

Energy Supply/Demand Outlook for Japan for FY 2012

Shigeru Suehiro, Senior Economist, Manager*

Kengo Suzuki, Toshiaki Hachiuma, Takayuki Yoshioka, researcher*

Summary

Although the Japanese economy and industrial activities are moving toward recovery, their future growth is subjected to the risk of electricity shortage caused by the prolonged shutdown of all the nuclear power plants in Japan. Considering those situations, this report forecasts energy supply and demand in Japan for FY2011 and FY2012 assuming two cases: Case (A): “without electricity restriction” and Case (B) “with electricity restriction”. The first case assumes that the nuclear power plants restart in the next summer, and the national economy and industry will not suffer from the electricity shortage. On the other hand, the second case assumes that no nuclear power plant restarts during the forecast period, and the national economy and industry will suffer from the electricity shortage throughout the next summer.

<Case (A): without electricity restriction>

In the FY2011, the Japanese real GDP is projected to decrease by 0.3 % from the previous year, and the final energy consumption and the primary energy supply are projected to decrease by 3.9% and 3.7 %, respectively, from the previous year. In the FY2012, the Japanese real GDP is projected to increase by 1.9 % from FY2011, and the final energy consumption and the primary energy supply are projected to increase by 1.1 % and 1.0 %, respectively. (Please refer to Table 1-1 for summary results of this case)

<Case (B): with electricity restriction>

In the FY2012, the Japanese real GDP is projected to increase by 0.1 %, which is 1.8 percent point lower than that in the Case (A). Accordingly, the final energy consumption in this case is projected to decrease by 0.2 %, and the primary energy supply is projected to increase by 0.2 %, respectively, from FY2011. In this case, fossil fuel power generation will increase significantly to offset the loss of nuclear power generation, which results in large scale increase in LNG, oil and coal consumption (and import payments). Note that there is no difference between the two cases in the FY2011. (Please refer to Table 1-2 for summary results of this case.)

* Energy Demand, Supply and Forecast Analysis Group, Energy Data and Modelling Center (EDMC)

Table 1-1 Summary Table (Case (A): without electricity restriction)

