Document 4

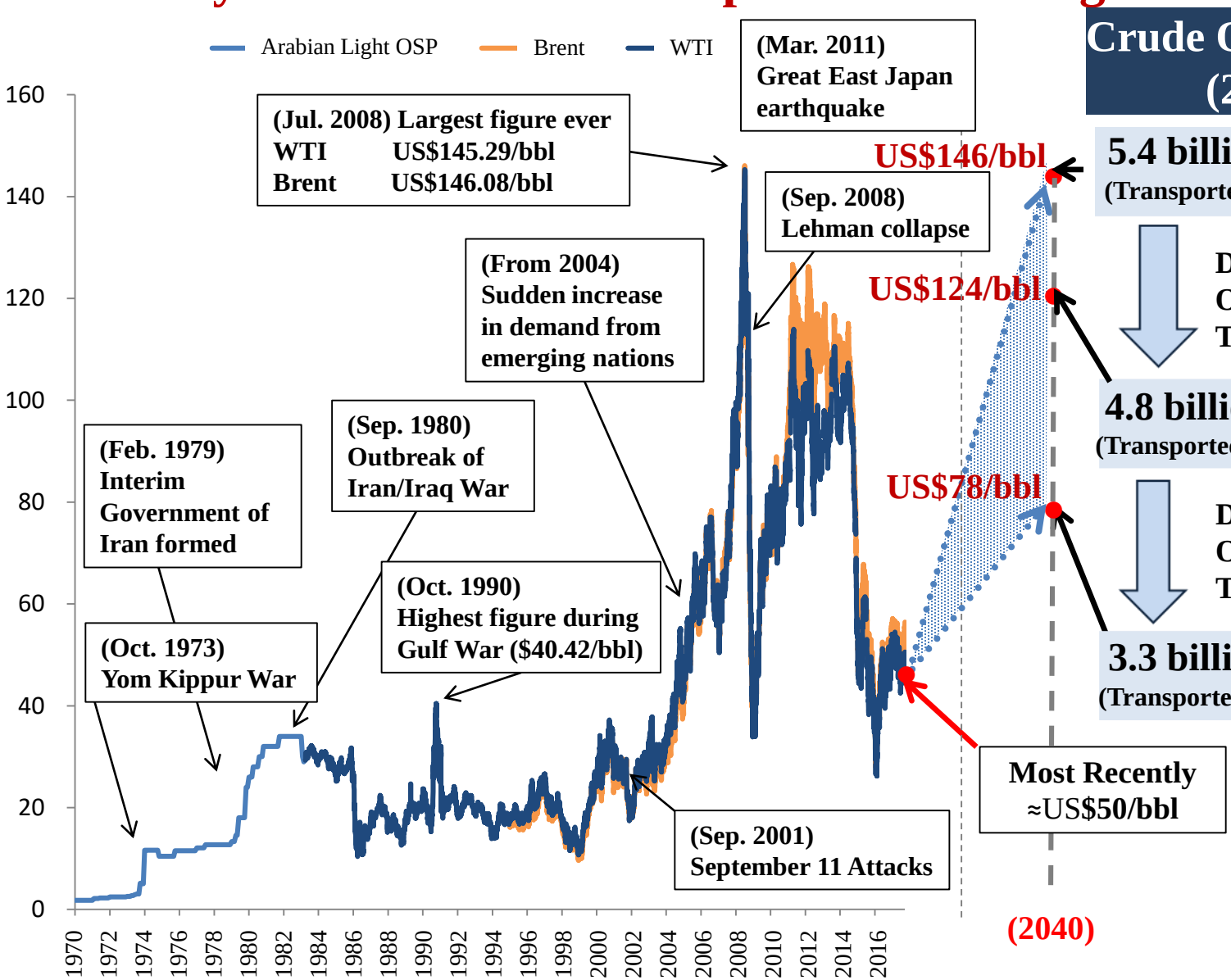
Resources, Geopolitics, and National Strategies

September 29th, 2017

Agency for Natural Resources and Energy
Ministry of Economy, Trade and Industry

The oil price continues to change, and most recently is at US$50/bbl.

