

Economic and Energy Outlook of Japan through FY2018

Japanese economy/energy supply and demand heading to slower growth or decline

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Summary of economy and energy outlook [Reference Scenario]

Macro economy and production activity | Japanese economy slows down its expansion in FY2018. Trade balance's surplus diminish.

Firm growth in both domestic and foreign demand expands the Japanese economy by 1.8% in FY2017. Although FY2018 enjoys firm private consumption under favourable employment and income and strong private capital investment, the GDP growth will decelerate to 1.1% due to the slower expansion of exports. This year, the index of industrial production experiences its highest level since the Lehman shock (+3.3%), with the chemical and machinery industries being large contributors. Although we are expecting firm demand during FY2018 in anticipation for the 2020 Summer Olympics in Tokyo, some demand related to the superconducting maglev construction and last minute demand prior to the next VAT hike in October 2019, decelerated exports (such as machinery) leads to a slower growth of the index (+1.3%). Trade balance, which turned positive at JPY4 trillion in FY2016, diminishes to JPY1.9 trillion in FY2017 and will almost plunge into negative in FY2018 because of rising energy prices.

Energy supply and demand | increases after a long time in FY2017. FY2018 turns into a decline again. CO₂ emissions continue to reduce.

Total primary energy supply in FY2017 will increase (+0.7%) for the first time since FY2013 due to temperature factors and a favourable economy. On the other hand, FY2018 supply will decline by 0.3%, due to a slow down of the economic growth. Natural gas reaches its lowest level since the Great East Japan Earthquake due to the progressing shift from oil and natural gas to nuclear and renewable energies. Although final energy consumption had decreased for six consecutive years, FY2017 turns to an increase of 0.6%. Due to favourable production activities, the industrial sector is a large contributor to the increase. FY2018 turns to a decrease in all sectors for an overall decline in consumption of 0.4%. The energy-related CO₂ emissions will be reduced to 1,104Mt in FY2018, or 10.6% less than in FY2013. The three main contributors to the reduction are a decrease in energy consumption (-4.8%) and increases in nuclear (-2.6%) as well as new energies (-2.5%).

Energy sales | Electricity and city gas growth will decelerate, the decrease in fuel oil sales will further expand in FY2018

In FY2017, total electricity sales increase by 1.2%. Electricity sales for industry (high and extra-high voltage) augment due to favourable production activities, and sales for lighting services and low voltage increases because of a cold winter and the related increased use of air conditioners. Although electricity sales in FY2018 will increase for a second consecutive year, the growth will only be of 0.2%. Sales for lighting services will decrease due to continuous improvements in energy efficiency for lighting and household electric appliances and a return to average temperature. Sales for high and extra-high voltage increase slightly because of a moderate production growth in the machinery industry. Total city gas sales in FY2017 will update their highest level (+2.9%) due to successes in demand development activities and enlarged production and economic activities. FY2018 will further update its highest level for a third consecutive year,

led by growing sales to general industry because of the continuous demand development activities. Influenced by a slowdown of production and economic activities, however, the growth will be limited to +1.4%. In FY2017, total fuel oil sales decrease by 0.9%. Although the sales of naphtha increase because of less periodic maintenance of ethylene plants than in the previous year, sales of gasoline and heavy fuel oil decrease. FY2018 will experience a decrease in sales of heavy fuel oil C for power generation (due to the return of nuclear power plants), a decrease in sales of naphtha (due to more periodic maintenance of ethylene plants), and a decrease in sales of kerosene and heavy fuel oil A (because of fuel switching to electricity and city gas). Sales of all kind of fuel oils except for diesel oil decrease, and total sales will decrease by 2.3% to close to a level below 170 billion litres.

