

Economic and Energy Outlook of Japan for FY2020

Domestic situation affected by growing uncertainty of
international developments

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Major “assumptions”

Global economy

- Growth in global economic activity will slow down in 2019 and will recover in 2020. 2019: 3.3%, 2020: 3.6%*
- A more accommodative monetary policy will stimulate economic growth in advanced economies in the second half of 2019
- China strengthens economic stimulus measures by financial and monetary policy.

Import CIF prices

June 2019 → FY2019 → FY2020

- Crude oil: \$73/bbl → 65 → 61
- LNG: \$9.4/MBtu → 10.0 → 9.2
(\$483/t → 514 → 474)
- Steam coal : \$113/t → 96 → 90

Hashizume from IEEJ “Outlook for International Oil Market”, Hashimoto from IEEJ “Outlook for International Gas Market”, and Sagawa from IEEJ “Outlook for International Coal Market”

Foreign exchange rate

June 2019 → FY2019 → FY2020

- JPY109/\$ → 110 → 110

Nuclear power generation

- A total of nine nuclear power plants have restarted. No more will be restarted within FY2019 and one will stop due to the absence of counterterrorism facilities. In the year, they will operate for eight months on average and generate 59.0 TWh (accounting for 6.1% of electric utilities’ power generation and received).
- Five more will restart in FY2020, bringing the number of restarted nuclear power plants to 14. Four will stop due to the absence of counterterrorism facilities. In the year, they will operate for an average of six months and generate 62.4 TWh (accounting for 6.5%).

Tax

- The standard VAT rate will be raised to 10% in October 2019, with a reduced rate introduced for some goods.

Air temperature

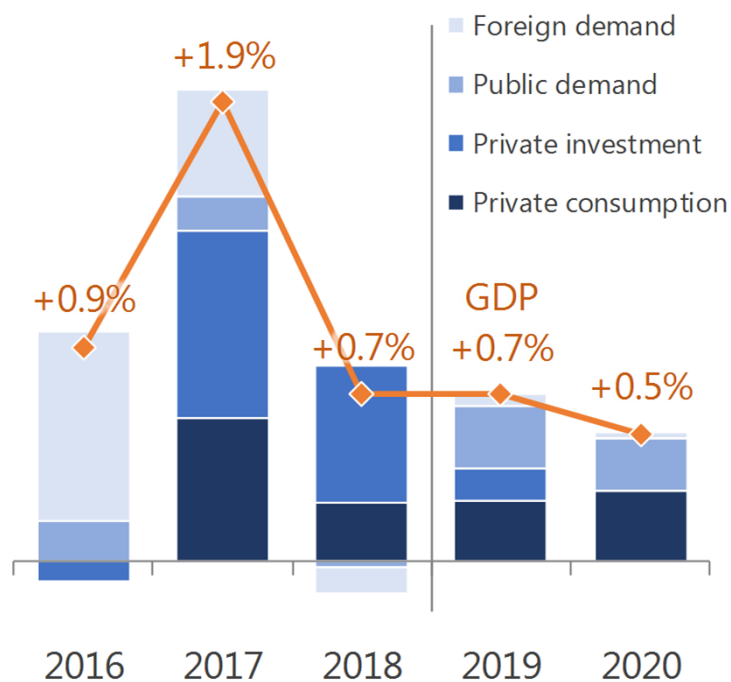
- According to the Japan Meteorological Agency’s forecast, we assume that summer in FY2019 will be cooler than normal before a return to normal levels. This means that summer in FY2019 will be cooler than in the previous year and that winter will be colder. Summer and winter in FY2020 will be similar to FY2019.

Growth will decelerate up to FY2020

The negative impacts of the planned hike in VAT will be smaller than the previous one in FY2014.

The growth will slow down until 2020 due to a stall in private investments.

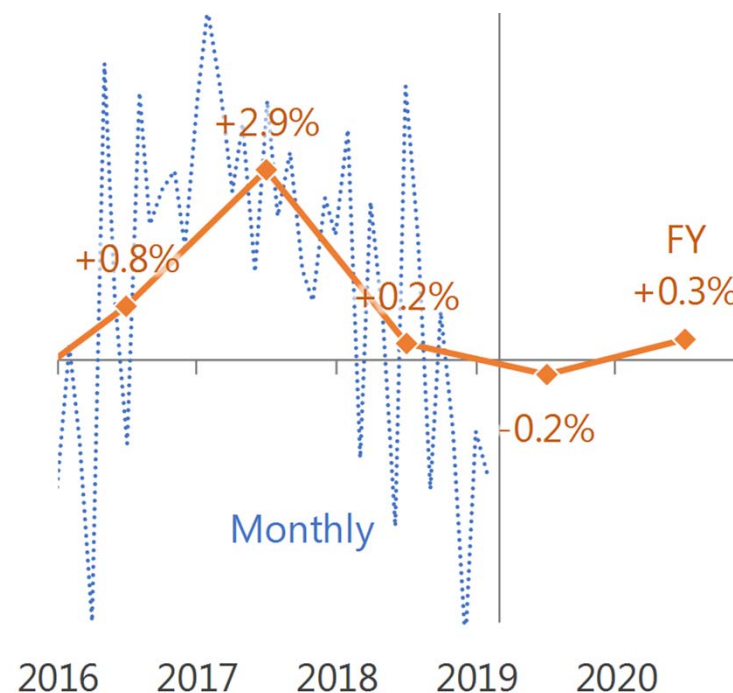
Real GDP growth and contributions



Industrial production will fall for the first time in four years, reflecting in part the slowdown of the Chinese economy.

In FY2020, with a recovery of the world economy, production expands slightly.

