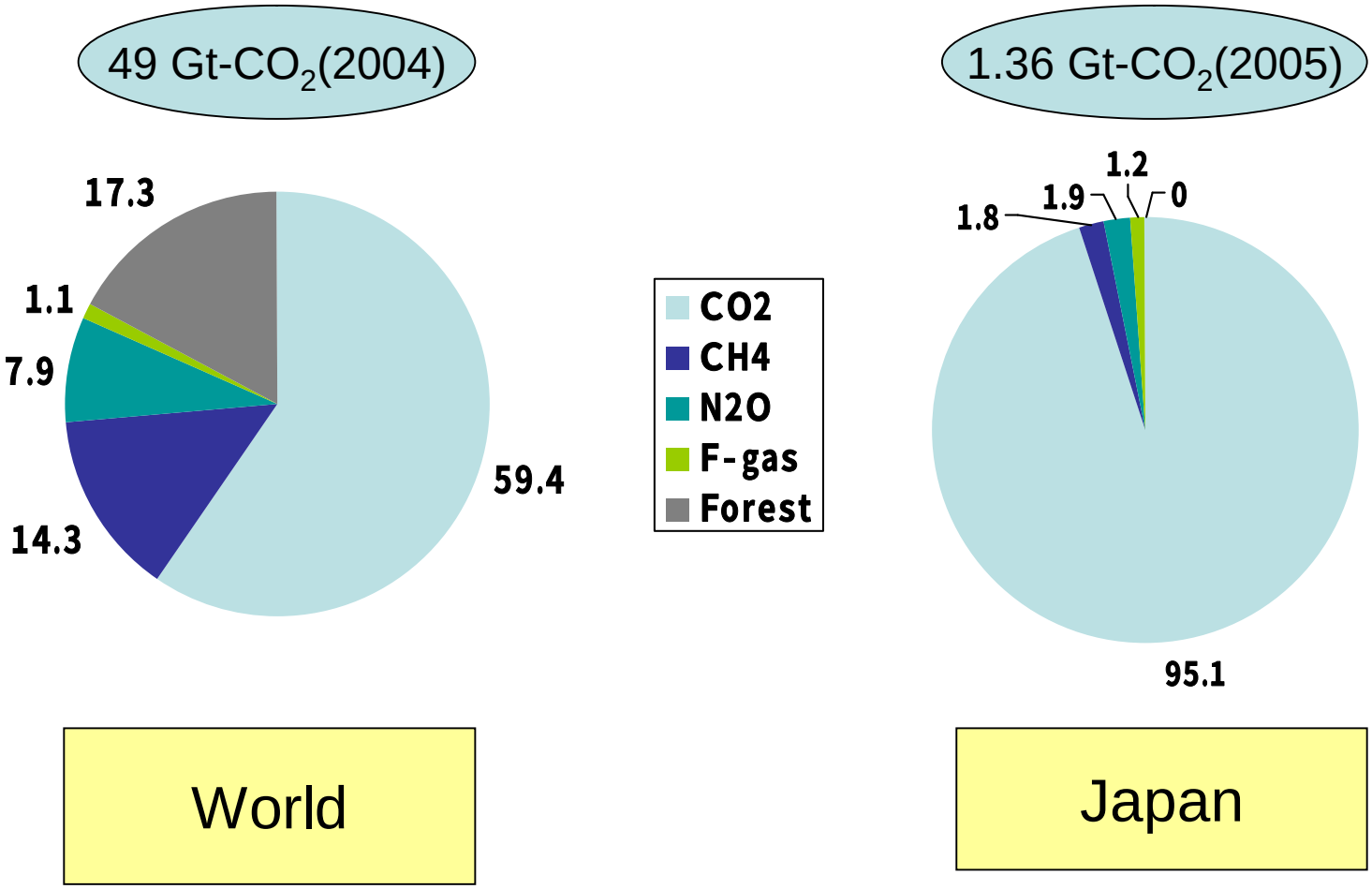