Table 1 | Summary of Reference Scenario

	Historical				Projections		Year-to-year changes		
	FY2010	FY2014	FY2015	FY2016	FY2017	FY2018	FY2016	FY2017	FY2018
Primary energy supply (Mtoe) ¹	513.5	472.9	465.5	463.5	466.7	465.3	-0.4%	0.7%	-0.3%
Oil ² (GL)	232.3	217.1	211.4	205.1	202.4	195.2	-3.0%	-1.3%	-3.6%
Natural gas ² (Mt of LNG equiv.)	73.6	91.5	86.9	89.0	86.9	84.9	2.5%	-2.4%	-2.3%
Coal ² (Mt)	184.7	190.0	190.1	188.0	188.9	188.9	-1.1%	0.5%	0.0%
Nuclear (TWh)	288.2	0.0	9.4	17.3	32.3	67.5	83.3%	86.4%	109%
Hydro (TWh)	81.8	82.5	85.2	78.7	80.4	81.5	-7.7%	2.3%	1.3%
Other renewables ³ (TWh)	63.9	87.2	99.2	108.7	118.2	126.8	9.6%	8.7%	7.3%
Final energy consumption ⁴ (Mtoe)	340.6	314.6	310.8	310.5	312.4	311.3	-0.1%	0.6%	-0.4%
Industry ⁵	159.3	149.2	147.4	146.7	148.3	148.3	-0.5%	1.1%	0.0%
Buildings	98.7	88.5	86.3	87.7	88.4	87.9	1.6%	0.8%	-0.6%
Transport	82.7	77.0	77.1	76.2	75.7	75.2	-1.2%	-0.6%	-0.8%
Petroleum products	176.2	158.4	158.5	155.9	155.9	154.1	-1.6%	0.0%	-1.2%
Natural gas and city gas	34.4	34.3	33.8	34.8	35.8	36.3	3.1%	2.7%	1.4%
Electricity	89.8	82.7	81.5	83.0	84.0	84.1	1.8%	1.2%	0.2%
Electricity sales ⁶ (TWh)	(926.6)	(851.4)	(837.5)	853.9	864.5	866.4	n.a.	1.2%	0.2%
City gas sales ⁷ (Billion m ³)	39.28	40.16	39.91	41.53	42.71	43.30	4.1%	2.9%	1.4%
Fuel oil sales (GL)	196.0	182.6	180.5	176.9	175.4	171.4	-2.0%	-0.9%	-2.3%
Energy-related CO ₂ emissions ⁴ (Mt)	1,131	1,186	1,150	1,144	1,132	1,104	-0.5%	-1.0%	-2.5%
(FY2013=100)	91.5	96.0	93.1	92.6	91.6	89.4
Crude oil, import, CIF (\$/bbl)	84	89	49	48	56	65	-2.5%	18.1%	14.8%
LNG, import, CIF (\$/MBtu)	11.3	15.4	8.8	7.0	8.8	9.9	-19.8%	24.8%	13.2%
Steam coal, import, CIF (\$/t)	114	93	76	81	98	93	6.8%	21.9%	-5.4%
Coking coal, import, CIF (\$/t)	175	109	88	110	145	124	25.8%	31.3%	-14.2%
Real GDP (JPY2011 trillion)	492.9	510.9	518.3	524.4	533.9	539.6	1.2%	1.8%	1.1%
Industrial production (CY2010=100)	99.4	98.4	97.5	98.6	101.8	103.1	1.2%	3.3%	1.3%
Exchange rate (JPY/\$)	86.1	109.2	120.4	108.4	112.5	115.0	-9.9%	3.8%	2.2%
Cooling degree days	560	364	322	431	397	380	33.8%	-7.7%	-4.4%
Heating degree days	1,077	994	875	966	1,043	1,019	10.4%	8.0%	-2.2%

Notes:

1. Mtoe = 10¹³ kcal

2. Conversion factors for Oil: 9,126 kcal/L; Natural gas: 13,043 kcal/kg; Steam coal: 6,139 kcal/kg; Coking coal: 6,928 kcal/kg until FY2012.

Conversion factors for Oil: 9,145 kcal/L; Natural gas: 13,016 kcal/kg; Steam coal: 6,203 kcal/kg; Coking coal: 6,877 kcal/kg since FY2013.

3. Excluding large hydro 30 MW or more. 4. Estimated actual value for fiscal 2016. 5. Industry includes non-energy use.

6. Figures in parentheses are old statistical figures. 7. Conversion factor: 1 m³ = 10,000 kcal

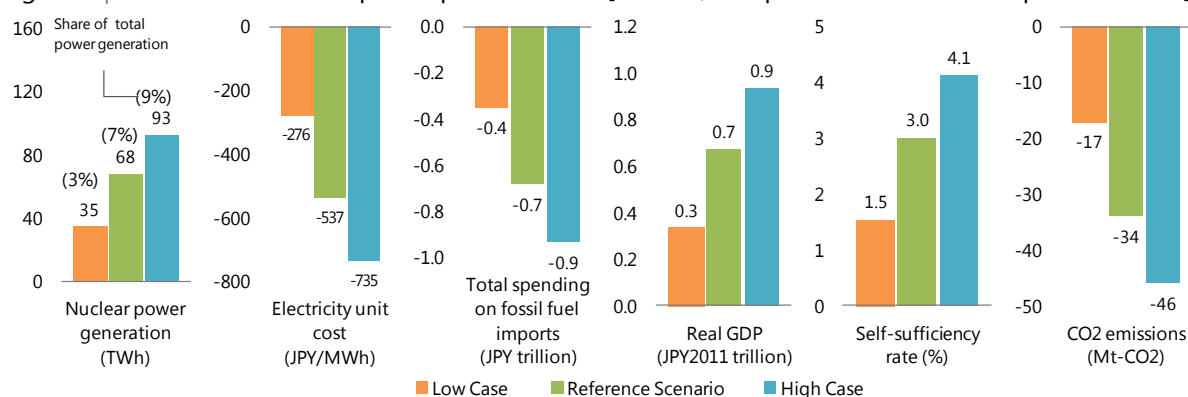
Renewable power generation | Although the FIT revisions slow down the growth in renewable power generation, the installation and burden continue to expand

The rapid increase in the approvals for renewable power seems suppressed by a fall in the purchasing price for solar PVs and the cancellation of previously approved but non-operated capacities. However, at the end of FY2018, the capacity will be 68 GW and the power generation will expand to 126.8 TWh; one eighth of Japan's total power generation. If all of the approved 105 GW (except for the expired capacities) become operational, the cumulative amount of consumer burden will reach JPY42 trillion. This is equivalent to a rise in electricity price of JPY2,400/MWh – 10% for the residential and 15% for the industry sector.

Topic | The effect of restarting nuclear power plants

We analyse the impact of the nuclear power plants' restart on the 3Es – economy, energy and environment. We assume a total of nine nuclear power plants to restart by the end of FY2018 in the Reference Scenario, seven nuclear power plants in the Low Case, and 15 nuclear power plants in the High Case. Total fossil fuel imports spending could be decreased by about JPY0.9 trillion and the energy-related CO₂ emissions could decline by as much as 46 Mt in the High Case. The pace of restarting the plants has a significant impact of the improvement of the 3Es.

Figure 1 | Effect of the nuclear power plants' restart [FY2018, compared with the Zero Operation Case]



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