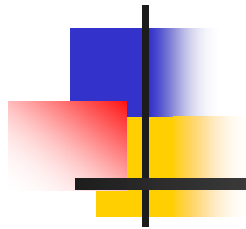




Current Situation and Outlook for the Oil & Gas (LNG) Market



Session 2 IEEJ/CNPC ETRI Joint Symposium

November 8th, 2017

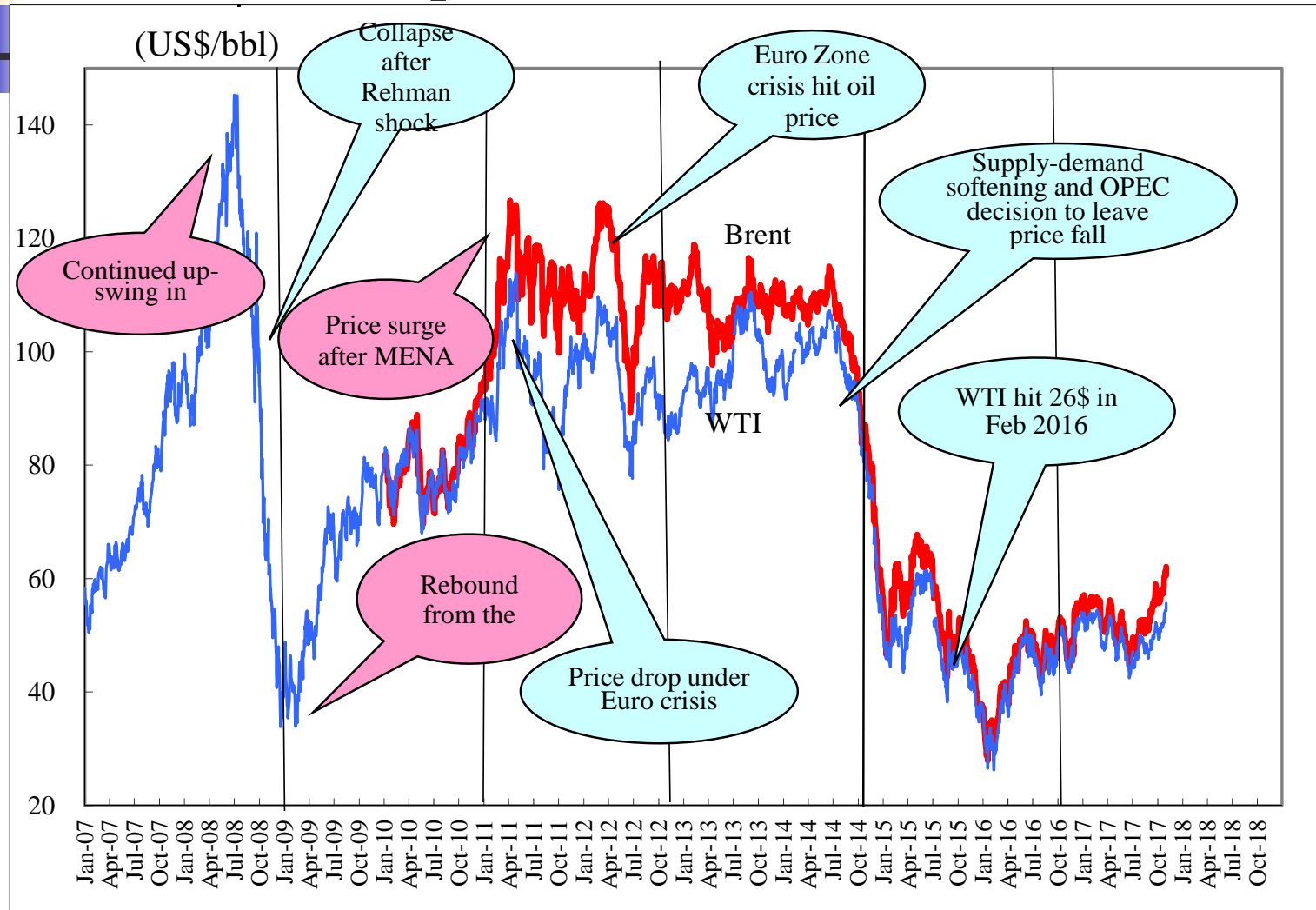
Dr. Ken Koyama