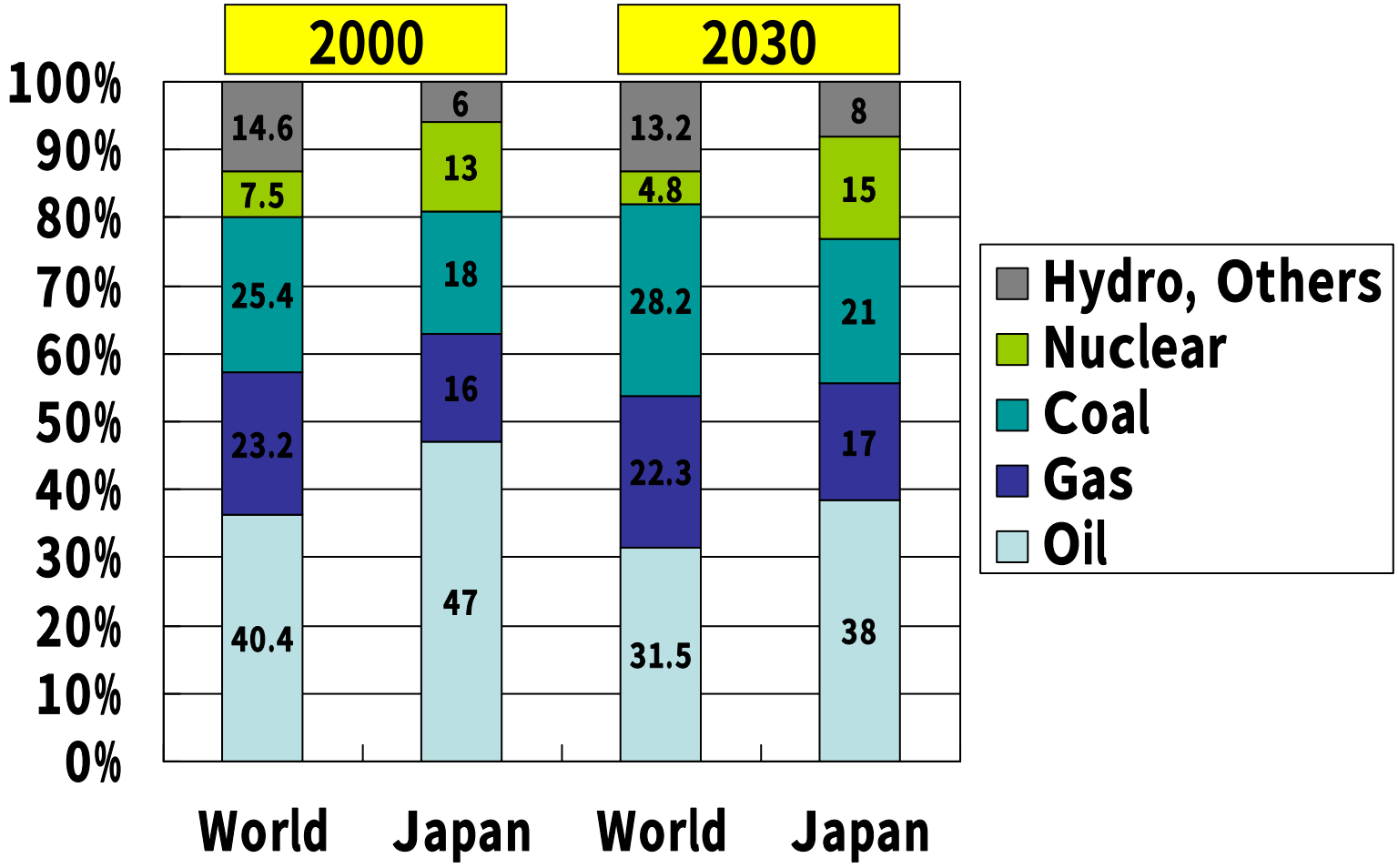
Comparison of GHG Emissions