Index of industrial production (Y-o-Y)

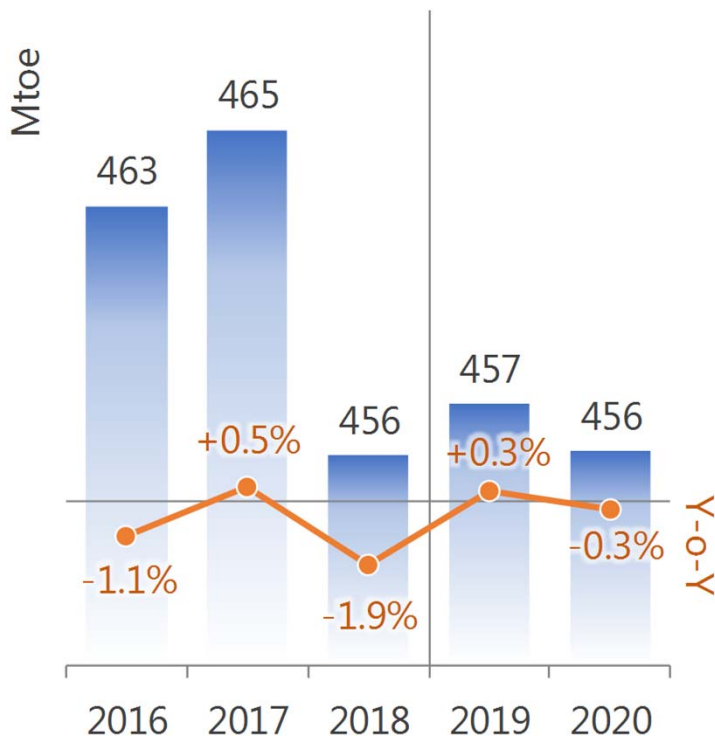


Total energy consumption increases in FY2019 and decreases in FY2020 slightly

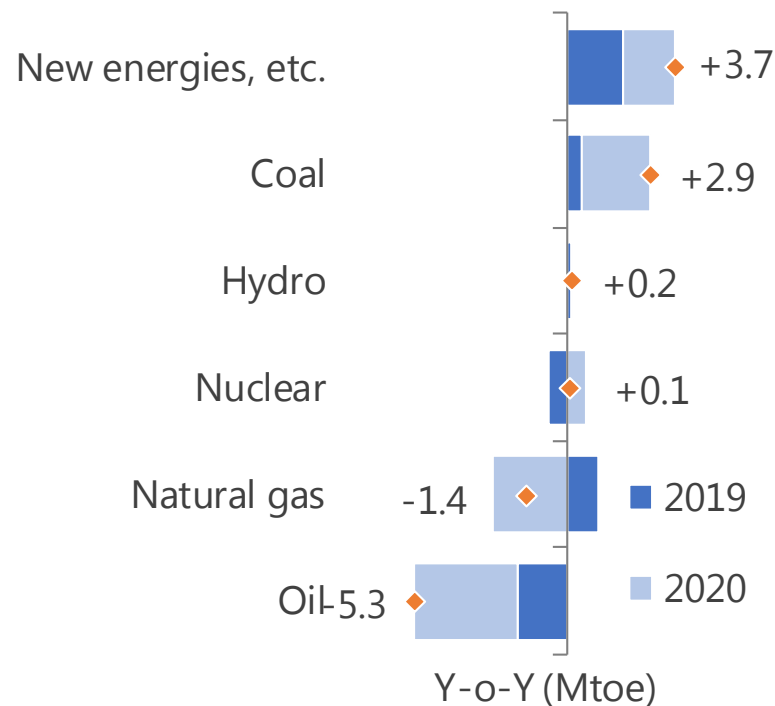
- In FY2019, increasing slightly by an increase in energy demand for heating due to a return from mild winter
- In FY2020, decreasing slightly reflecting a decline in material production and further progress in energy saving

- Share of coal accounts for 27% for the first time in about half century in FY2020 with newly installed coal power generation.
- Oil dependency will fall to half of first oil crisis.