Chief economist and managing director
Institute of Energy Economics, Japan



Crude Oil Price Volatility

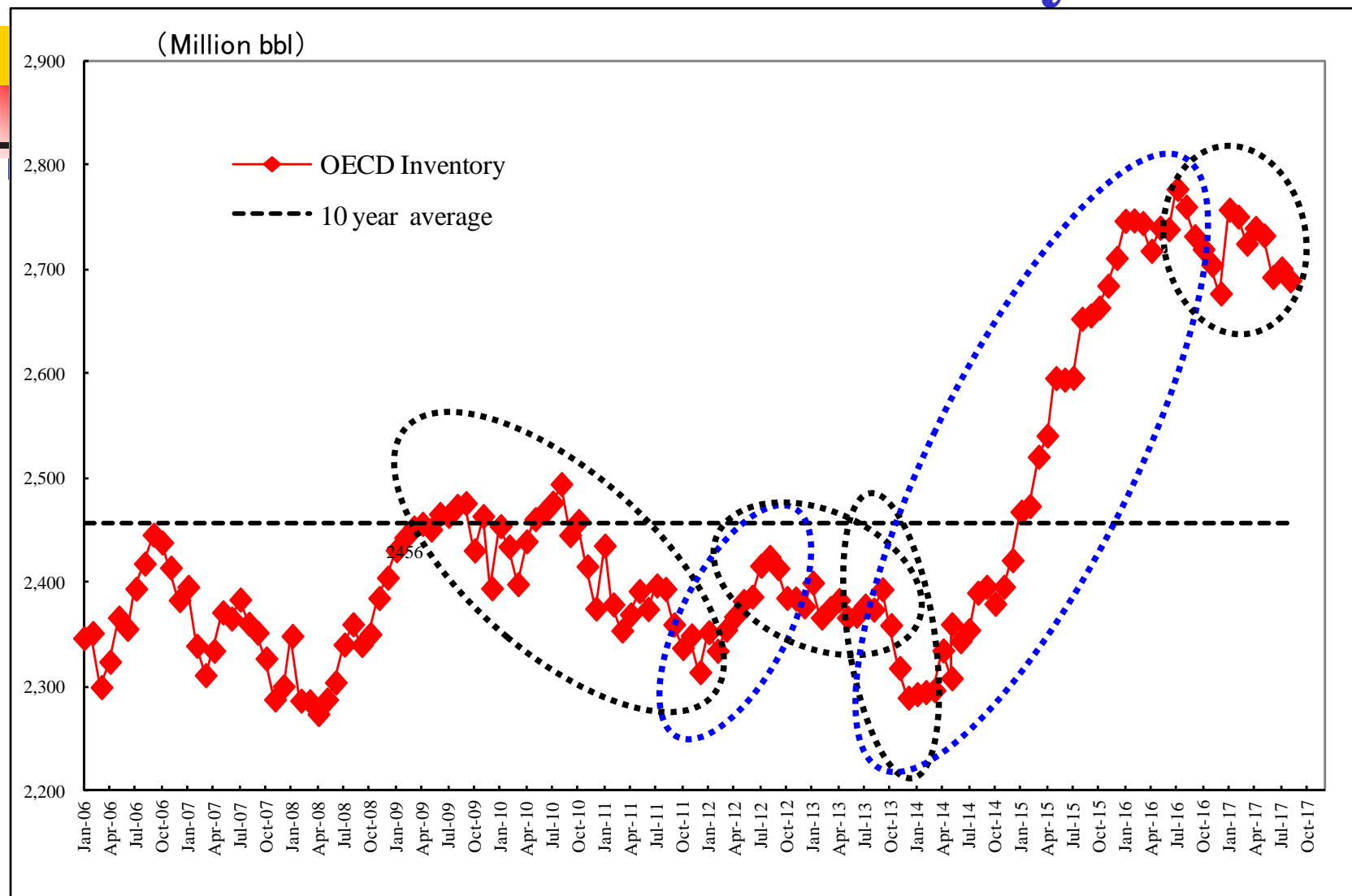
Crude oil price continued to be volatile



Source: NYMEX data, etc.