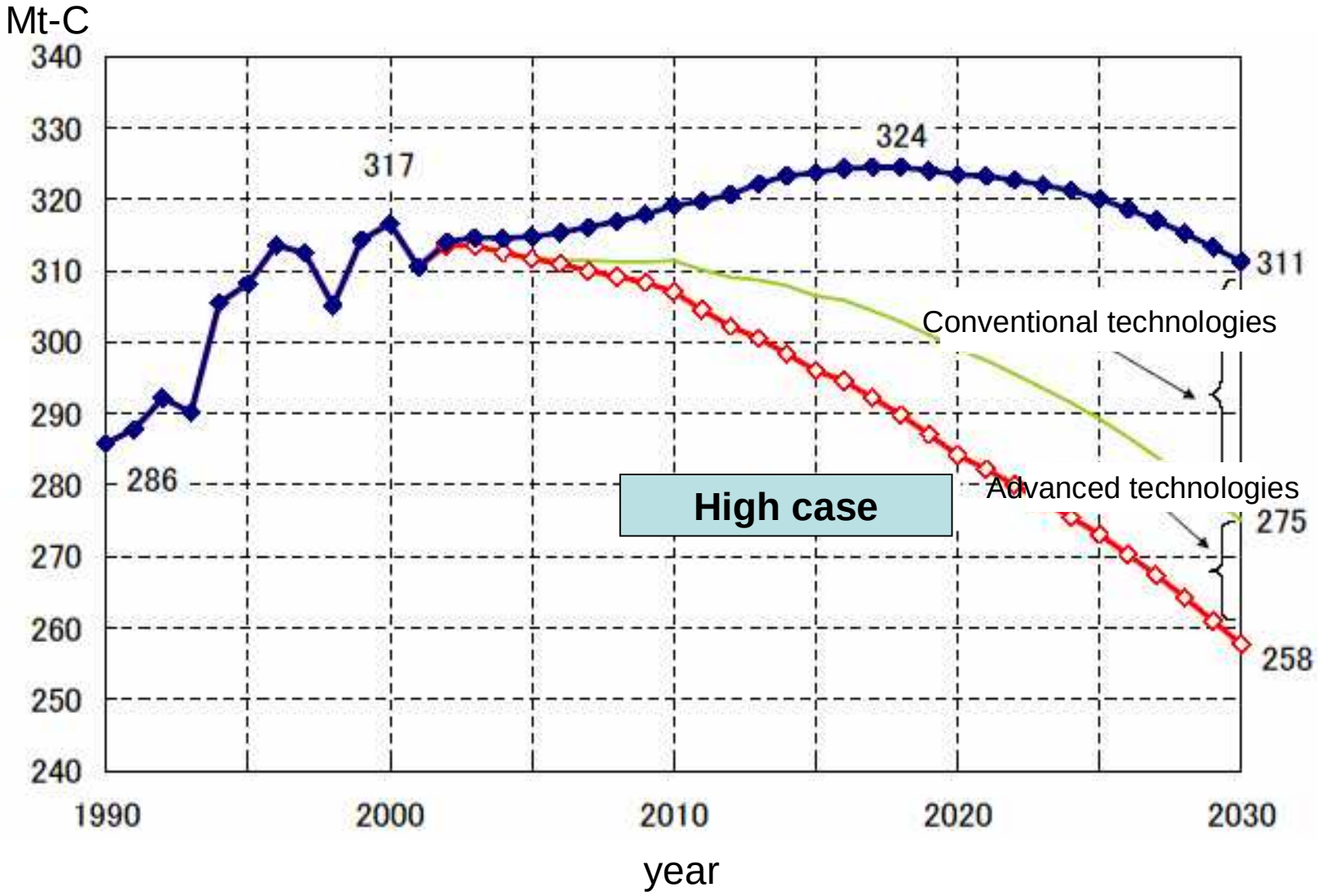


Comparison of Primary Energy Consumptions

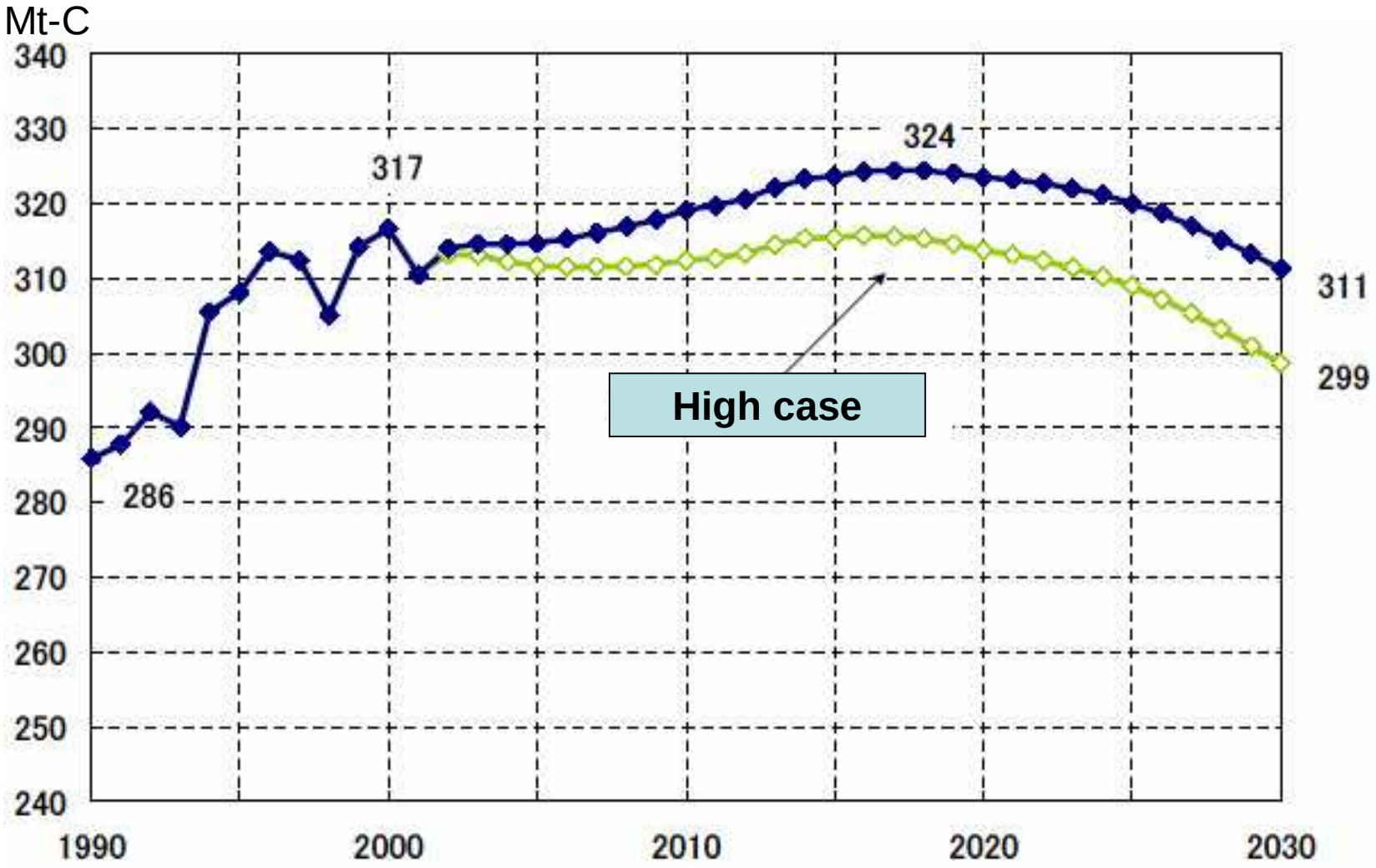


Source: WEO 2007(world), MITI 2004(Japan)