Primary energy supply



Primary energy supply changes

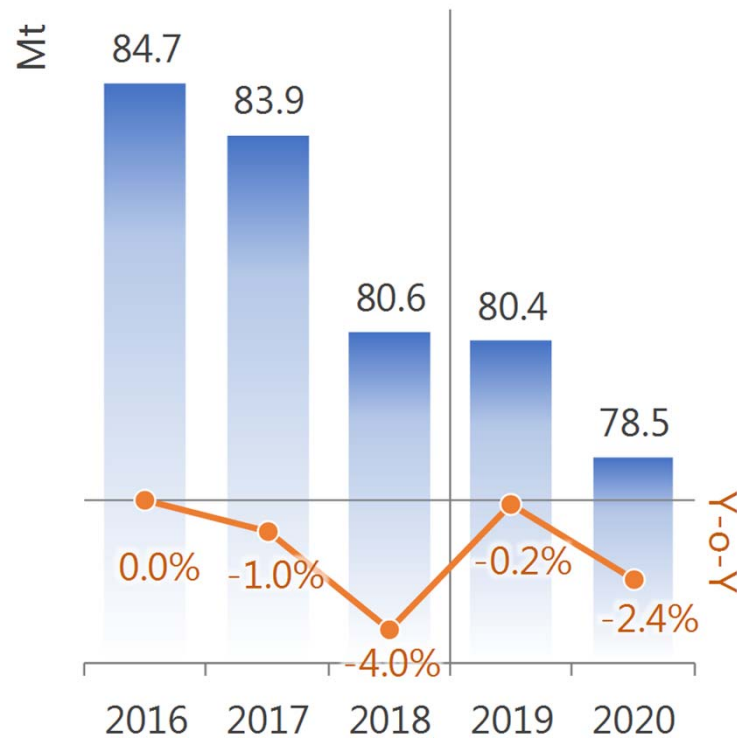


LNG less than 80 Mt for the first time after the Great East Japan Earthquake

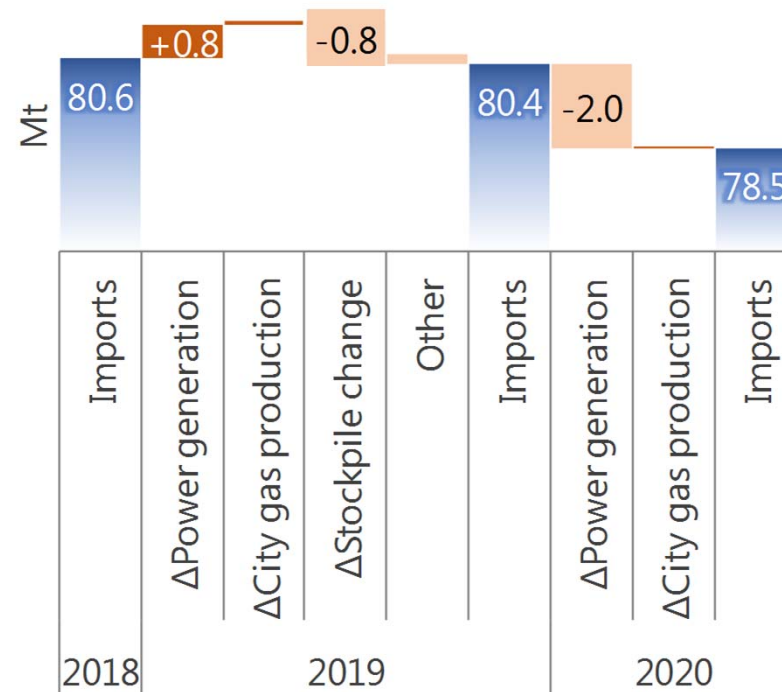
- LNG imports will decrease for the fourth year consecutive in FY2020, 11 Mt lower than the peak in FY2014.
- LNG imports are 10% more than the amount before the earthquake.

- In FY2019, while demand will increase, imports will decrease due to the stock built up in the previous year
- Although demand for power generation increase in FY2019, it will decrease in FY2020.

LNG imports



Contribution of LNG imports

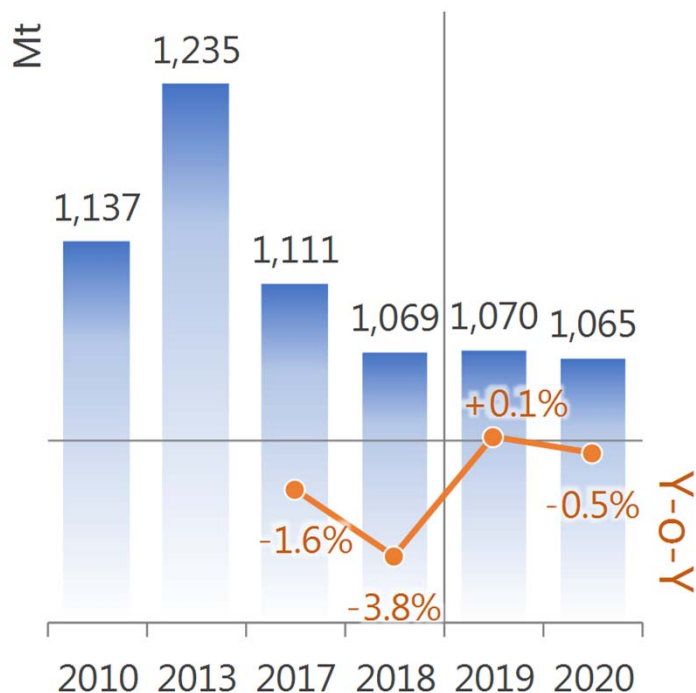


CO₂ will increase in FY2019 for the first time after FY2013

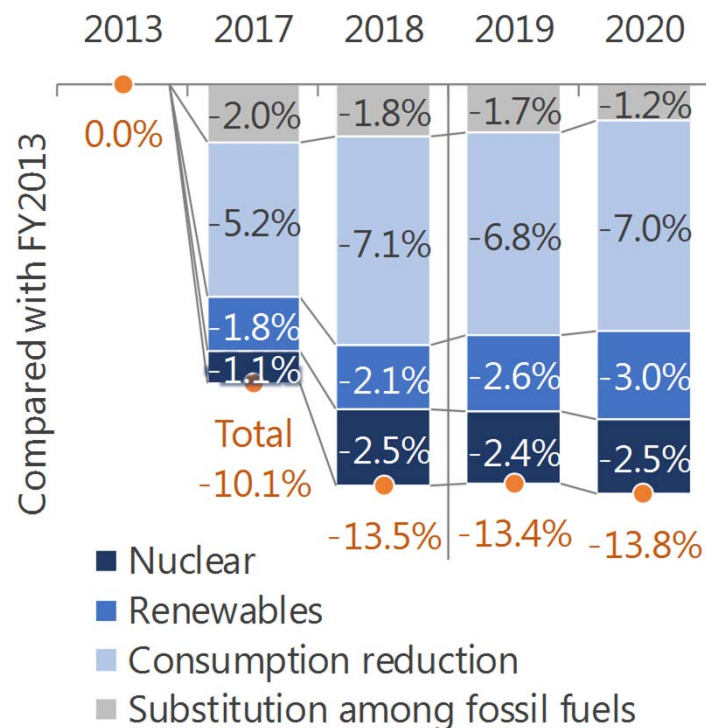
- CO₂ will increase by 1 Mt in FY2019 due to a small growth of total energy consumption and the slow restart of nuclear power generation.
- CO₂ will be reduced to 1,065 Mt. According to the statistics, it will be the lowest level since FY1990.

- Only renewables will contribute to reduce CO₂ in FY2019. In FY2020, renewables, consumption reduction and nuclear will contribute to reduce CO₂.
- To reduce effectively, only one measure is insufficient.