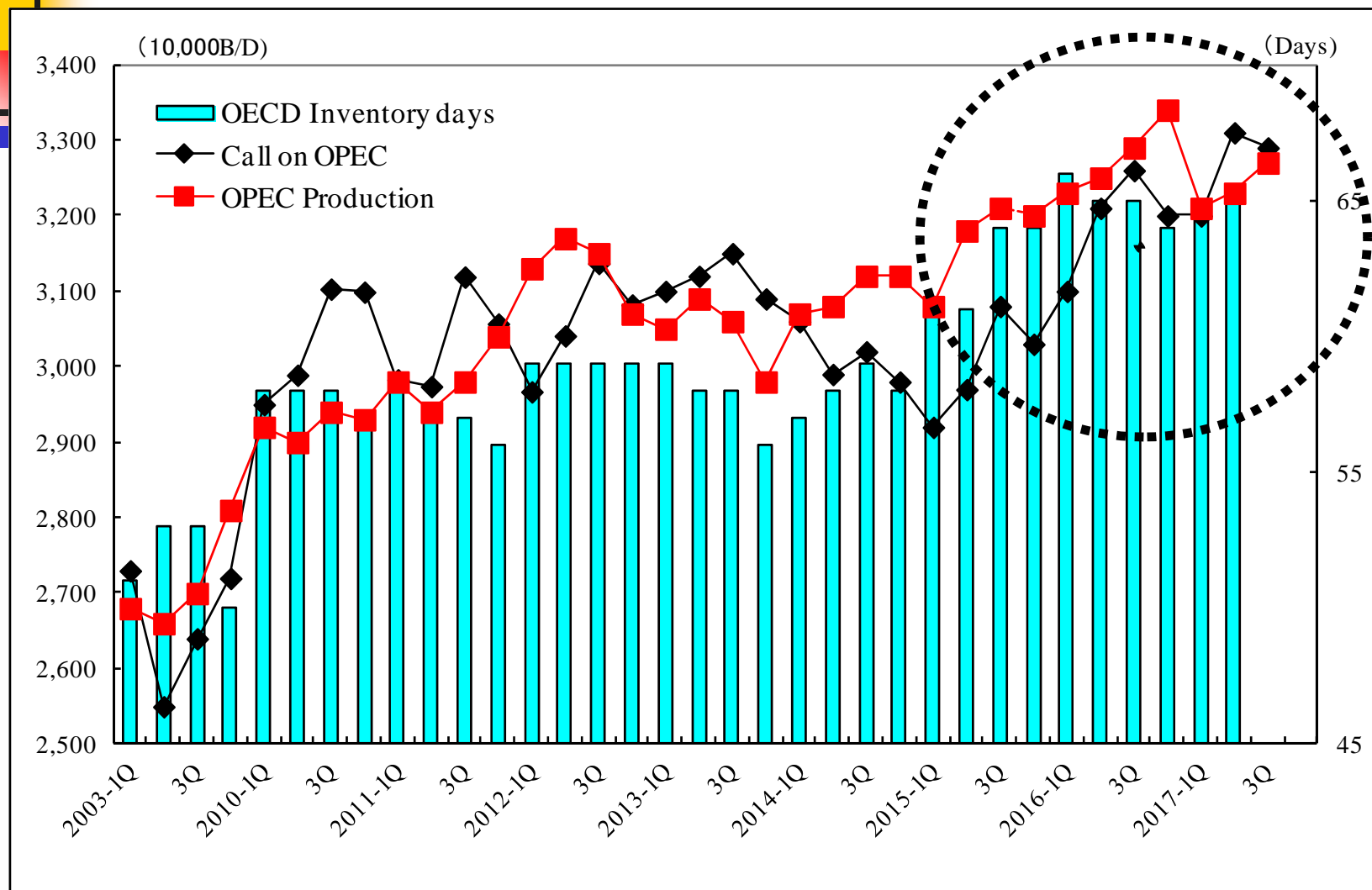
OECD Oil Inventory



Source: Outlook by the Author based on data from IEA “Oil Market Report”