Energy Efficiency Potentials in Japan (Industries, Building, Transportation)

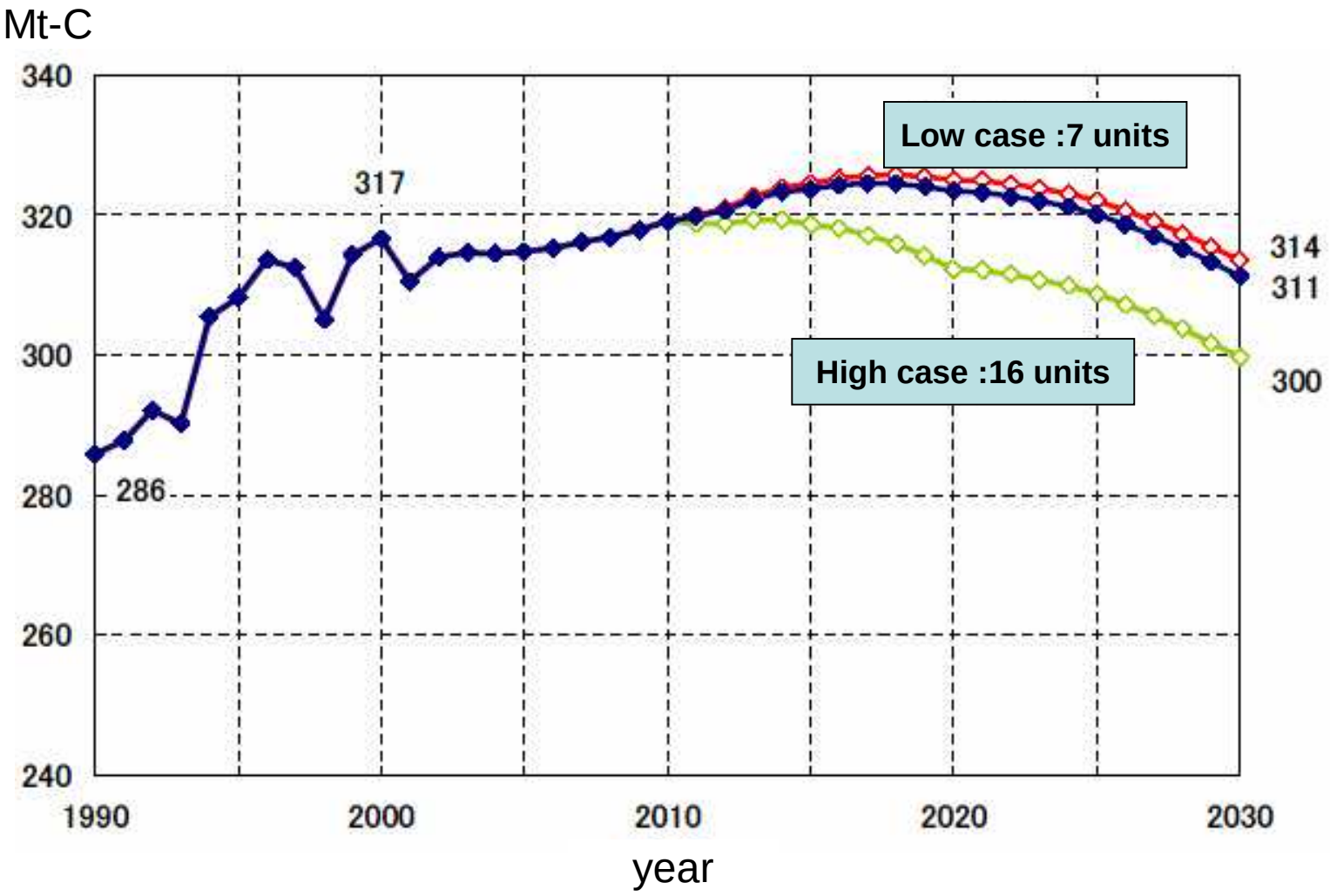


Renewable Potentials in Japan
(Solar, Wind, Biomass, Mini-hydro)