Energy-related CO₂ emissions



CO₂ emissions change and contribution

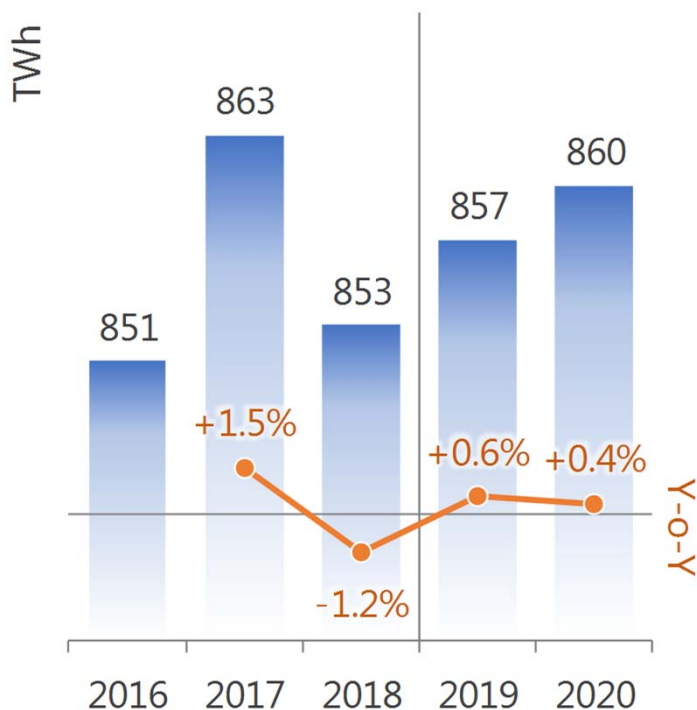


Electricity sales will increase gradually

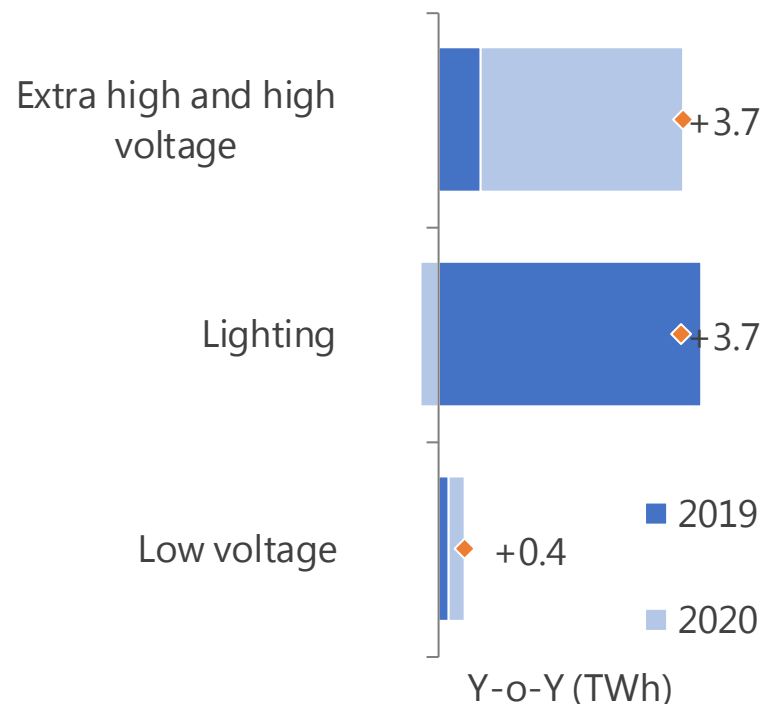
- Electricity sales in FY2019 will increase slightly reflecting higher energy demand for heating due to a return from mild winter in the previous year.
- FY2020 is second to FY2017 when world economy was strong and winter was cold.

- Sales for lighting services will increase sharply due to colder temperature in FY2019 and decrease slightly due to the further penetration of energy-efficient equipment
- Sales for power services will increase due to growth in iron and steel in FY2019 and machinery in FY2020.

Electricity sales



Electricity sales changes

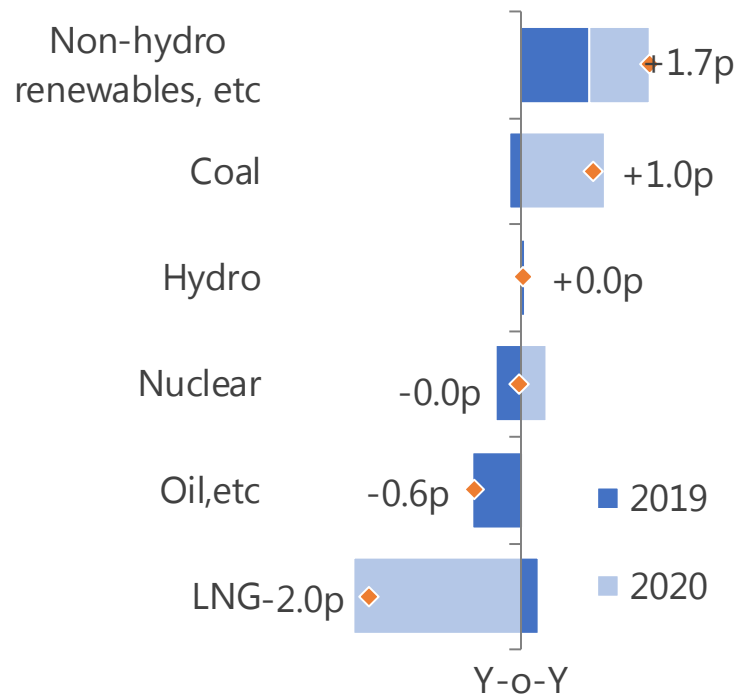
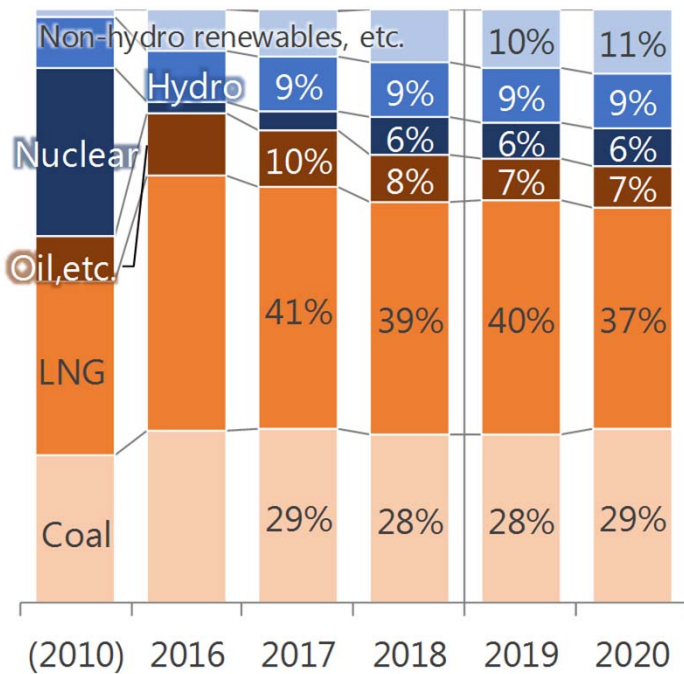


Fossil fuels' share of power generation mix will shrink, with LNG's share falling to 37%

- Zero-emission power sources (renewables and nuclear) will expand their power generation mix share to over one quarter.
- Note that they are more than 10p lower than before the earthquake and the pace of expansion is significantly more slowly.
- LNG will expand in FY2019 but shrink with increases of other sources in FY2020
- For oil, etc., the decrease of oil-fired power generation will be offset by the increase of city gas-fired power generation.