		FY2009 (Actual)	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)	
			1st half	2nd half	Total	1st half	2nd half	Total		
Key economic indicators	GDP (Chained to year 2005, in billions of yen)	495,417 (-2.1)	252,961 (4.9)	258,031 (1.5)	510,992 (3.1)	249,895 (-1.2)	259,335 (0.5)	509,230 (-0.3)	519,012 (1.9)	
	Private demand	364,657 [-3.1]	187,200	188,475	375,675 [2.2]	185,736	189,268	375,003 [-0.2]	379,730 [1.1]	
	Public demand	118,037 [0.9]	57,189	61,514	118,704 [0.1]	58,226	63,563	121,789 [0.6]	124,453 [0.6]	
	External demand	11,673 [0.2]	8,635	8,189	16,825 [0.8]	6,240	6,973	13,214 [-0.8]	14,839 [0.1]	
	Corporate goods price index (Year 2005 = 100)	102.6 (-5.2)	102.9 (0.1)	103.7 (1.4)	103.3 (0.7)	105.6 (2.6)	105.5 (1.8)	105.5 (2.2)	105.9 (0.4)	
	Consumer price index (Year 2010 = 100)	100.5 (-1.5)	100.0 (-0.9)	99.8 (-0.4)	99.9 (-0.6)	99.8 (-0.2)	99.4 (-0.3)	99.6 (-0.2)	99.2 (-0.4)	
	Index of industrial production (Year 2005 = 100)	86.1 (-8.8)	94.6 (17.4)	93.1 (1.7)	93.9 (9.1)	90.3 (-4.5)	94.2 (1.2)	92.3 (-1.7)	96.9 (5.0)	
	Crude steel production (In thousands of tons)	96,449 (-8.6)	55,424 (27.9)	55,369 (4.2)	110,792 (14.9)	53,312 (-3.8)	54,265 (-2.0)	107,576 (-2.9)	110,550 (2.8)	
	Ethylene production (In thousands of tons)	7,219 (10.7)	3,327 (-5.3)	3,671 (-0.9)	6,999 (-3.0)	3,293 (-1.0)	3,384 (-7.8)	6,677 (-4.6)	6,942 (4.0)	
	Exchange rate (Yen/US dollar)	92.8 (-7.6)	88.9 (-6.8)	82.5 (-8.6)	85.7 (-7.7)	79.8 (-10.3)	77.5 (-6.0)	78.6 (-8.2)	77.5 (-1.4)	
	Crude oil CIF price (US dollar/bbl)	68.9 (-23.5)	78.6 (27.5)	89.5 (17.4)	84.0 (21.9)	114.0 (45.0)	110.0 (23.0)	112.0 (33.3)	110.0 (-1.8)	
	Heating degree-days	952 (6.1)	77 (122.4)	998 (8.8)	1,075 (12.9)	53 (-31.1)	946 (-5.2)	999 (-7.1)	980 (-1.9)	
	Cooling degree-days	329 (-17.5)	560 (70.6)	0 (-75.0)	560 (70.5)	472 (-15.7)	2 (1600.0)	474 (-15.4)	425 (-10.4)	
	Key energy indicators	Primary energy supply (10*10kcal = KTOE)	491,315 (-4.0)	250,850 (8.5)	262,902 (1.1)	513,752 (4.6)	236,308 (-5.8)	258,561 (-1.7)	494,869 (-3.7)	500,063 (1.0)
		Final energy consumption (10*10kcal = KTOE)	331,043 (-2.4)	164,813 (7.1)	177,925 (0.4)	342,738 (3.5)	155,468 (-5.7)	173,874 (-2.3)	329,342 (-3.9)	332,895 (1.1)
		Industrial sector	155,327 (-3.2)	78,625 (8.3)	82,480 (-0.3)	161,105 (3.7)	75,375 (-4.1)	80,816 (-2.0)	156,191 (-3.1)	160,339 (2.7)
Consumer sector		92,901 (-1.7)	43,574 (9.0)	54,468 (2.9)	98,042 (5.5)	39,658 (-9.0)	52,319 (-3.9)	91,976 (-6.2)	92,309 (0.4)	
Transportation sector		82,815 (-1.7)	42,614 (3.3)	40,977 (-1.4)	83,591 (0.9)	40,435 (-5.1)	40,739 (-0.6)	81,174 (-2.9)	80,247 (-1.1)	
Electricity sales (billion kWh)		889.4 (-3.4)	476.0 (9.1)	466.1 (2.9)	942.1 (5.9)	439.7 (-7.6)	452.6 (-2.9)	892.3 (-5.3)	917.7 (2.8)	
Town gas sales (million m ³ /10,000kcal)		33,837 (-1.9)	16,574 (8.3)	18,710 (0.9)	35,283 (4.3)	16,380 (-1.2)	18,995 (1.5)	35,375 (0.3)	36,252 (2.5)	
Fuel oil sales (1,000kl)		195,122 (-3.0)	92,031 (2.4)	103,917 (-1.3)	195,948 (0.4)	88,605 (-3.7)	107,174 (3.1)	195,779 (-0.1)	188,199 (-3.9)	
CO ₂ emissions (energy-based) (million t-CO ₂) (FY1990 = 100)		1,075 (-5.5)			1,122 (4.3)			1,146 (2.1)	1,086 (-5.3)	
		101.5		105.9			108.2	102.5		

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

- Figures in parentheses indicate year-to-year percentage changes, except contributions to GDP growth.
- Contributions to GDP growth may not add up to the total due to minor data deviations.
- The industrial sector consumption includes non-energy uses.

Table 1-2 Summary Table (Case (B): with electricity restriction)