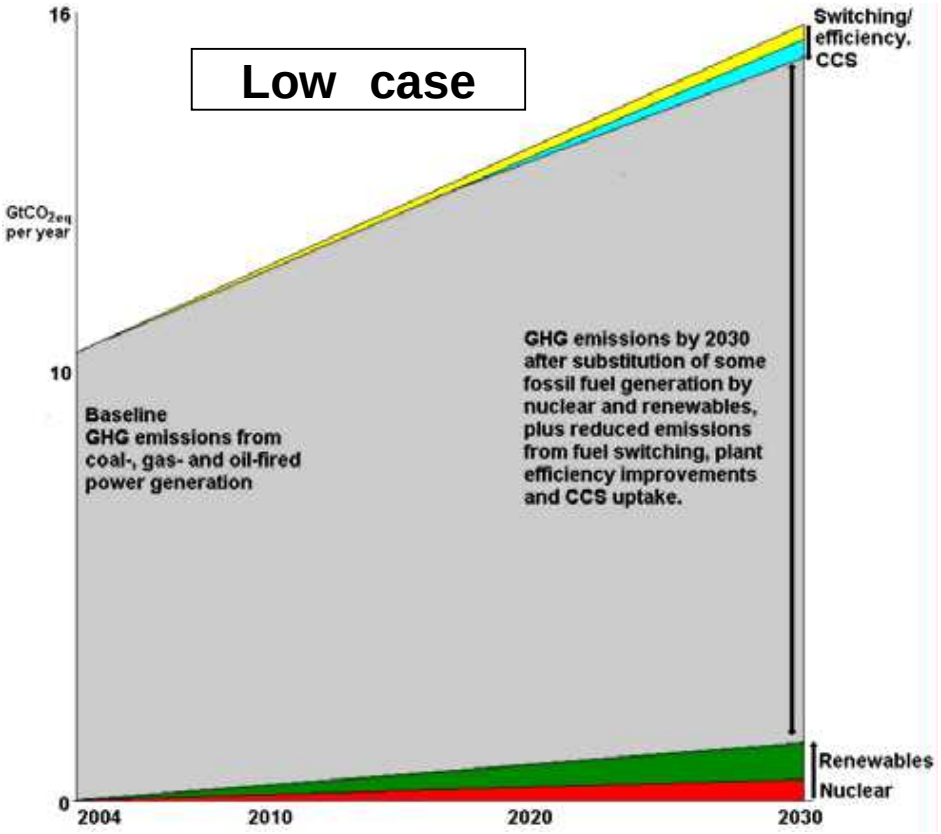


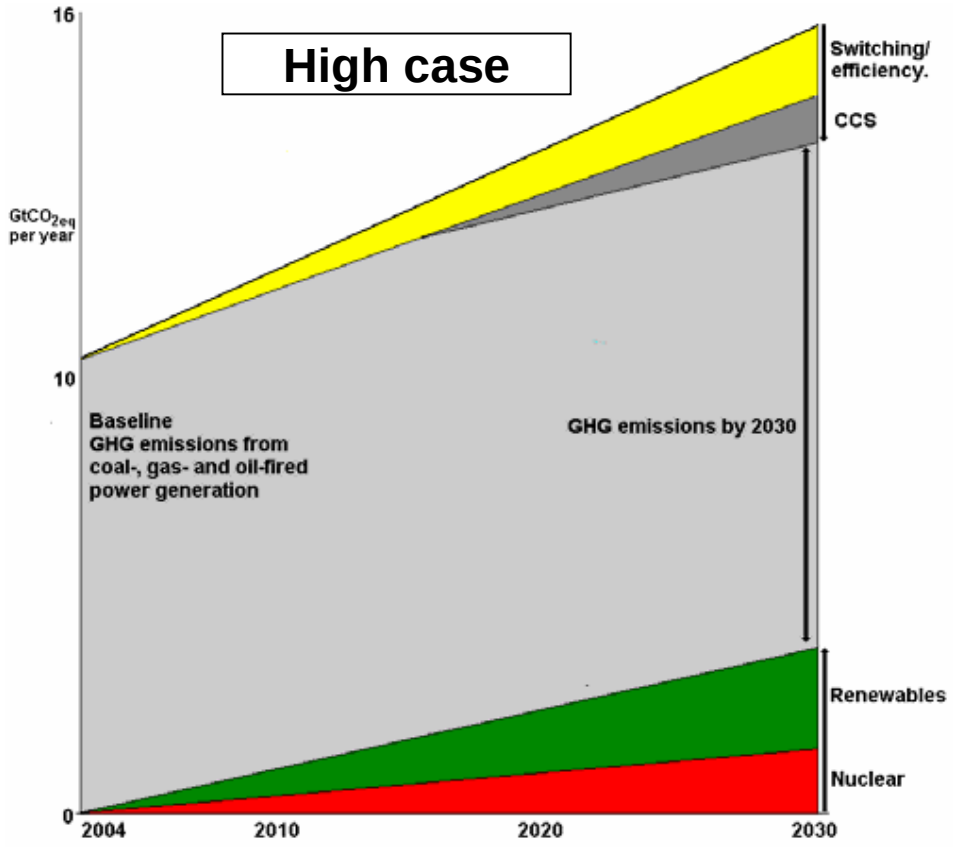
Nuclear Potential in Japan

【Blue】Reference case : 9 units (CF=85%)