What do you think of resources prices in the long term?



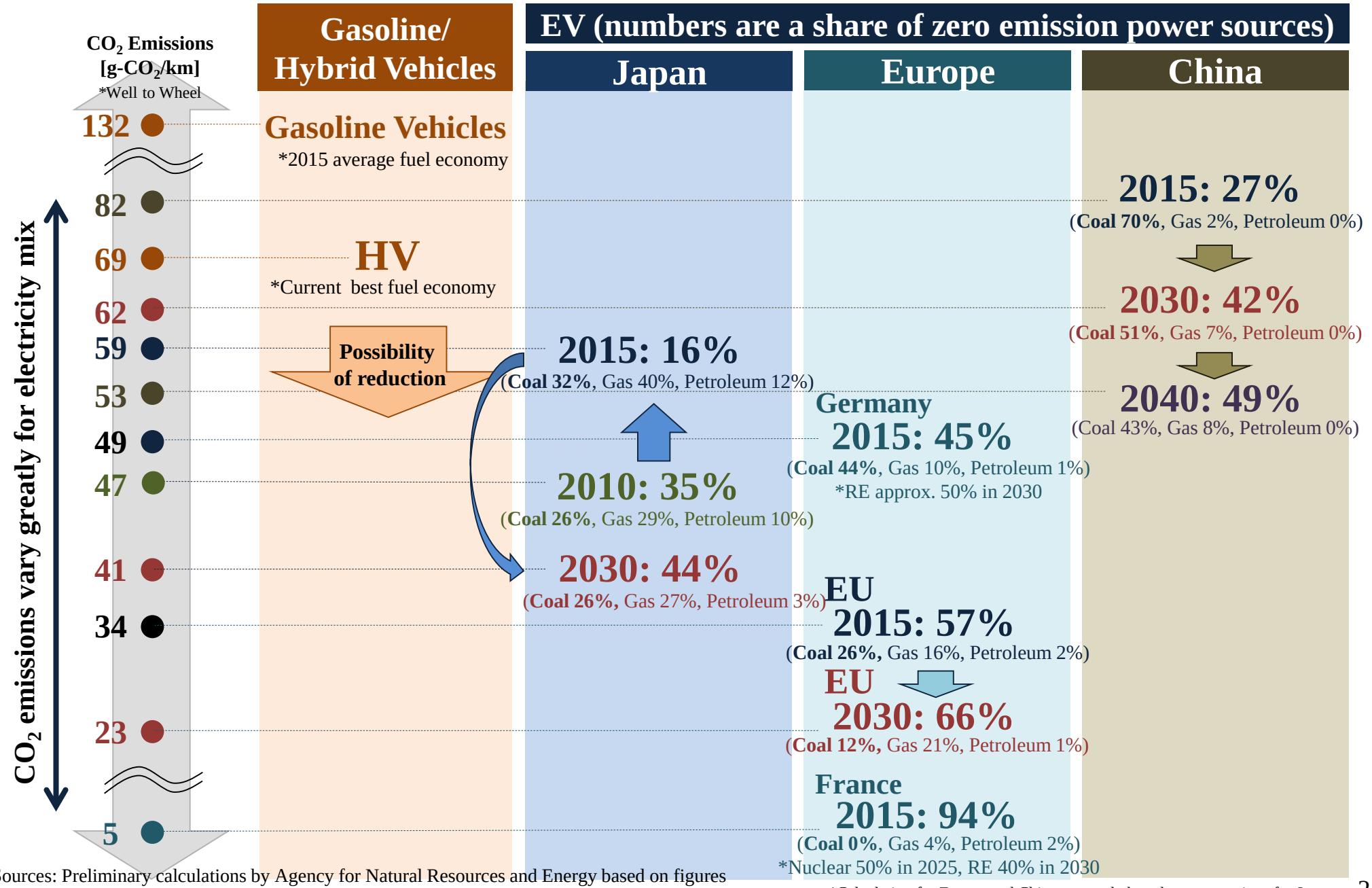
Crude Oil Demand (2040)	EV & PHV (2040)
5.4 billion tons (Transported: 3.4 billion)	30 million units (approx. 2% in total)
Decreasing 0.6 billion tons in total, Of which 0.5 billion tons in Transportation (approx. 80%)	
4.8 billion tons (Transported: 2.9 billion)	150 million units (approx. 8% in total)
Decreasing 1.5 billion tons in total, Of which 1.1 billion tons in Transportation (approx. 70%)	
3.3 billion tons (Transported: 1.8 billion)	710 million units (approx. 36% in total)