Electric utilities' power generation mix

Power generation mix changes



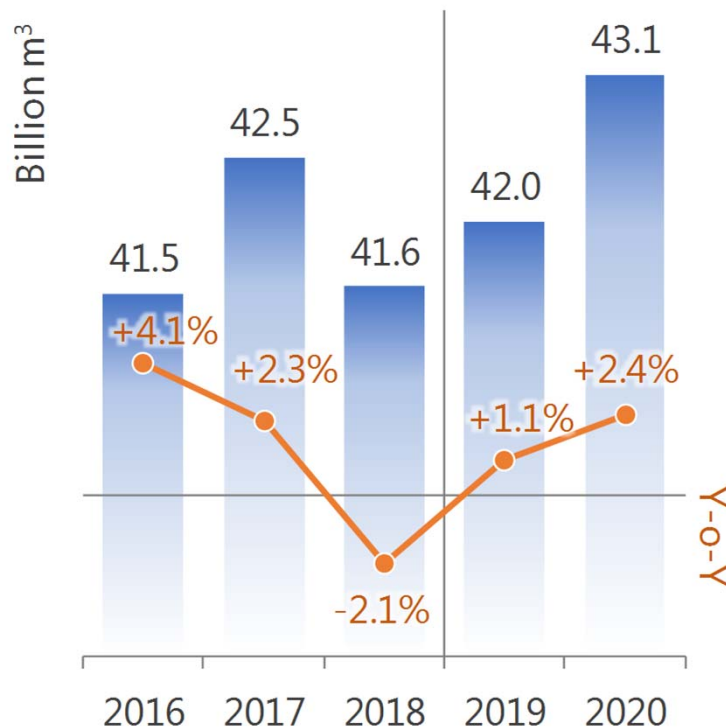
Note 1: FY2010 data are for general electric utilities under a former classification. Data lose continuity as data in FY2015 are based on old standards.
 Note 2: Hydro includes pumped storage and oil, etc. includes city gas, coal products and others.

City gas sales will hit the peak for electric utility

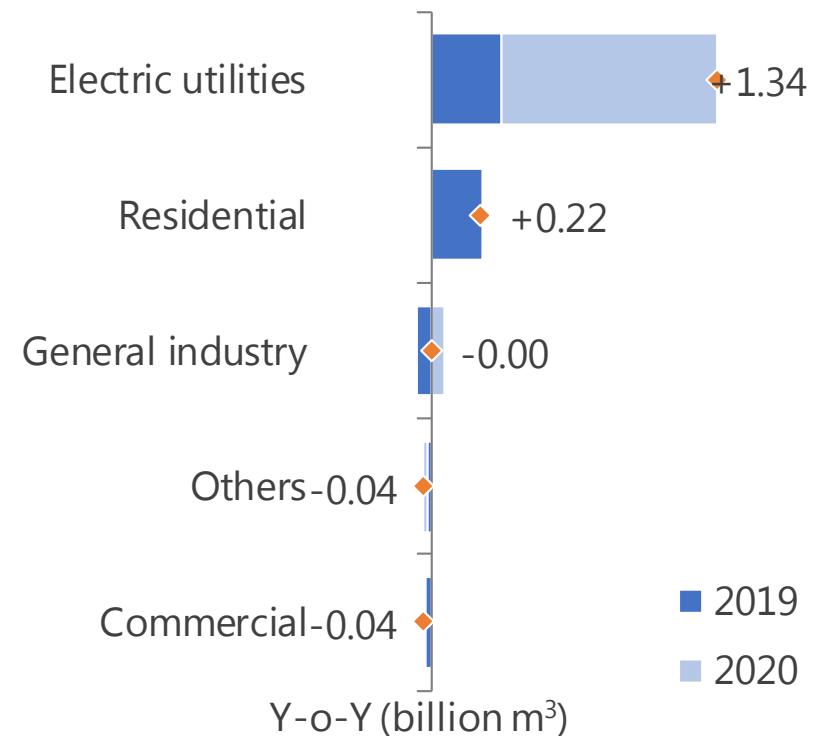
- Total gas sales will increase for the second year straight.
- Large-sized city gas-fired power plants will start operating in FY2019 and drive the overall increase.

- General industry will be weaker than before.
- As no large-sized city gas-fired power generation are planned for after FY2020 the increase for FY2020 indicates the peak in demand for electric utilities.

City gas sales



City gas sales changes



Fuel oil sales break the two-thirds of the peak

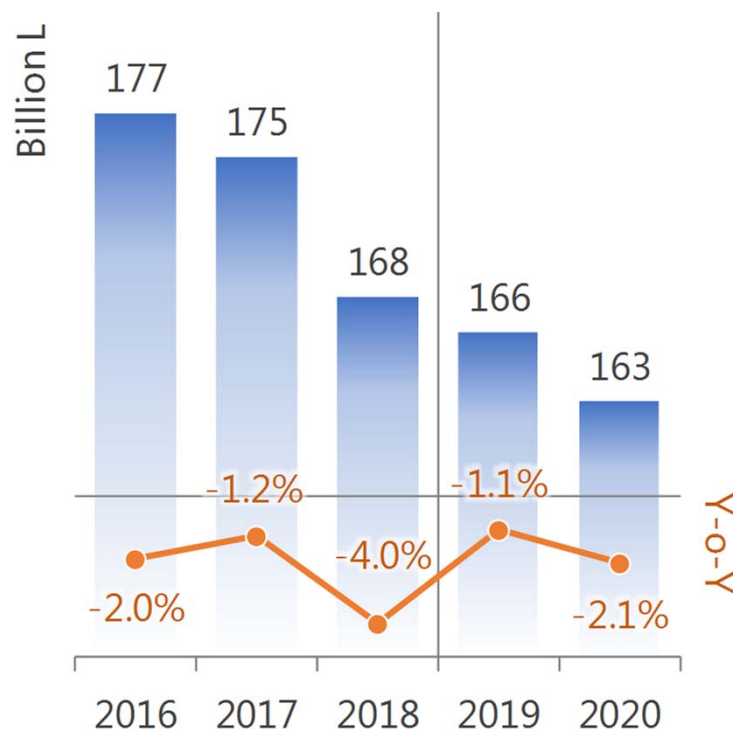
Fuel oil sales will decline for an eighth consecutive year due to improvement in efficiency and fuel switching.

