

Economic and Energy Outlook of Japan through FY2019

Decelerating growth and growing disquiets

The Institute of Energy Economics, Japan

YANAGISAWA Akira

Senior Economist

Energy and Economic Analysis Group, Energy Data and Modelling Center

M. Aoshima, H. Arimoto, Y. Yorita, D.M. Kim, T. Ohira, Y. Shibata, S. Suehiro and K. Ito

Economic and energy outlook through FY2019



Stable global economic growth



Deepening intl. political confrontation



Ending U.S. and European monetary easing



Rising oil prices



Slightly expansive fiscal spending



VAT rising to 10%



Continuous monetary easing



Continuing but decelerating energy saving

2017

2019



Japanese economy
1.6% → 1.1 → 0.9



Industrial production
4.1% → 1.1 → 1.0



Trade balances
JPY 2.5T → -1.2 → -1.4



Consumer prices
0.7% → 0.9 → 1.5

Decelerating from *too good* economic growth in FY2017



Primary energy supply
0.4% → -0.8 → -0.2



Electricity sales
1.5% → 0.0 → 0.0



City gas sales
2.3% → -0.3 → 1.0



Fuel oil sales
-1.2% → -3.1 → -1.3

* Photo source: Prime Minister's Office Instagram



Global economy

- Generally stable global economic growth of 3.9% each in 2018 and 2019
- U.S. economic expansion will accelerate on tax cuts while European expansion will come to a pause partially.
- Among Asian economies, India will post high growth. China will decelerate growth that will still be high.

Import CIF prices

June 2018 → FY2018 → FY2019

- Crude oil: \$76/bbl → 72 → 69
- LNG: \$9.8/MBtu → 11.0 → 10.7
(\$509/t → 568 → 552)
- Steam coal: \$115/t → 111 → 95

Sources: Morikawa "Outlook for International Oil Market," Kobayashi "Outlook for International Gas Market" and Sagawa "Outlook for International Coal Market"

Exchange rate

June 2018 → FY2018 → FY2019

- JPY110/\$ → 112 → 115

Nuclear power generation

- Nine plants have been restated. No more addition is expected within FY2018. They will operate for an average nine months, generating 62.5 TWh of electricity (accounting for 6% of generation and purchases by electric utilities).
- Two more will be restarted by the end of FY2019, bringing the total number of restarted plants to 11. They will operate for an average eight months, generating 65.4 TWh (6%).

Tax

- The standard VAT rate will be increased to 10% with reduced tax rates introduced for some goods in October 2019.

Air temperature

- According to the Japan Meteorological Agency's forecast, we assume that summer in FY2018 will be warmer than normal before air temperatures return to normal levels. This means that summer in FY2018 will be warmer (+0.4°C) than in the previous year and that winter will also be warmer (+0.5°C). In FY2019, summer will be cooler (-0.7°C) than in the previous year and winter will be as cold as in the previous year.

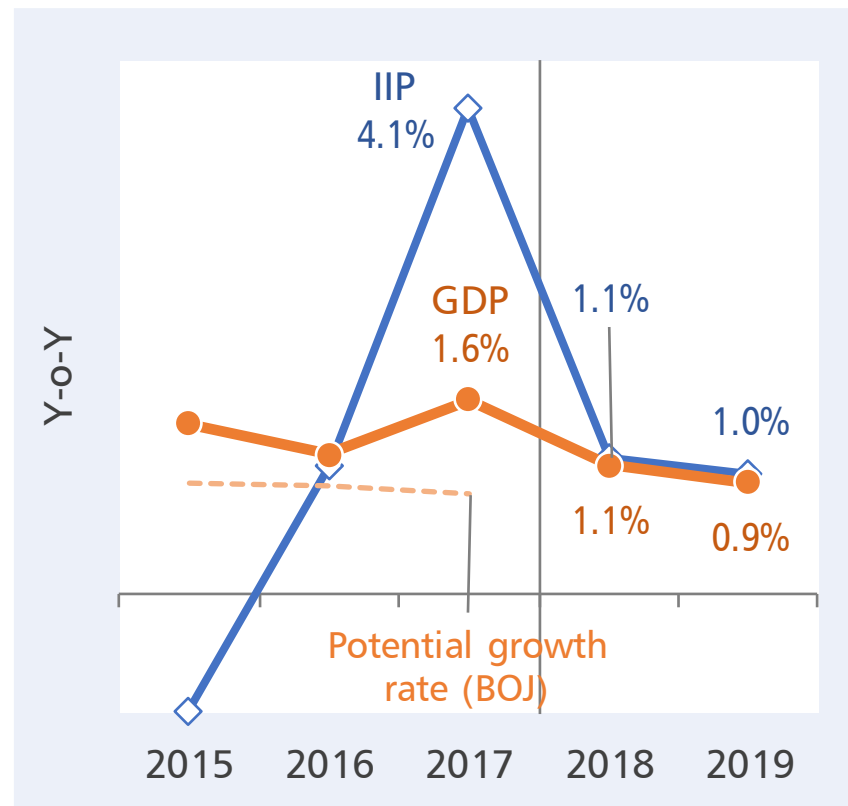
Deceleration from *high* growth

No need for excessive pessimism

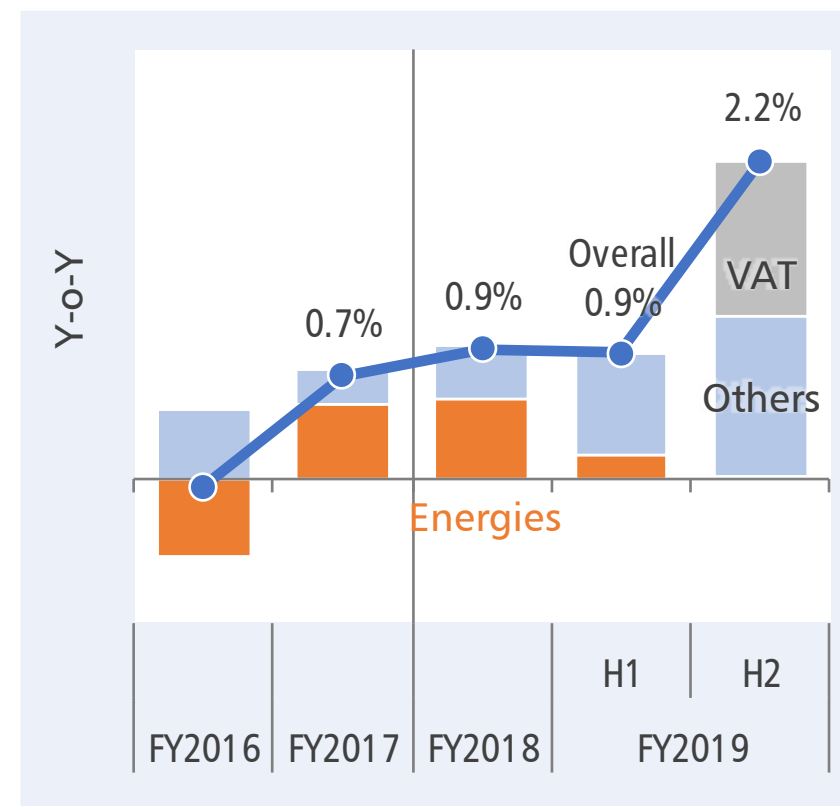
- Decelerating from a relatively high growth of 1.6% in FY2017 to a level close to potential growth
- Industrial production growth slowing down from a high level to around 1%