		FY2009 (Actual)	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)	
			1st half	2nd half	Total	1st half	2nd half	Total		
Key economic indicators	GDP (Chained to year 2005, in billions of yen)	495,417 (-2.1)	252,961 (4.9)	258,031 (1.5)	510,992 (3.1)	249,895 (-1.2)	259,335 (0.5)	509,230 (-0.3)	509,957 (0.1)	
	Private demand	364,657 [-3.1]	187,200	188,475	375,675 [2.2]	185,736	189,268	375,003 [-0.2]	378,040 [0.7]	
	Public demand	118,037 [0.9]	57,189	61,514	118,704 [0.1]	58,226	63,563	121,789 [0.6]	124,441 [0.6]	
	External demand	11,673 [0.2]	8,635	8,189	16,825 [0.8]	6,240	6,973	13,214 [-0.8]	7,878 [-1.1]	
	Corporate goods price index (Year 2005 = 100)	102.6 (-5.2)	102.9 (0.1)	103.7 (1.4)	103.3 (0.7)	105.6 (2.6)	105.5 (1.8)	105.5 (2.2)	105.8 (0.3)	
	Consumer price index (Year 2010 = 100)	100.5 (-1.5)	100.0 (-0.9)	99.8 (-0.4)	99.9 (-0.6)	99.8 (-0.2)	99.4 (-0.3)	99.6 (-0.2)	99.2 (-0.4)	
	Index of industrial production (Year 2005 = 100)	86.1 (-8.8)	94.6 (17.4)	93.1 (1.7)	93.9 (9.1)	90.3 (-4.5)	94.2 (1.2)	92.3 (-1.7)	93.8 (1.6)	
	Crude steel production (In thousands of tons)	96,449 (-8.6)	55,424 (27.9)	55,369 (4.2)	110,792 (14.9)	53,312 (-3.8)	54,265 (-2.0)	107,576 (-2.9)	108,191 (0.6)	
	Ethylene production (In thousands of tons)	7,219 (10.7)	3,327 (-5.3)	3,671 (-0.9)	6,999 (-3.0)	3,293 (-1.0)	3,384 (-7.8)	6,677 (-4.6)	6,692 (0.2)	
	Exchange rate (Yen/US dollar)	92.8 (-7.6)	88.9 (-6.8)	82.5 (-8.6)	85.7 (-7.7)	79.8 (-10.3)	77.5 (-6.0)	78.6 (-8.2)	77.5 (-1.4)	
	Crude oil CIF price (US dollar/bbl)	68.9 (-23.5)	78.6 (27.5)	89.5 (17.4)	84.0 (21.9)	114.0 (45.0)	110.0 (23.0)	112.0 (33.3)	110.0 (-1.8)	
	Heating degree-days	952 (6.1)	77 (122.4)	998 (8.8)	1,075 (12.9)	53 (-31.1)	946 (-5.2)	999 (-7.1)	980 (-1.9)	
	Cooling degree-days	329 (-17.5)	560 (70.6)	0 (-75.0)	560 (70.5)	472 (-15.7)	2 (1600.0)	474 (-15.4)	425 (-10.4)	
	Key energy indicators	Primary energy supply (10*10kcal = KTOE)	491,315 (-4.0)	250,850 (8.5)	262,902 (1.1)	513,752 (4.6)	236,308 (-5.8)	258,561 (-1.7)	494,869 (-3.7)	495,824 (0.2)
		Final energy consumption (10*10kcal = KTOE)	331,043 (-2.4)	164,813 (7.1)	177,925 (0.4)	342,738 (3.5)	155,468 (-5.7)	173,874 (-2.3)	329,342 (-3.9)	328,734 (-0.2)
		Industrial sector	155,327 (-3.2)	78,625 (8.3)	82,480 (-0.3)	161,105 (3.7)	75,375 (-4.1)	80,816 (-2.0)	156,191 (-3.1)	157,168 (0.6)
Consumer sector		92,901 (-1.7)	43,574 (9.0)	54,468 (2.9)	98,042 (5.5)	39,658 (-9.0)	52,319 (-3.9)	91,976 (-6.2)	91,854 (-0.1)	
Transportation sector		82,815 (-1.7)	42,614 (3.3)	40,977 (-1.4)	83,591 (0.9)	40,435 (-5.1)	40,739 (-0.6)	81,174 (-2.9)	79,712 (-1.8)	
Electricity sales (billion kWh)		889.4 (-3.4)	476.0 (9.1)	466.1 (2.9)	942.1 (5.9)	439.7 (-7.6)	452.6 (-2.9)	892.3 (-5.3)	905.5 (1.5)	
Town gas sales (million m ³ /10,000kcal)		33,837 (-1.9)	16,574 (8.3)	18,710 (0.9)	35,283 (4.3)	16,380 (-1.2)	18,995 (1.5)	35,375 (0.3)	35,828 (1.3)	
Fuel oil sales (1,000kl)		195,122 (-3.0)	92,031 (2.4)	103,917 (-1.3)	195,948 (0.4)	88,605 (-3.7)	107,174 (3.1)	195,779 (-0.1)	199,380 (1.8)	
CO ₂ emissions (energy-based) (million t-CO ₂) (FY1990 = 100)	1,075 (-5.5)			1,122 (4.3)			1,146 (2.1)	1,209 (5.5)		
		101.5		105.9			108.2	114.1		