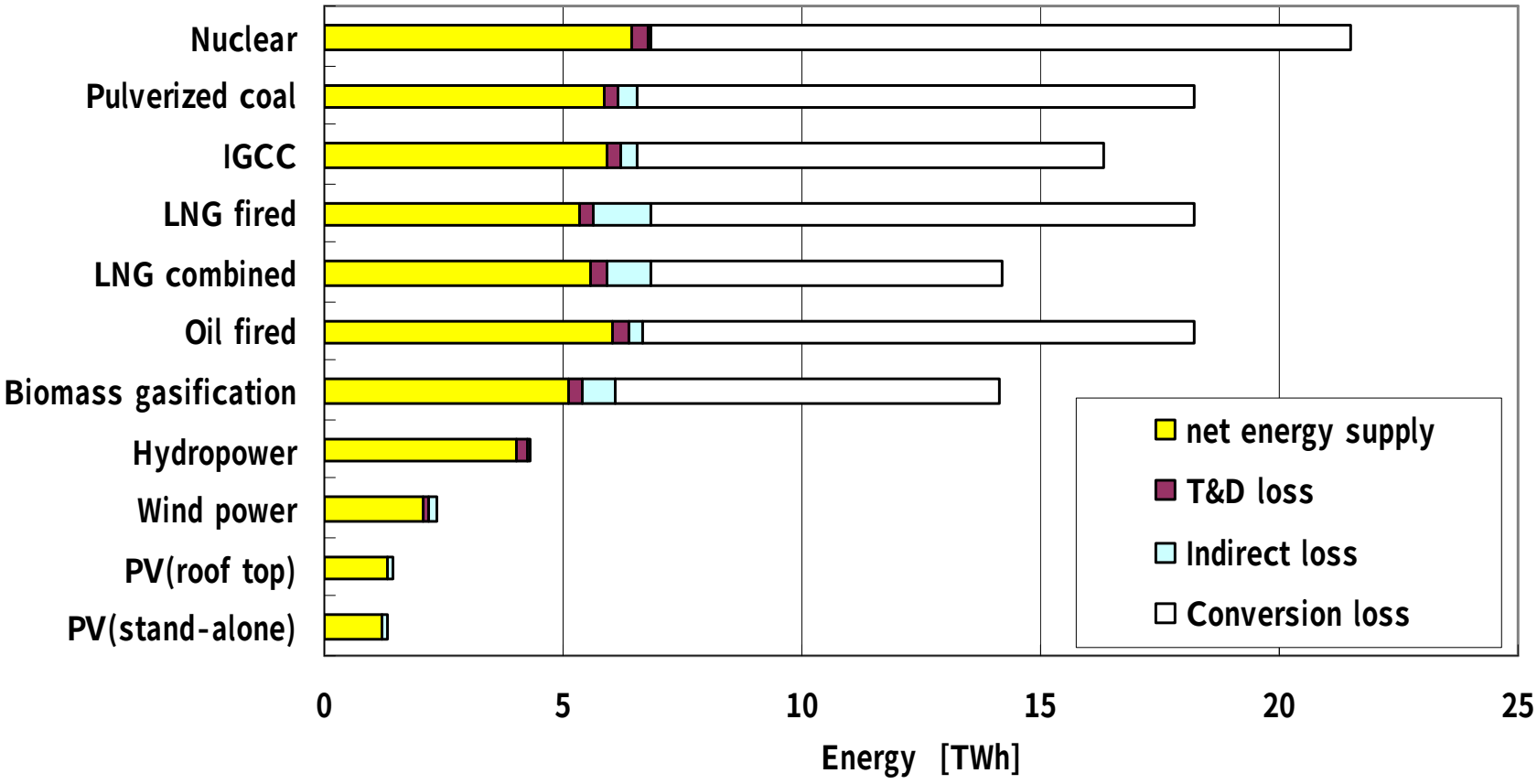
GHG Mitigation Potential of Energy Supply Technologies





Source：IPCC、AR4 (2007)