- Energy price hikes continuing to contribute to overall price increases in FY2018
- Non-energy price hikes and a VAT increase contributing to overall price increases in FY2019

Real GDP and IIP



Consumer prices



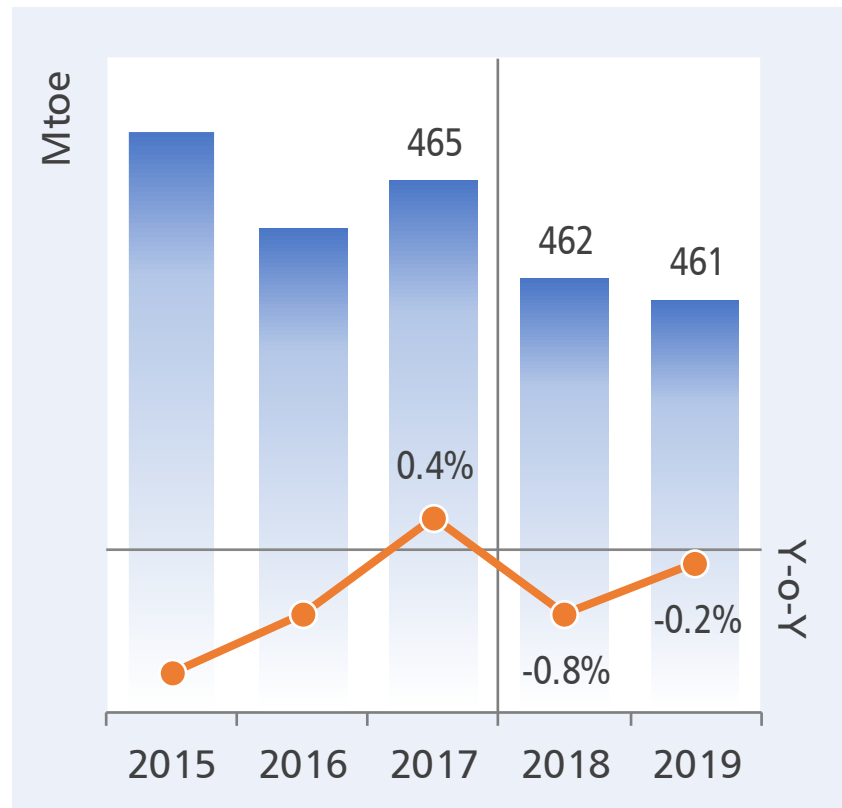
Primary energy supply turning down again



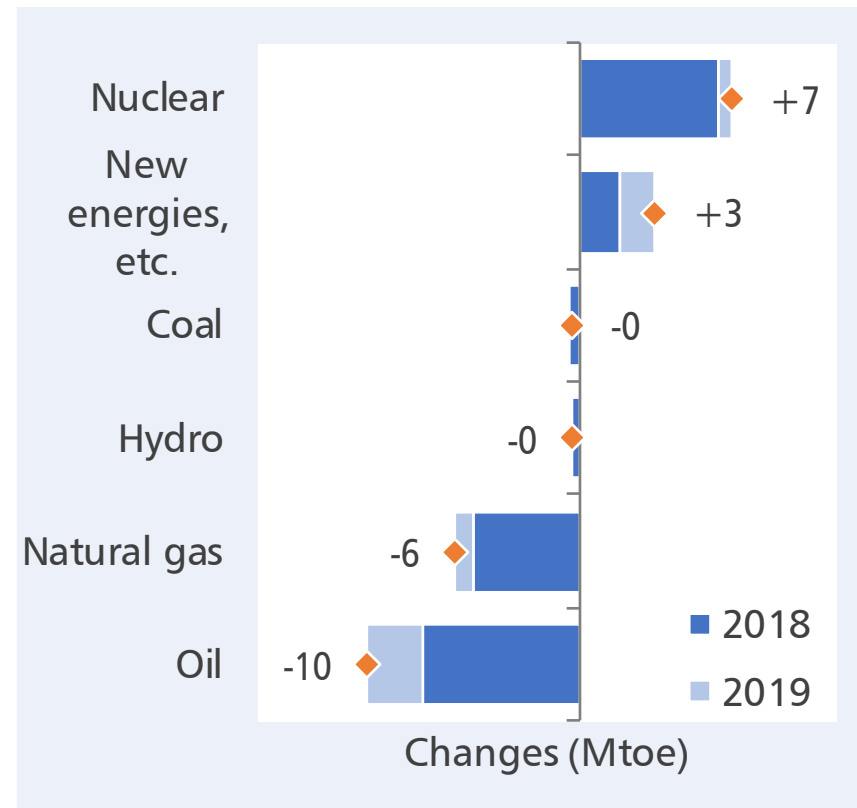
- After increasing for the first time in four years on high economic growth and a colder winter, primary energy supply will turn down on economic growth deceleration.
- Final energy consumption will fall in all sectors for two years on end.

- All fossil fuels will fail to increase due to fuel switching and efficiency improvements, reducing their share of primary energy supply below 90% for the first time in seven years.
- Natural gas supply will post the first ever three-year consecutive fall.

Primary energy supply



Changes in primary energy supply



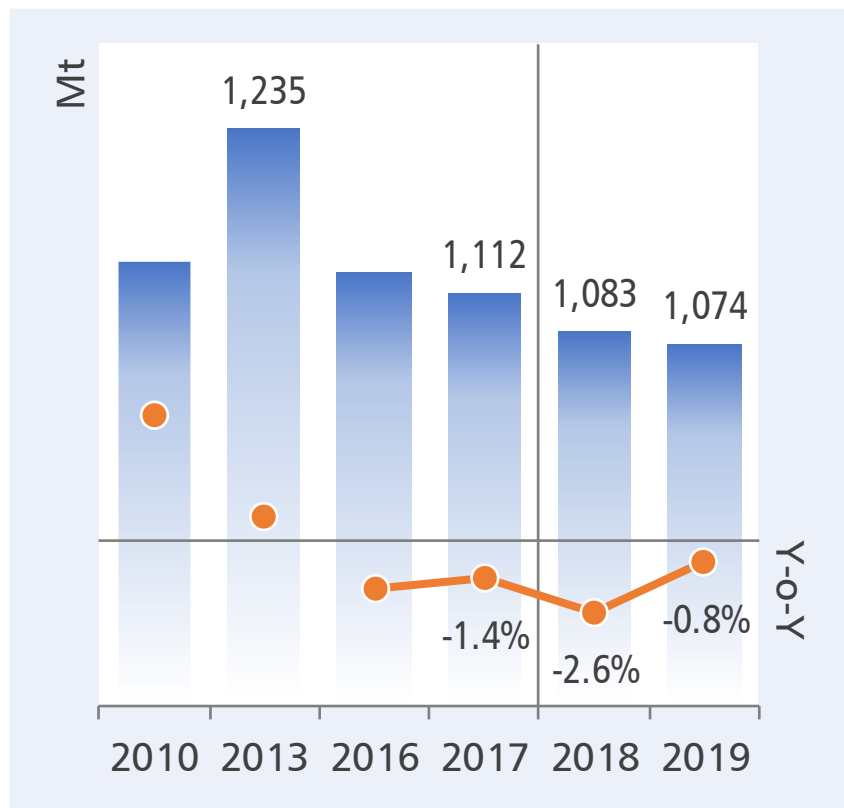
CO₂ emission reduction accelerating on expansion of non-fossil fuel consumption