Sources: Actual results data prepared from various publications; forecasts by IEEJ

Notes:

- Figures in parentheses indicate year-to-year percentage changes, except contributions to GDP growth.
- Contributions to GDP growth may not add up to the total due to minor data deviations.
- The industrial sector consumption includes non-energy uses.

Table 2 Final Energy Demand

	FY2009 (Actual)	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)		
		1st half	2nd half	Total	1st half	2nd half	Total	Case (A): without restriction	Case (B): with restriction	
Sector (10 ¹⁰ kcal)	Industrial Sector	155,327 (-3.2)	78,625 (8.3)	82,480 (-0.3)	161,105 (3.7)	75,375 (-4.1)	80,816 (-2.0)	156,191 (-3.1)	160,339 (2.7)	157,168 (0.6)
	Consumer sector	92,901 (-1.7)	43,574 (9.0)	54,468 (2.9)	98,042 (5.5)	39,658 (-9.0)	52,319 (-3.9)	91,976 (-6.2)	92,309 (0.4)	91,854 (-0.1)
	Household sector	51,552 (-0.8)	21,890 (9.4)	32,574 (3.3)	54,464 (5.6)	20,162 (-7.9)	31,469 (-3.4)	51,632 (-5.2)	51,364 (-0.5)	51,153 (-0.9)
	Commercial sector	41,349 (-2.7)	21,684 (8.5)	21,894 (2.5)	43,578 (5.4)	19,496 (-10.1)	20,849 (-4.8)	40,345 (-7.4)	40,944 (1.5)	40,701 (0.9)
	Transportation sector	82,815 (-1.7)	42,614 (3.3)	40,977 (-1.4)	83,591 (0.9)	40,435 (-5.1)	40,739 (-0.6)	81,174 (-2.9)	80,247 (-1.1)	79,712 (-1.8)
Energy Type (10 ¹⁰ kcal)	Coal etc	34,418 (-4.6)	18,294 (15.0)	18,042 (-2.5)	36,336 (5.6)	17,496 (-4.4)	17,629 (-2.3)	35,125 (-3.3)	36,013 (2.5)	35,557 (1.2)
	Oil	177,180 (-1.7)	83,232 (2.9)	95,148 (-1.2)	178,380 (0.7)	78,171 (-6.1)	92,285 (-3.0)	170,456 (-4.4)	169,543 (-0.5)	167,509 (-1.7)
	Town gas	32,472 (-0.6)	16,202 (12.2)	18,598 (3.1)	34,800 (7.2)	16,158 (-0.3)	18,956 (1.9)	35,114 (0.9)	36,114 (2.8)	35,590 (1.4)
	Electricity	83,554 (-3.4)	45,282 (10.3)	44,276 (4.2)	89,558 (7.2)	41,920 (-7.4)	43,113 (-2.6)	85,033 (-5.1)	87,492 (2.9)	86,408 (1.6)
	Other	3,419 (-7.8)	1,803 (14.3)	1,861 (1.1)	3,664 (7.2)	1,722 (-4.5)	1,892 (1.7)	3,614 (-1.4)	3,732 (3.3)	3,669 (1.5)
	Total	331,043 (-2.4)	164,813 (7.1)	177,925 (0.4)	342,738 (3.5)	155,468 (-5.7)	173,874 (-2.3)	329,342 (-3.9)	332,895 (1.1)	328,734 (-0.2)
	GDP (Chained to year 2005, in billions of yen)	495,417 (-2.1)	252,961 (4.9)	258,031 (1.5)	510,992 (3.1)	249,895 (-1.2)	259,335 (0.5)	509,230 (-0.3)	519,012 (1.9)	509,957 (0.1)
Index of industrial production (Year 2005 = 100)	86.1 (-8.8)	94.6 (17.4)	93.1 (1.7)	93.9 (9.1)	90.3 (-4.5)	94.2 (1.2)	92.3 (-1.7)	96.9 (5.0)	93.8 (1.6)	
Heating degree-days	952 (6.1)	77 (122.4)	998 (8.8)	1,075 (12.9)	53 (-31.1)	946 (-5.2)	999 (-7.1)	980 (-1.9)	980 (-1.9)	
Cooling degree-days	329 (-17.5)	560 (70.6)	0 (-75.0)	560 (70.5)	472 (-15.7)	2 (1600.0)	474 (-15.4)	425 (-10.4)	425 (-10.4)	