The decrease rate in , which is the lowest in the 8 years, is due to temporary factors.

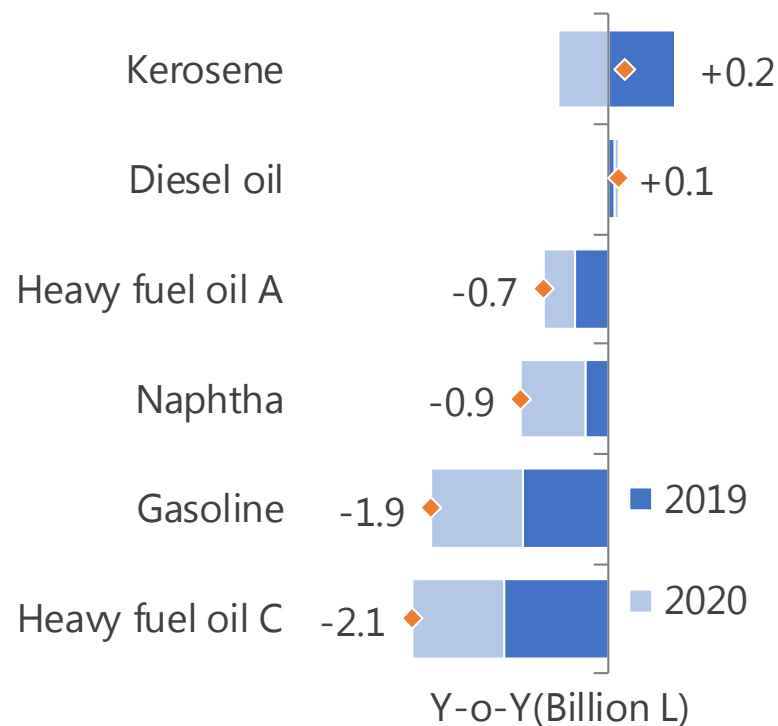
Sales of kerosene will increase in FY2019 due to a return from mild winter and sales for diesel oil are helped by brisk transportation demand.

Gasoline will decrease for a fifth consecutive year. Falling lower than 50 billion L for the first time since FY1993

Fuel oil sales



Fuel oil sales change

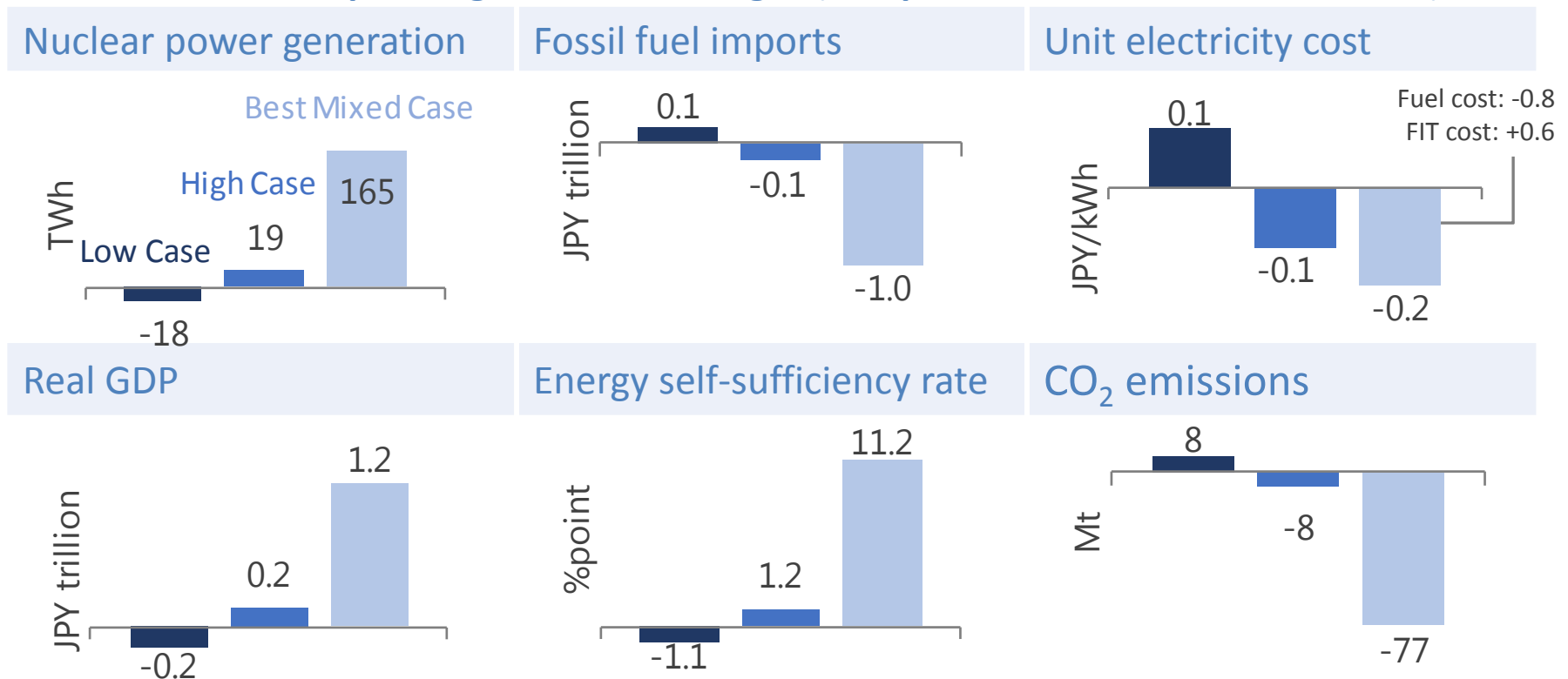


The effects of the completion of counterterrorism facilities and restarting nuclear power plants

Nuclear power generation growth would boost the economy through fossil fuel import and electricity cost cuts, reduce CO₂ emissions in a manner to help mitigating climate change and contribute to energy security by improving the energy self-sufficiency rate.