* Scenarios in WEO2016
$146/bbl: Current Policies Scenario
$124/bbl: New Policies Scenario
$78/bbl: 450 Scenario

*In 1983 both the WTI futures (NYMEX) and blend futures (IPE, currently ICE) were listed.
*Price was per-barrel, demand was crude oil equivalent
*Unit of EV & PHV is an example of factors of oil demand decrease

Source: WEO2016

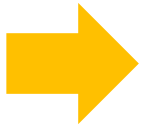
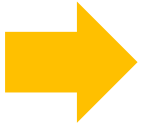
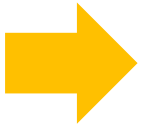
(Ref.) The impact of electric vehicles on CO_2 will differ greatly due to zero emission ratios



Sources: Preliminary calculations by Agency for Natural Resources and Energy based on figures from the Japan Automobile Research Institute, IEA Energy Balances, WEO2016 etc.

*Calculation for Europe and China are partly based on assumptions for Japan

Japan lacks natural resources and is particularly low in self sufficiency. How can this be increased in the long-term?

	Self Sufficiency (2000)		Self Sufficiency (2016)	Primary Nationally Produced Resources
			*China/India = 2015	
U.S.	73%		88%	Natural Gas Coal, Petroleum
U.K.	74%		67%	Petroleum
Germany	40%		37%	Coal
France	52%		54%	Nuclear Power
China	98%		84%	Coal
India	80%		65%	Coal
Japan	20%		8%	None

Source: IEA Energy Balances 2017 *Japan's self sufficiency ratios estimated by Agency for Natural Resources and Energy