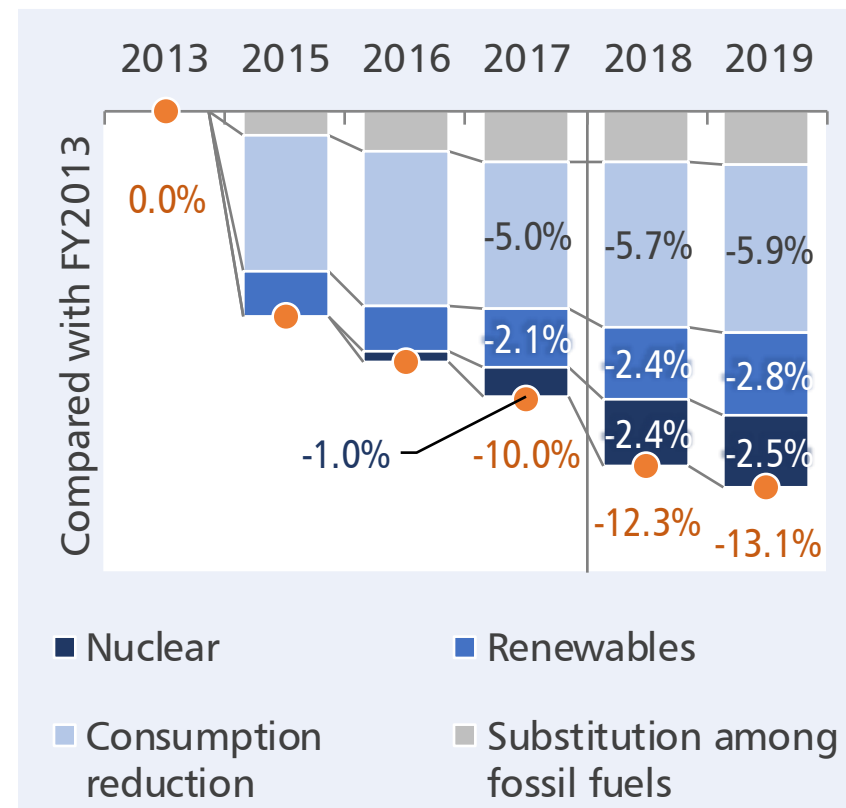
- Energy-related CO₂ emissions will decrease for the sixth straight year after peaking in FY2013.
- Emissions will slip below 1.1 Gt for the first time in 25 years excluding FY2009 when they plunged on the global financial crisis.

- Energy conservation has so far made a key contribution to a CO₂ emission reduction, being joined by the expansion of non-fossil energy in the future.

Energy-related CO₂ emissions



Contribution to CO₂ reduction

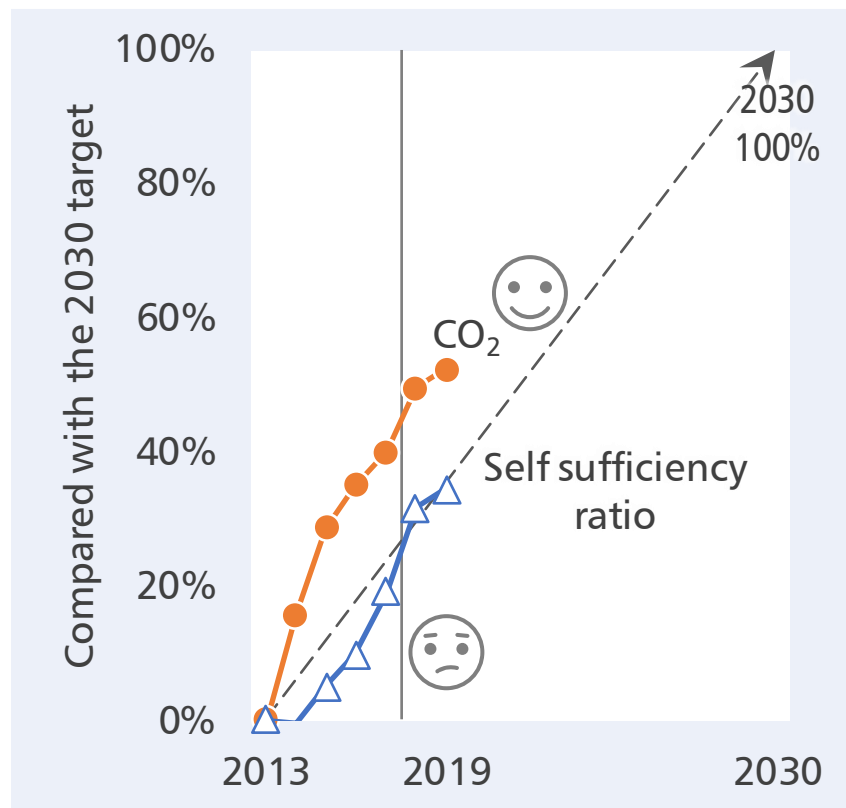




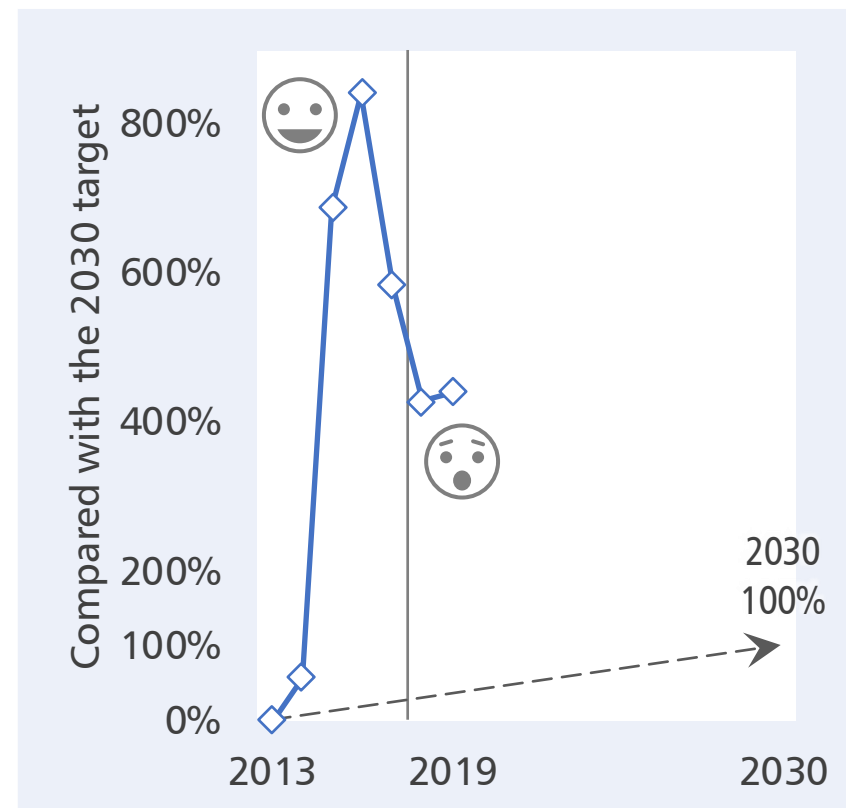
- CO₂ emissions are being cut at a good pace. The energy self-sufficiency ratio will rise back on the expansion of non-fossil energy.
- Behind progress are not only successful measures but also slower-than-expected economic growth.