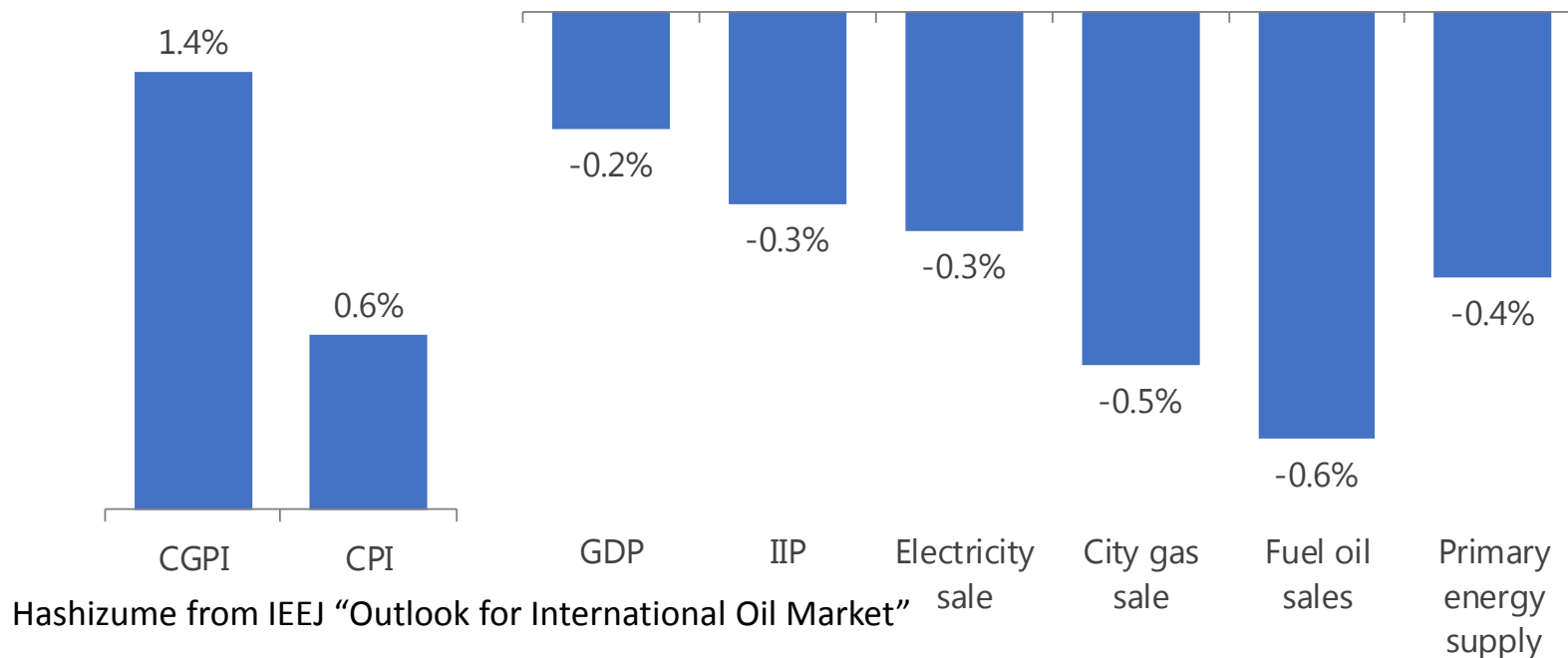
Specifying the review standard and considering the inherent characteristics of each plant are important. Smoothing the restart of the nuclear power generation contributes to achieving 3Es.

Effects of nuclear power generation changes (compared with Reference Scenario) [FY2020]



The impacts of the oil price rise by increased geopolitics risk in the Middle East

- Evaluating an oil price rise of \$15/bbl from the Reference Scenario due to volatility in the Middle East, with a focus on the relation between U.S. and Iran
- GDP and IIP would fall 0.2% and 0.3%
- Among sales of energy, fuel oils would fall the most.
- Effects of higher oil price (compared with Reference Scenario) [FY2020]**
- Lowering the costs of renewable energy, smoothing the restart of the nuclear power generation as well as introducing actions to reduce the tension in the Middle East are all important for lessening the risks.



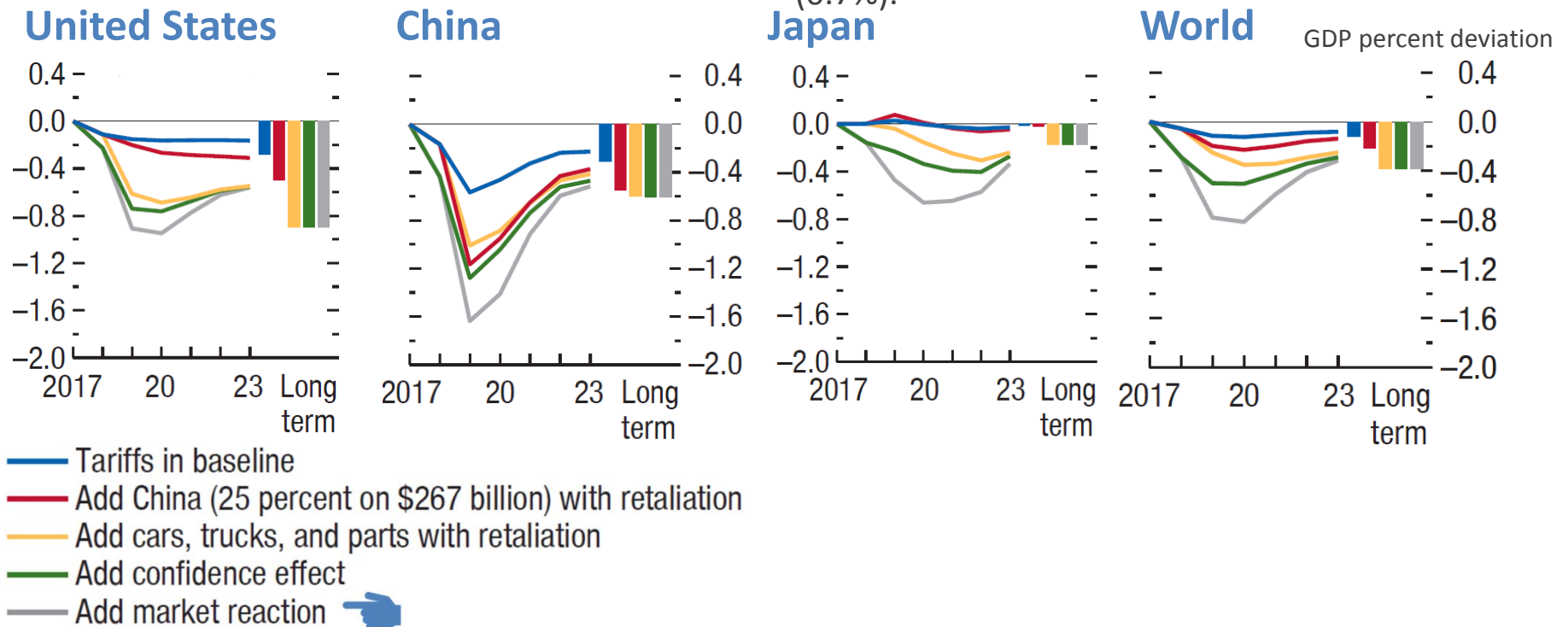
Ref. | Impacts on world economy by trade war (IMF)