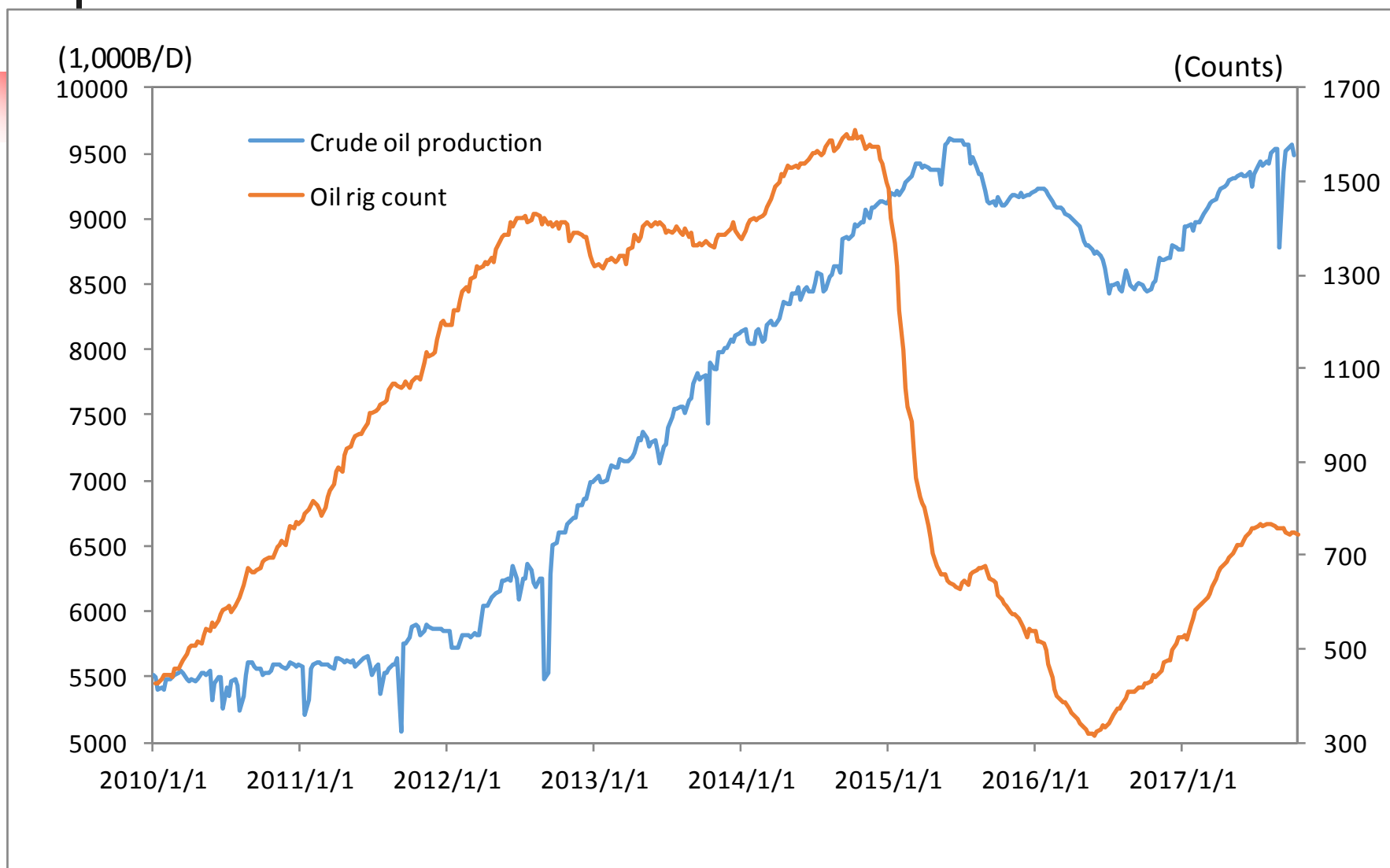
Call on OPEC vs. OPEC Production



Source: IEA "Oil Market Report"