- Electricity costs have been cut beyond a target due to falls in international energy prices.
- The situation will rapidly change if oil prices rise back to around \$70/bbl.

CO₂ and self sufficiency ratio



Electricity cost

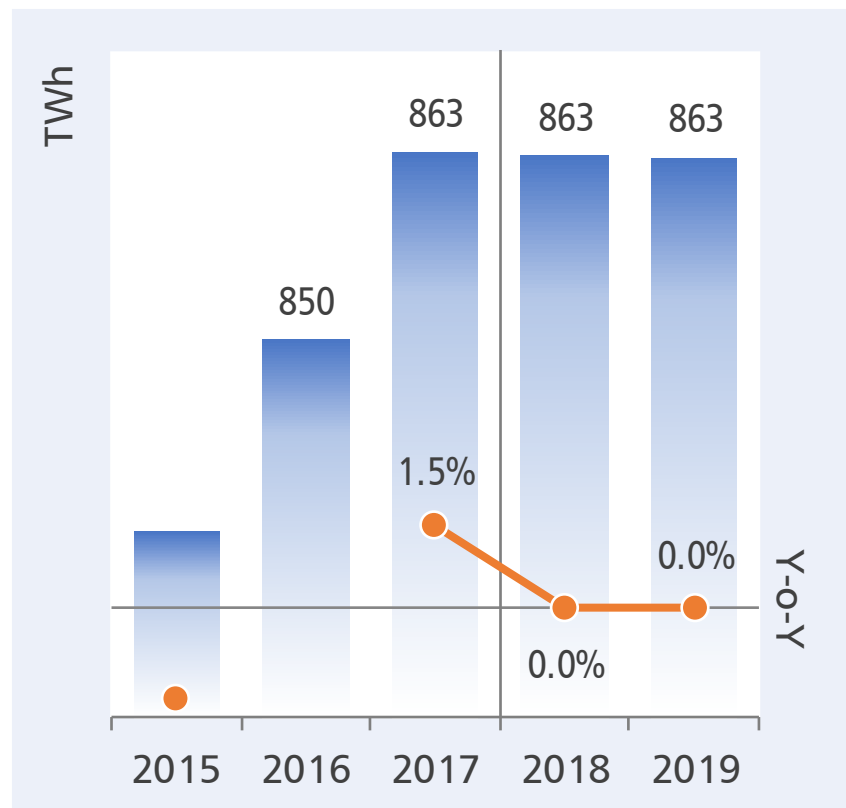


Electricity consumption decrease would not necessarily be natural

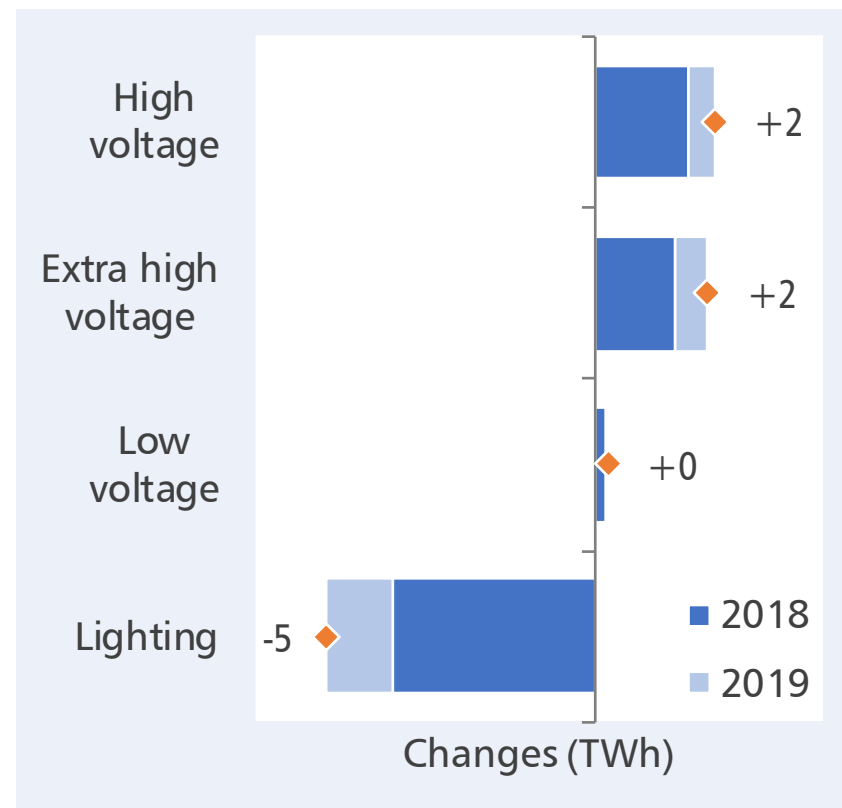
- Electricity sales will level off after rising rapidly on a colder winter.
- The medium-term downtrend since the Great East Japan Earthquake will substantially weaken.

- The decline will be attributable fully to a drop in sales to lighting service users affected by temperature changes.
- Sales to power service users will increase for the third straight year on the strength of moderate production expansion.

Electricity sales



Changes in electricity sales



Note: There is a break between FY2015 and FY2016.