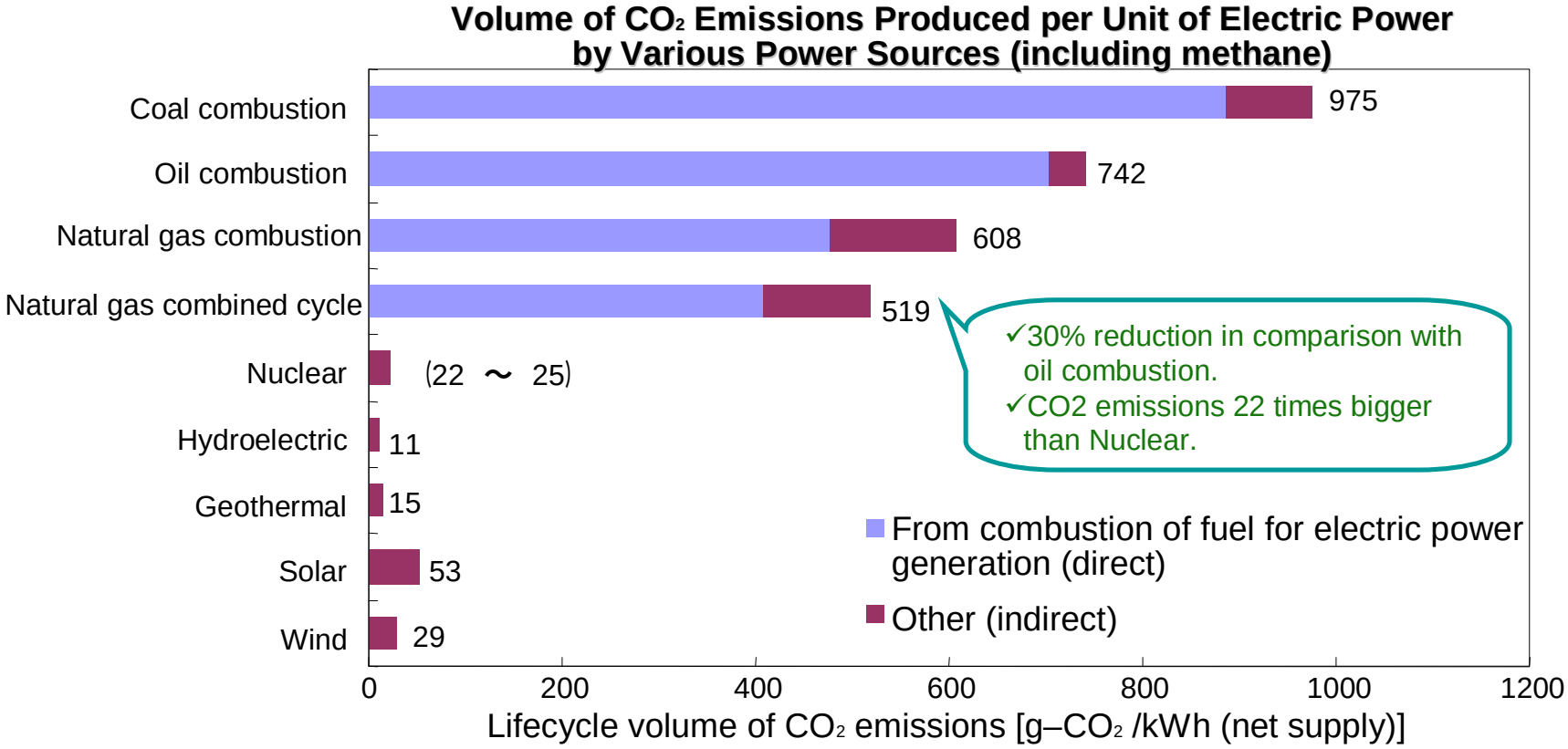
Net Energy Balance of Different Power Generation Systems [1,000MW、life:30 year]



Source：IPCC、AR4 (2007)

The Perspective of Preventing Global Warming

✓With regard to the entire life-cycle including factors such as construction of power plants and transport of fuel, the volume of CO_2 emissions generated natural gas can reduce about 30% compared to oil, but is 22 times bigger than nuclear.



Sources: For nuclear power: Central Research Institute of the Electric Power Industry, "Evaluation of Nuclear-Powered Electrical Generation Technology in Terms of Lifecycle CO_2 Emissions," August 2001.
For other power sources: Central Research Institute of the Electric Power Industry, "Evaluation of Electrical Generation Technology in Terms of Lifecycle CO_2 Emissions," March 2000.

Overnight construction cost of power plant（1）

Source: NEA, IEA, Projected Costs of Generating Electricity

		Japan	USA	Germany	France
Nuclear	Reactor Type / fuel cycle option	ABWR/CC	GENIII/OT	PWR/OT	PWR/CC
	$/kWe	2510	1894	1773	1556
	% French cost	**161%**	**122%**	**114%**	**100%**
Gas	Technology / emission control equipement	CCGT (LNG)/ SCR	CCGT/SCR	CCGT/SCR	CCGT/ns
	$/kWe	1292	609	503	599
	% French cost	**216%**	**102%**	**84%**	**100%**
Coal	Plant type / emission control equipement	PF/FGD, SCR, ESP	PF/FGD, SCR, FF	PF/dust, FGD, SCR	PF(SC)/ns
	$/kWe	2347	1160	938	1393
	% French cost	**168%**	**83%**	**67%**	**100%**

Overnight construction cost of power plant (2)