IMF analyzed the economic impacts of the tariffs that have been imposed between the United States and several of its trading partners as well as some trade measures that have been announced or considered, but not yet imposed.

In addition to the direct impacts of the tariffs, the estimates include the impacts on the confidence effect and the market reaction.

World GDP falls by 0.8% in 2020 from the reference.

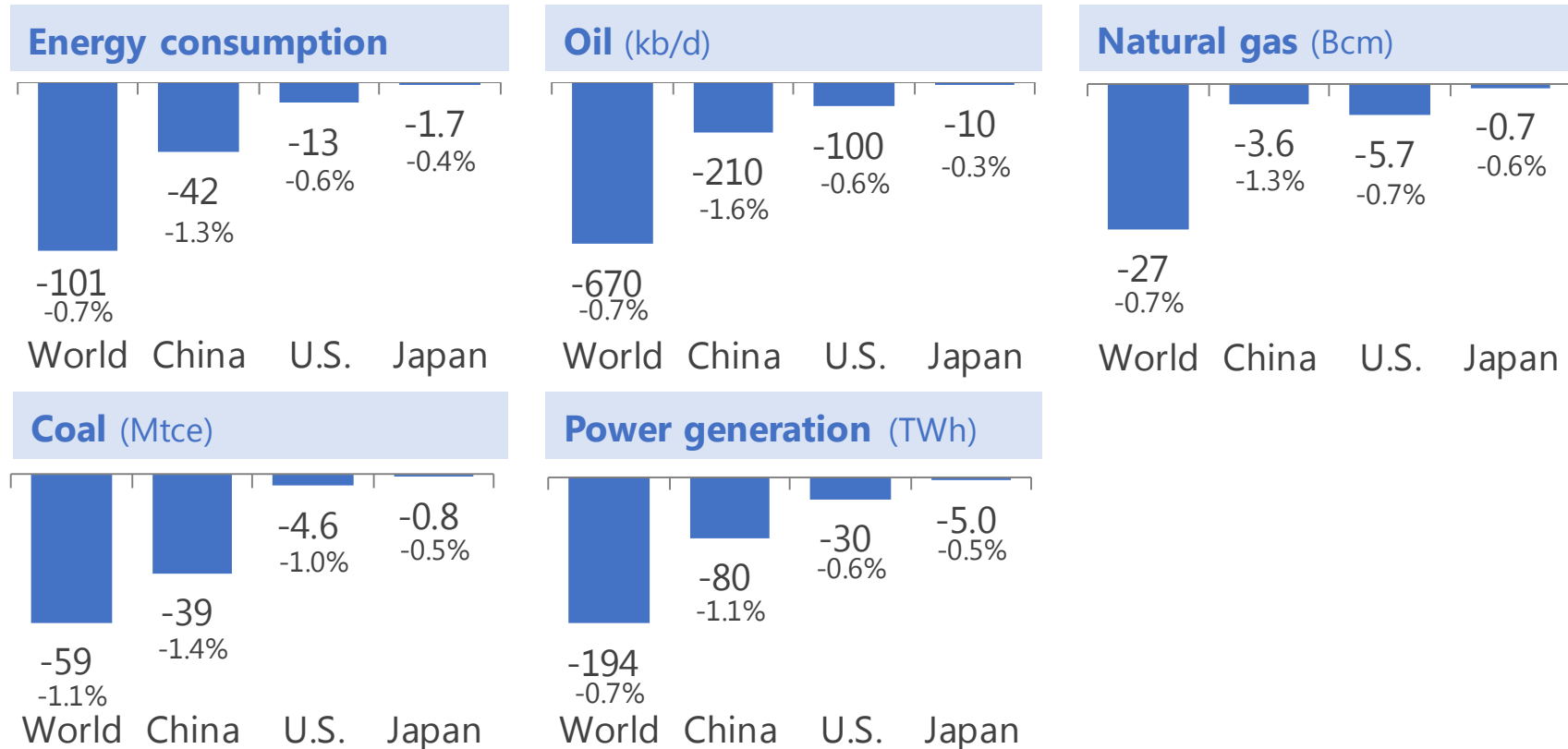
The most negatively affected countries are Canada and Mexico (1.6%) then China (1.4%) which is more than U.S. (0.9%). Japan is below the world average (0.7%).



World energy consumption would be influenced by trade war

- World primary energy consumption would be reduced by 0.7% (101 Mtoe)
- Oil and natural gas would both be reduced by 0.7% (670 kb/d and 27 Bcm) .
- Coal would drop the most by 1.1% (59 Mtce) mainly due to the decrease of electricity demand in China.
- This could potentially change the current flow of energy trade and the energy market will continue to be influenced by the trade war.

Trade war's impact on world's energy consumption (compared with the Reference Scenario [2020])



Note: 1 Mtce = 0.7 Mtoe = 0.7 × 10¹³ kcal