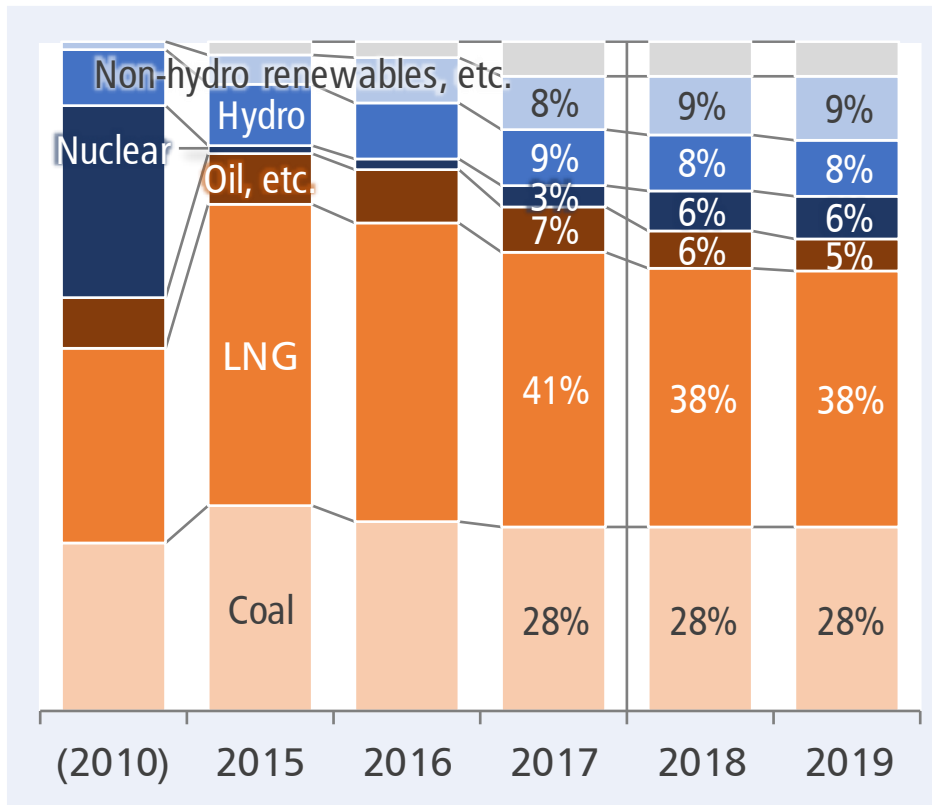
Fossil fuels' share of power generation falling closer to 70% at last

Not yet

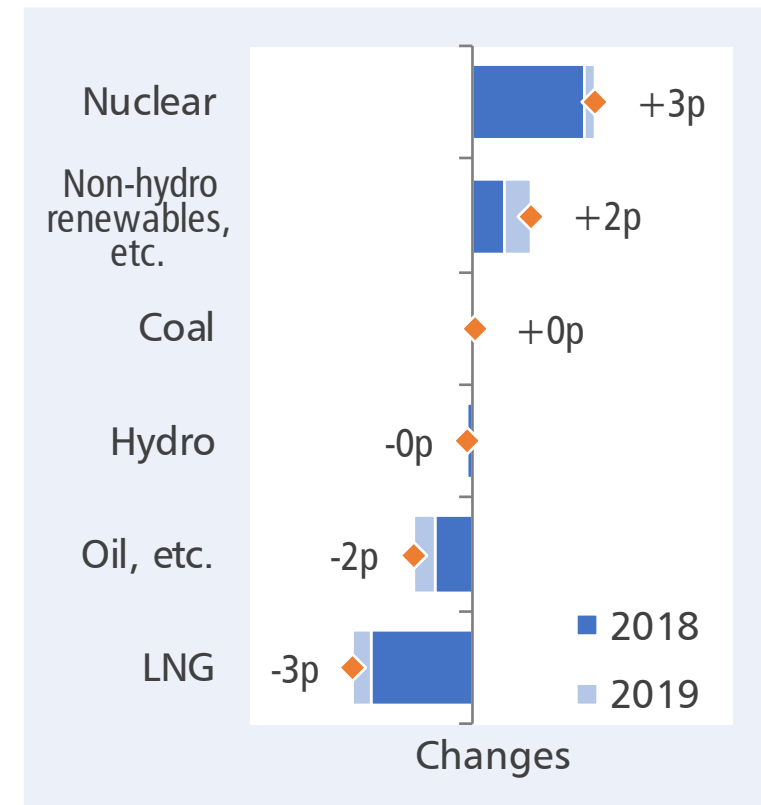
- Nine nuclear power plants have been restarted and two more will be restarted in FY2019.
- Renewables (excluding hydro) will expand further under the FIT scheme, topping hydro's share of electricity generation and purchases by electric utilities.

- Fossil fuels' share of power generation fell to three quarters and will further decrease.
- However, the FY2019 decrease will be the smallest in five years.

Electricity generation and purchases mix



Changes in mix



Notes: Former general electric utilities for FY2010. There is a break between FY2015 and FY2016.

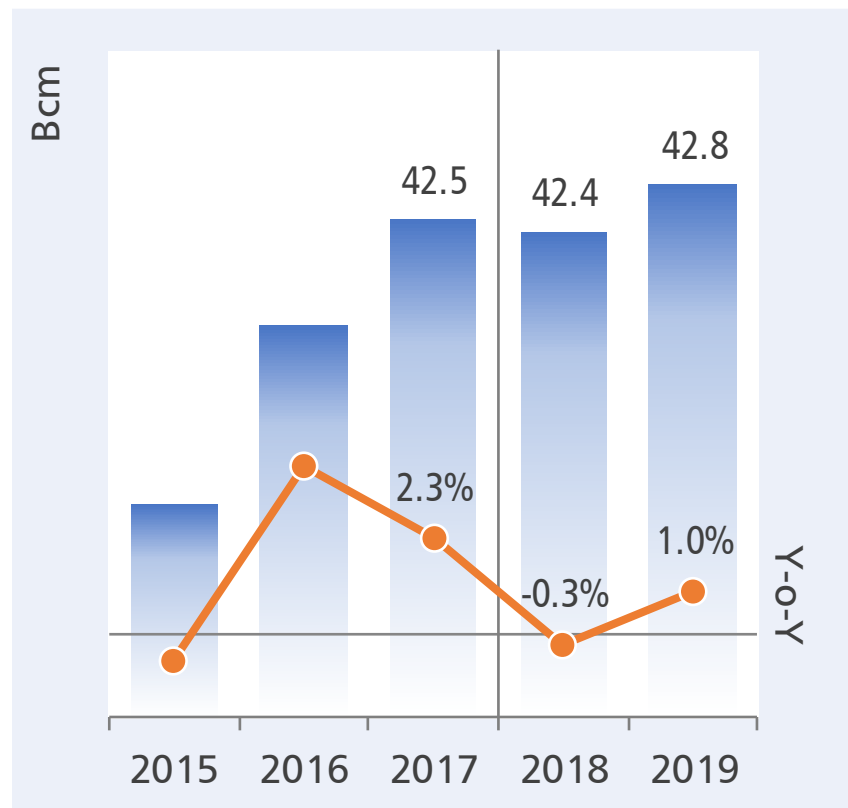
City gas sales growth deceleration will grow clearer