Source: NEA, IEA, Projected Costs of Generating Electricity

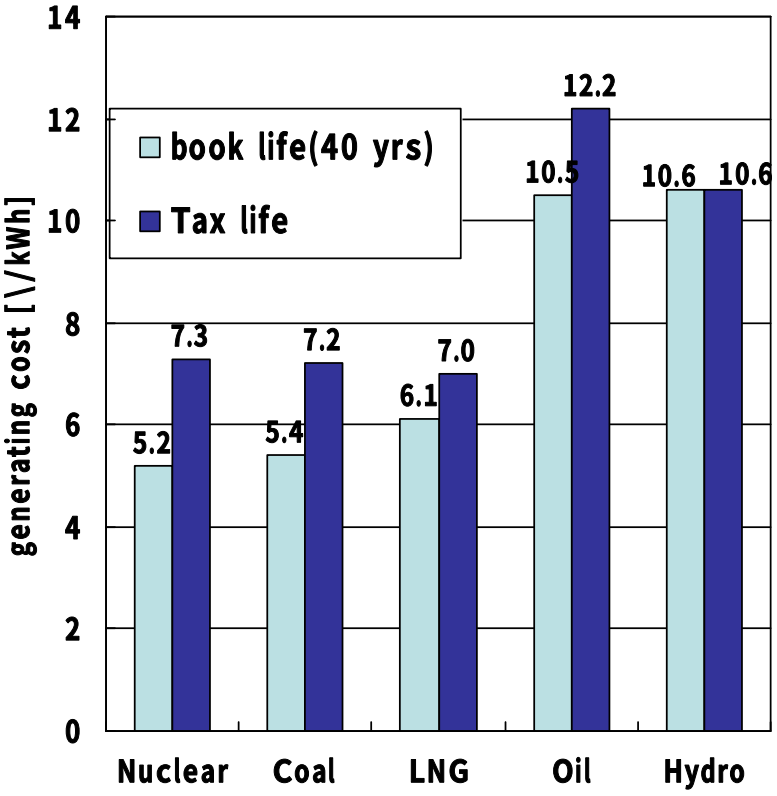
		Japan	USA	Germany	France
Nuclear	Reactor Type / fuel cycle option	ABWR/CC	GENIII/OT	PWR/OT	PWR/CC
	$/kWe	2510	1894	1773	1556
	% Gas cost	**194%**	**311%**	**352%**	**260%**
Gas	Technology / emission control equipement	CCGT (LNG)/SCR	CCGT/SCR	CCGT/SCR	CCGT/ns
	$/kWe	1292	609	503	599
	% Gas cost	**100%**	**100%**	**100%**	**100%**
Coal	Plant type / emission control equipement	PF/FGD, SCR, ESP	PF/FGD, SCR, FF	PF/dust, FGD, SCR	PF(SC)/ns
	$/kWe	2347	1160	938	1393
	% Gas cost	**182%**	**190%**	**186%**	**233%**

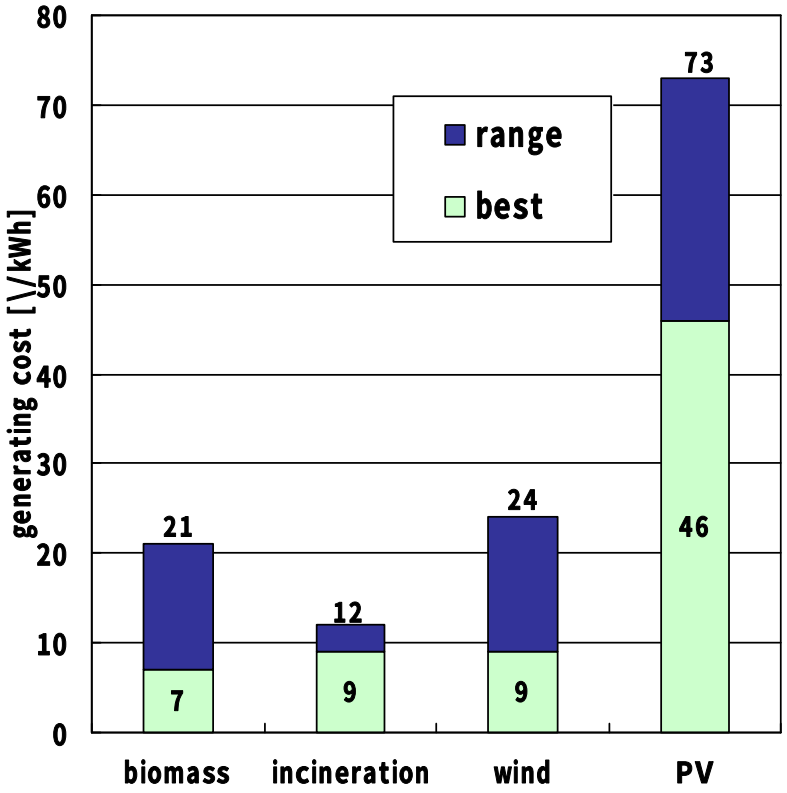
Projected Costs of Electricity Generation Plants in Japan

Plant type	Heat value	Capital +O&M [¥/kWh]	Case 1: Low fuel price (#1) [discount rate: 2%]				Case 2: High fuel price (average of Sep.05 to Feb.06)			
			Price	Escalation [%]	Cost [\/kWh]	Total [\/kWh]	Price	Escalation [%]	Cost [\/kWh]	Total [\/kWh]
Oil	9,126 [kcal/l]	5.05	21,030 [\/kl]	0.20	5.45	10.5	42,210 [\/kl]	0	10.23	15.3
LNG	13,019 [kcal/kg]	2.00	28,090 [\/t]	0.27	4.10	6.1	39,670 [\/t]	0	5.35	7.4
Coal	6,354 [kcal/kg]	3.69	4,330 [\/t]	0.77	1.71	5.4	7,330 [\/t]	0	2.45	6.1
Nuclear	-	3.57	-	-	1.53 (#2)	5.1	-	-	1.53 (#2)	5.1
Hydro	-	10.6	-	-	-	10.6	-	-	-	10.6

#1: The cost study subcommittee of electric industry committee (Jan. 2004)
#2: fuel cycle cost

Comparison of Electricity Generating Costs





Discount rate:2%, capacity factor:80%,45%(hydro)

Source: Federation of Electric power companies(2004)

Source: Advisory council for resources and energy(2001)