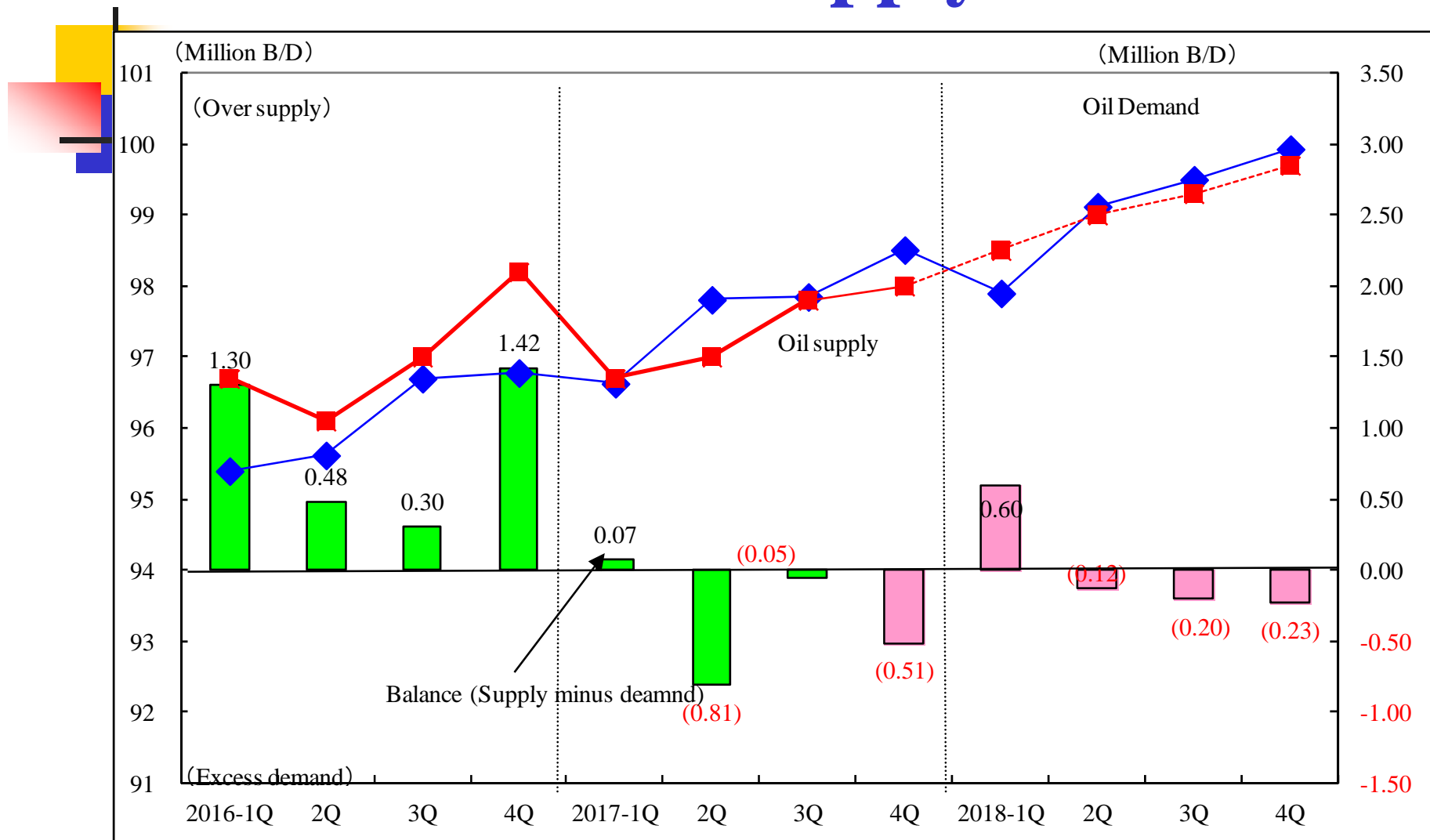
US Oil Production and Rig Count



Source: Data from EIA and Baker Hughes



Outlook for Oil Supply-Demand



Source: Outlook by the Author based on data from IEA “Oil Market Report”