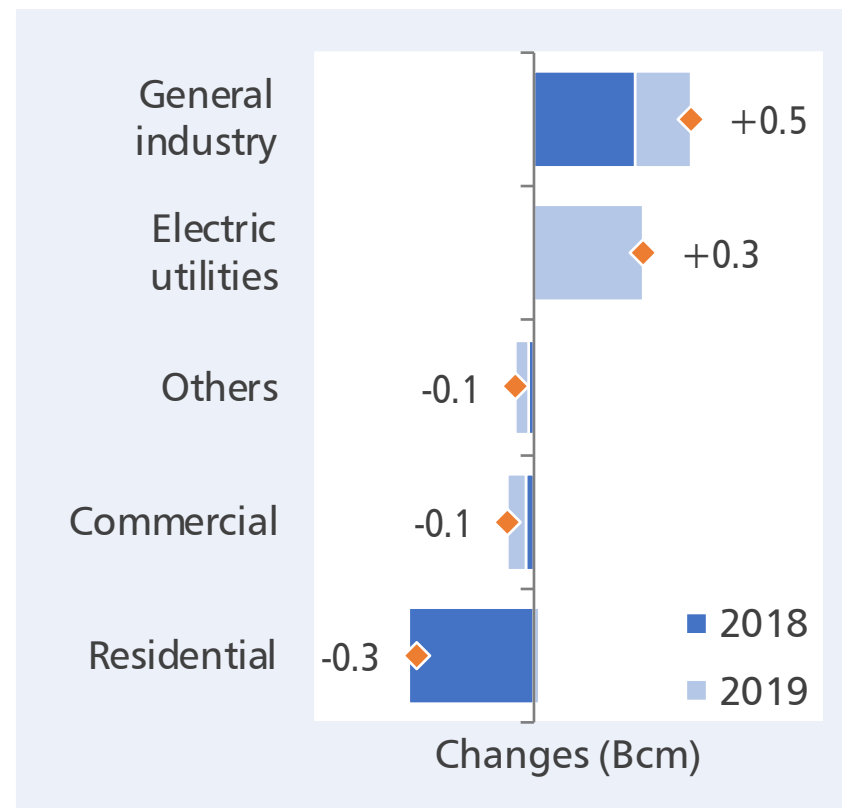
- After hitting a record high for the second straight year, city gas sales will fall slightly before rewriting a record high.
- City gas sales growth lacks momentum. Temperature changes' impact on city gas sales will grow larger again.

- The substantial drop in city gas sales for the residential sector will be attributable to the previous year's colder winter (the coldest in 32 years in western Japan).
- City gas sales will rebound in FY2019 thanks to the launch of a large city gas-fired power plant.

City gas sales



Changes in city gas sales

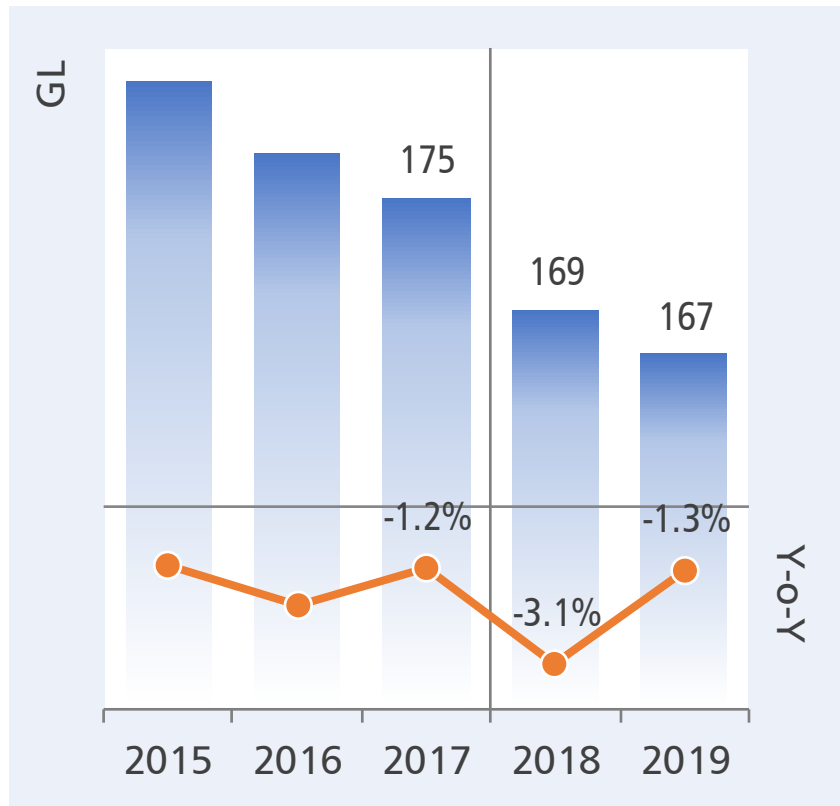


Only diesel oil among fuel oils will score sales growth in coming two years

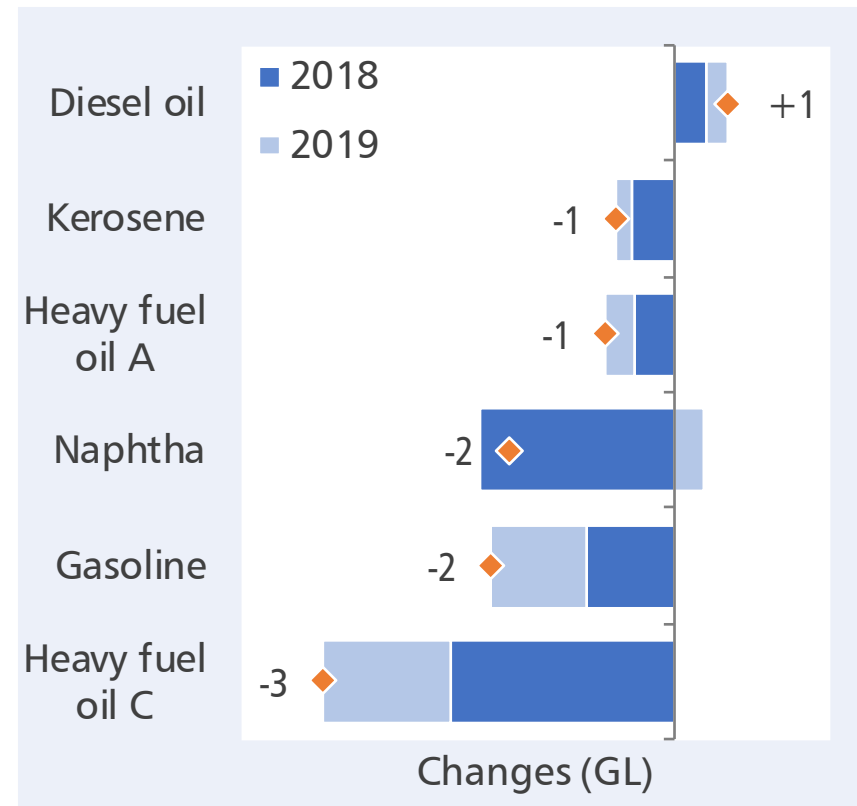


- Oil demand will continue falling on a fuel efficiency improvement trend, fuel switching and high oil prices.
- Fuel oil sales will slip below 170 GL for the first time in 50 years, falling for the seventh straight year.
- Excluding brisk diesel oil sales for freight transportation, fuel oil sales will decline from the previous year.
- Gasoline sales in FY2019 will fall back to a quarter-century low close to 50 GL.