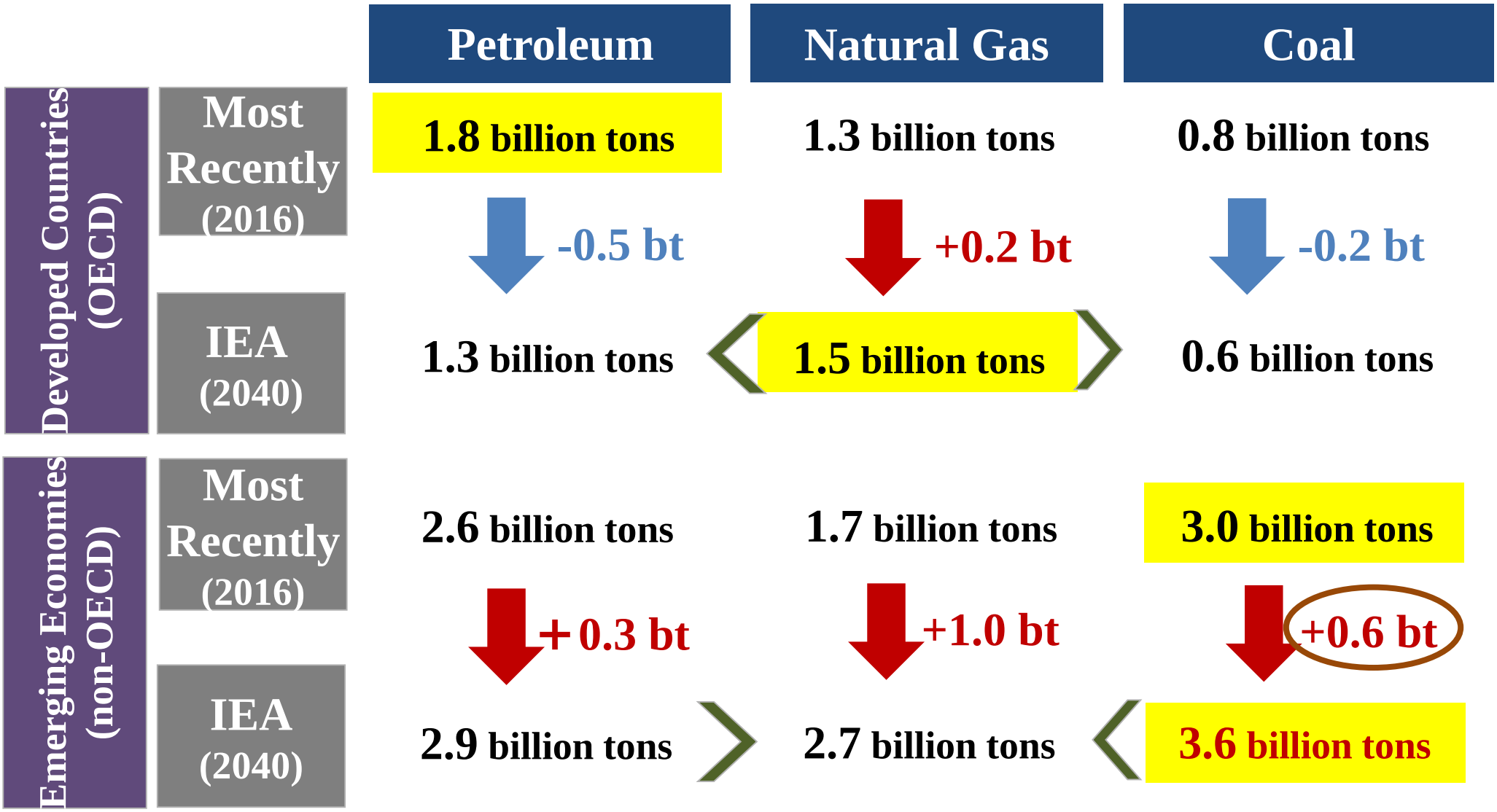
Japan's imports are particularly reliant on the Middle East. What will be the long-term situation there?

	Petroleum				Gas			
	Import Reliance	% Middle East	Largest Importer		Import Reliance	% Middle East	Largest Importer	
U.S.	41%	8%	15% Canada	Connected via Pipeline	3%	0%	3% Canada	Connected via Pipeline
U.K.	22%	1%	12% Norway	Connected via Pipeline	46%	10%	32% Norway	Connected via Pipeline
Germany	96%	4%	37% Russia	Connected via Pipeline	90%	0%	44% Russia	Connected via Pipeline
France	97%	25%	15% Saudi Arabia	Tanker Transport *Connected via European Pipeline	99%	2%	40% Norway	Connected via Pipeline
China	61%	31%	9% Saudi Arabia	Tanker Transport *Connected via pipeline to Russia etc.	29%	4%	15% Turkmenistan	Connected via Pipeline
India	83%	46%	15% Saudi Arabia	Tanker Transport *No pipeline	40%	25%	22% Qatar	Tanker Transport *No pipeline
Japan	99%	85%	37% Saudi Arabia	Tanker Transport *No pipeline	98%	23%	28% Australia	Tanker Transport *No pipeline

Source: Produced by Agency for Natural Resources and Energy from IEA/Energy balances etc.

*Data for China and India is from 2015

Developed countries shift to gas, and emerging countries continue coal dependency. How will Japan contribute to CO2 reduction?



Source: New Policy Scenario, WEO2016 IEA etc.
Note: Unit is tons of crude oil equivalent.