Sources: Actual results data prepared from IEEJ etc.; forecasts by IEEJ

Notes:

- Figures in parentheses indicate year-to-year percentage changes.
- "Industrial sector" includes non-energy use.

Table 3 Primary Energy Supply

	FY2009 (Actual)	FY2010 (Actual)			FY2011 (Forecast)			FY2012 (Forecast)		
		1st half	2nd half	Total	1st half	2nd half	Total	Case (A): without restriction	Case (B): with restriction	
Primary Energy Supply (10 ¹⁰ kcal)	Coal	107,939 (-7.8)	60,457 (20.1)	59,760 (3.8)	120,217 (11.4)	58,532 (-3.2)	60,660 (1.5)	119,192 (-0.9)	117,106 (-1.8)	124,083 (4.1)
	Oil	209,848 (-6.1)	99,689 (2.5)	112,590 (0.0)	212,279 (1.2)	96,239 (-3.5)	119,750 (6.4)	215,989 (1.7)	204,938 (-5.1)	226,089 (4.7)
	Natural gas	90,259 (-2.6)	45,888 (8.6)	49,618 (3.4)	95,506 (5.8)	51,699 (12.7)	61,927 (24.8)	113,626 (19.0)	104,677 (-7.9)	121,522 (6.9)
	Hydro	16,964 (1.0)	10,824 (12.1)	6,561 (-10.3)	17,385 (2.5)	10,515 (-2.9)	6,388 (-2.6)	16,904 (-2.8)	16,058 (-5.0)	16,058 (-5.0)
	Nuclear	58,876 (8.4)	30,245 (7.1)	30,415 (-0.7)	60,660 (3.0)	15,796 (-47.8)	5,751 (-81.1)	21,547 (-64.5)	49,161 (128.2)	28 (-99.9)
	Other	7,429 (-2.9)	3,747 (7.9)	3,958 (0.0)	7,705 (3.7)	3,528 (-5.9)	4,084 (3.2)	7,611 (-1.2)	8,124 (6.7)	8,044 (5.7)
	Total	491,315 (-4.0)	250,850 (8.5)	262,902 (1.1)	513,752 (4.6)	236,308 (-5.8)	258,561 (-1.7)	494,869 (-3.7)	500,063 (1.0)	495,824 (0.2)
	GDP (Chained to year 2005, in billions of yen)	495,417 (-2.1)	252,961 (4.9)	258,031 (1.5)	510,992 (3.1)	249,895 (-1.2)	259,335 (0.5)	509,230 (-0.3)	519,012 (1.9)	509,957 (0.1)
GDP intensity (primary energy supply/GDP) (FY2000 = 100)	93.7 (-2.0)			95.0 (1.4)			91.8 (-3.3)	91.1 (-0.9)	91.9 (0.1)	
CO ₂ emissions (energy-based) (million t-CO ₂)	1,075 (-5.5)			1,122 (4.3)			1,146 (2.1)	1,086 (-5.3)	1,209 (5.5)	
	101.5			105.9			108.2	102.5	114.1	

Sources: Actual results data prepared from IEEJ, Ministry of the Environment, and Cabinet Office; forecasts by IEEJ

Notes:

- Figures in parentheses indicate year-to-year percentage changes.
- "Other" includes renewable energy etc.

Contact: report@tky.ieej.jp