Fuel oil sales



Changes in fuel oil sales



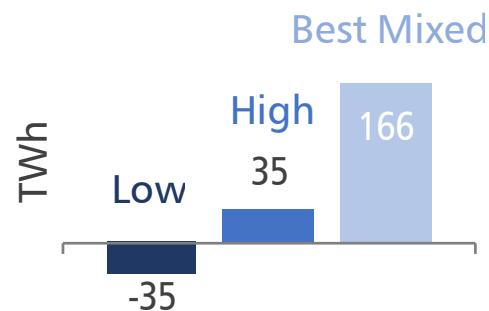
Topic 1 | Nuclear power generation contributing much to 3E's



Nuclear power generation expansion will push up the economy through the reduction of fossil fuel import spending and of electricity costs, work to cut carbon dioxide emissions to support climate change countermeasures and contribute to Japan's energy security by improving its self sufficiency ratio.

Effects by nuclear power generation (compared with Reference Scenario, FY2019)

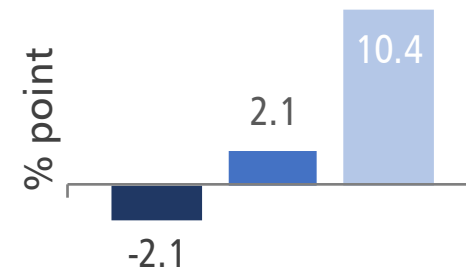
Nuclear power generation



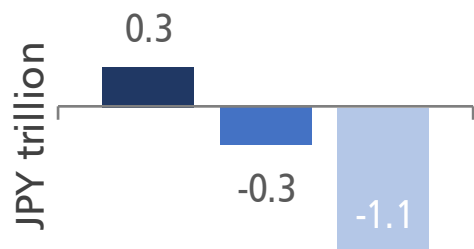
Real GDP



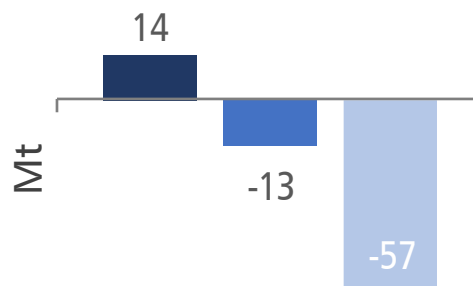
Self sufficiency ratio



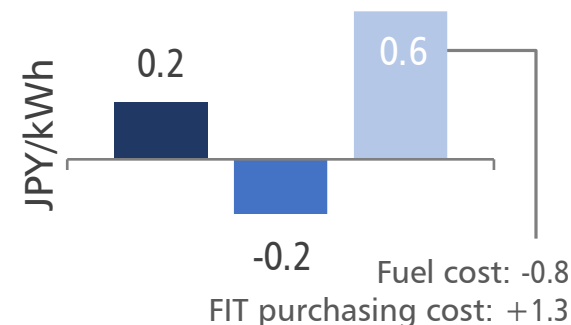
Fossil fuel import spending



CO₂ emissions



Electricity unit cost



Note: See page 13 of the report for definition of the cases. Effects of renewable power generation are also included in the Best Mixed Case.

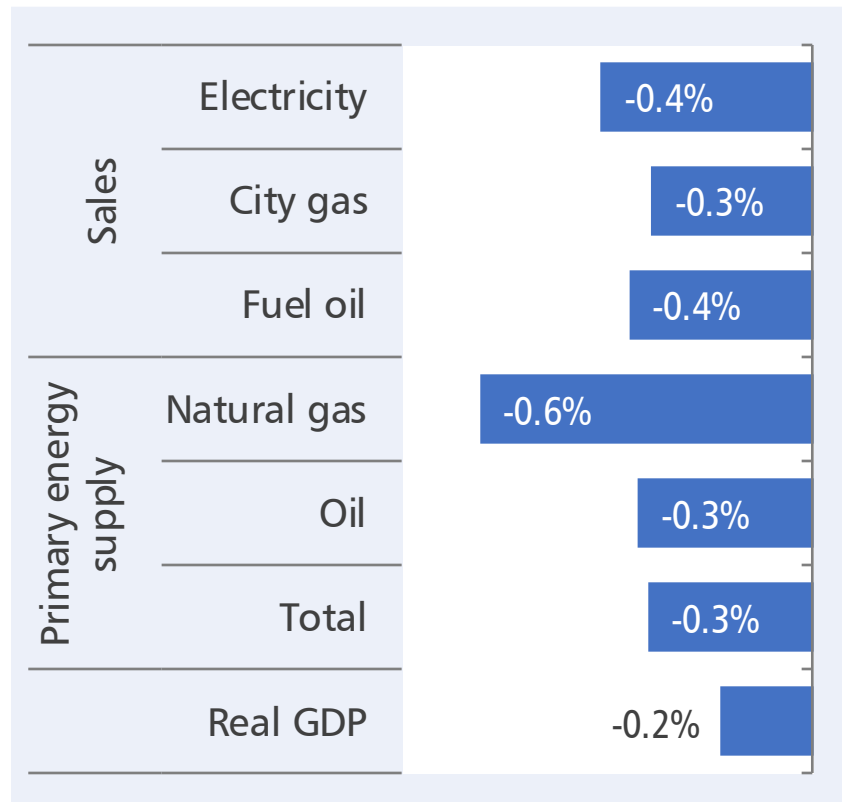
Topic 2 | Oil price hikes affecting adversely Japan



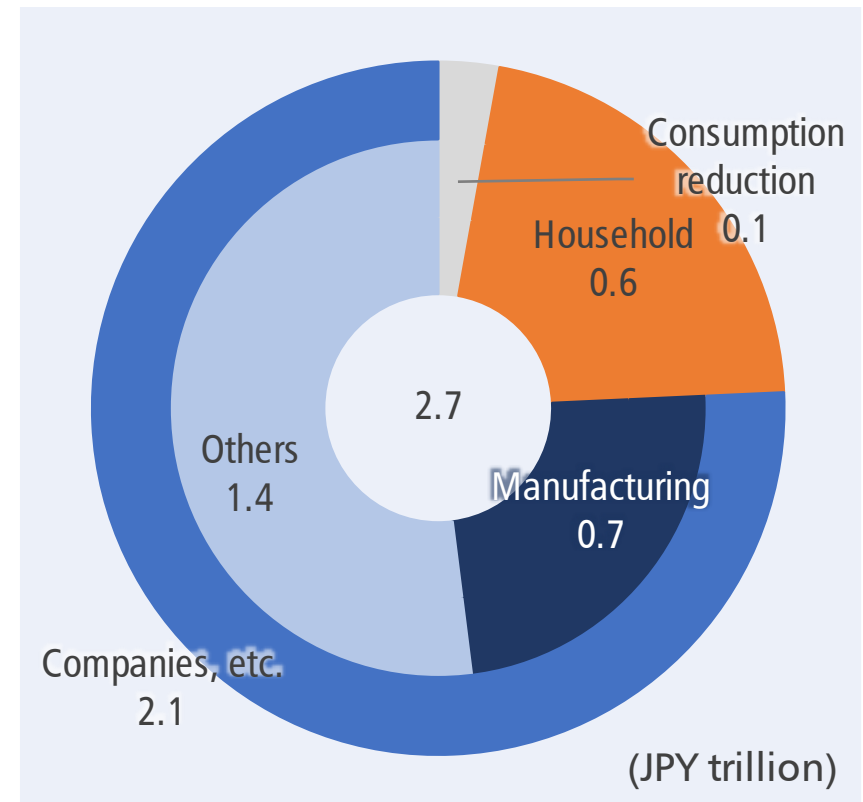
- Oil price hikes, while having positive accounting effects in some industries, affect adversely Japan's national economy.
- Oil price hikes push natural gas consumption down for both power generation and city gas.

- A \$10/bbl oil price hike has potential to bring about JPY2.7 trillion in additional payments for oil and natural gas imports, amounting to a 1-percentage-point increase in the VAT rate.
- Households will directly shoulder one-fifth of the additional payments.

Effects by oil price rise by \$10/bbl



Share of additional spending



Note: Compared with Reference Scenario [FY2019]

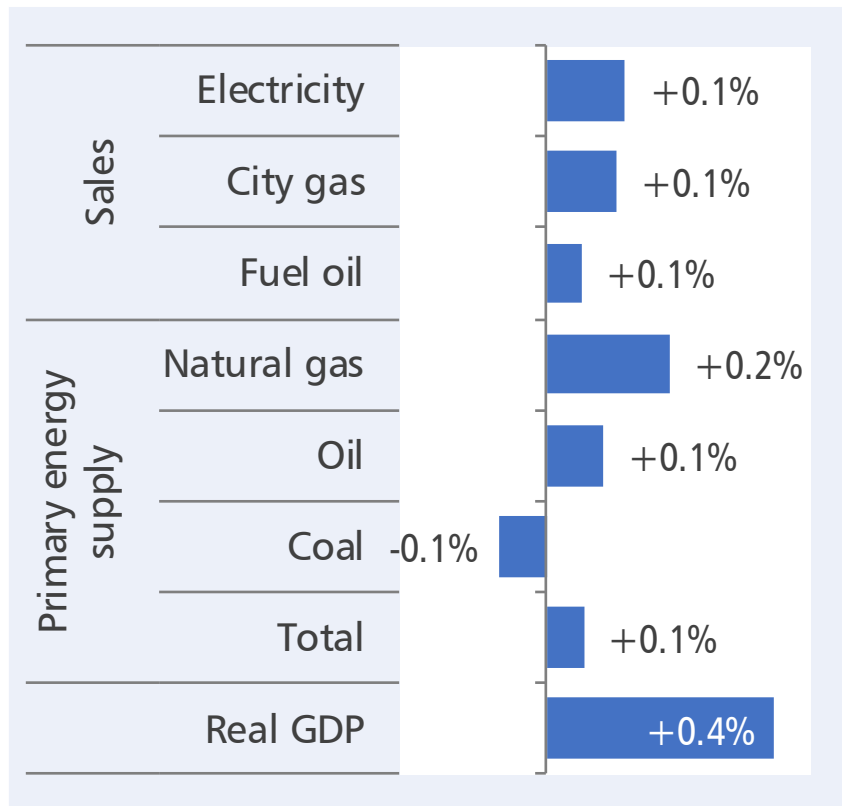
Topic 3 | U.S. vehicle tariff would be greater matter of concern to Japan than U.S.-China trade war



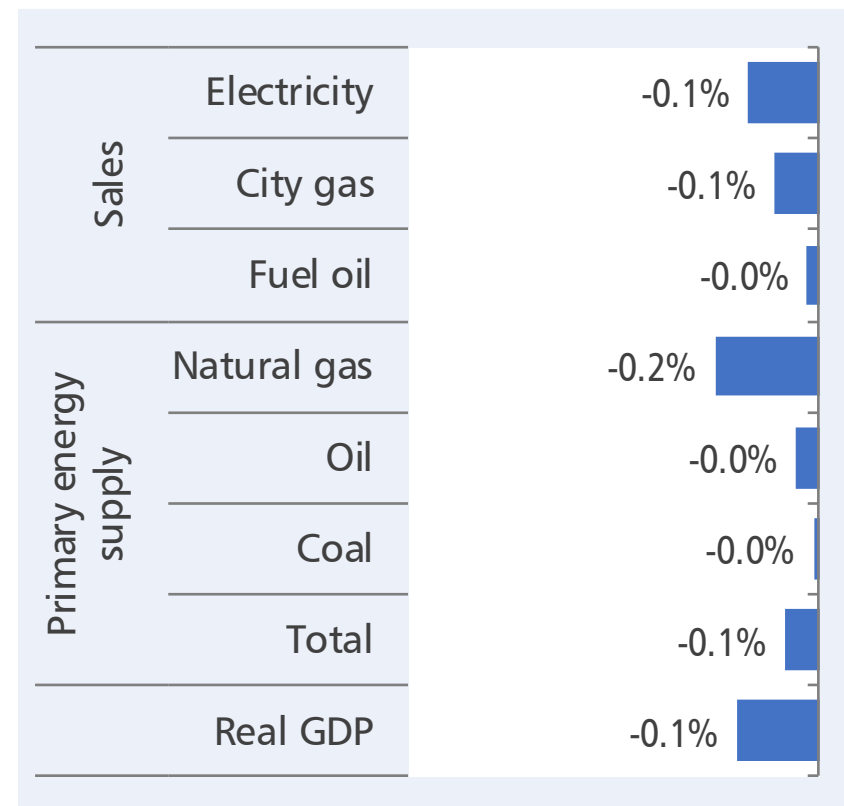
- If the United States and China impose a 45% tariff on imports from each other, the global economy will contract by 0.6%.
- Japan will reduce exports to China but expand those to the United States. Japan's energy demand will expand a little.

- If the United States levies a 20% tariff on imported vehicles and automotive parts, the global economy will contract by 0.2%.
- The Japanese economy will contract by 0.1%. Western Japan heavily depends on car and related industries and will be affected more than other parts of Japan.

Impacts of US.-China trade war



Impacts of U.S. car import tariff



Analysis on effects of U.S. tariffs

A hypothetical case and the computable general equilibrium model are used for analysing economic effects of U.S. tariffs.

Effects of high U.S. and Chinese tariffs

U.S. and China

- Tariffs will push their trade down.
- Price hikes will lead to domestic economic deceleration and hurt export competitiveness.
- Prices of export goods excluded from U.S.-China trade will come under downward pressure.

→ Basically, tariffs will have numerous adverse macroeconomic effects.

Third countries

- Exports to the United States and China will decrease on U.S. and Chinese economic deterioration.
- Exports of goods substituting for U.S. and Chinese products in U.S.-China trade will increase.
- Goods pushed out from U.S.-China trade will flow into third countries.

→ Whether the U.S.-China trade war will accelerate or decelerate growth in a third country will depend on conditions in the country.

Analysis using a general equilibrium model

- This is a comparative-statics analysis assuming no specific period of time.
- Effects of market sentiment, speculative factors or currency adjustments are not subject to this analysis.