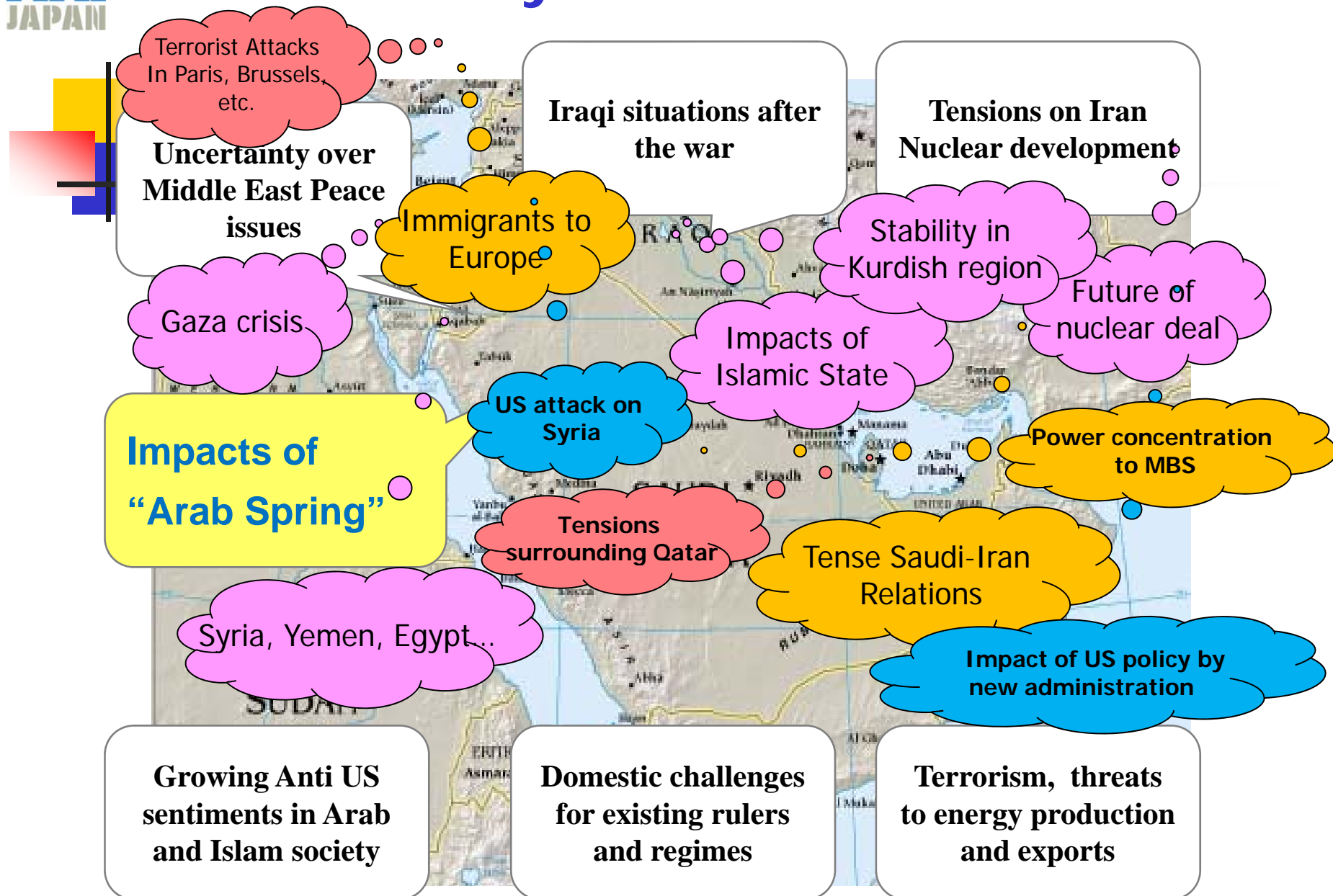


Outlook for Near-Term Global Oil Market

- Current price level likely to remain in the near term.
- Market is heading for “Re-balancing”, but...
- US LTO production is resilient and start to pick up again if oil price goes beyond a certain level.
- What can be a “surprise”?
 - OPEC decision?
 - Supply disruption in oil producer countries?
 - Economic downside risks?
- Current price level is not sustainable for mid-term. Market may head for 70 in 2020s
- Another uncertainty has emerged for longer term...



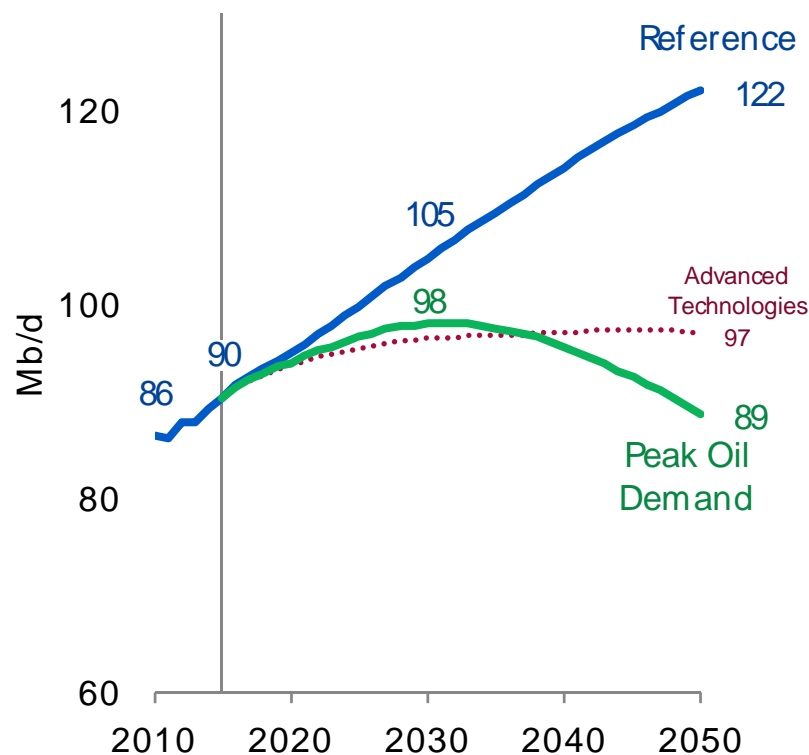
Instability in the Middle East





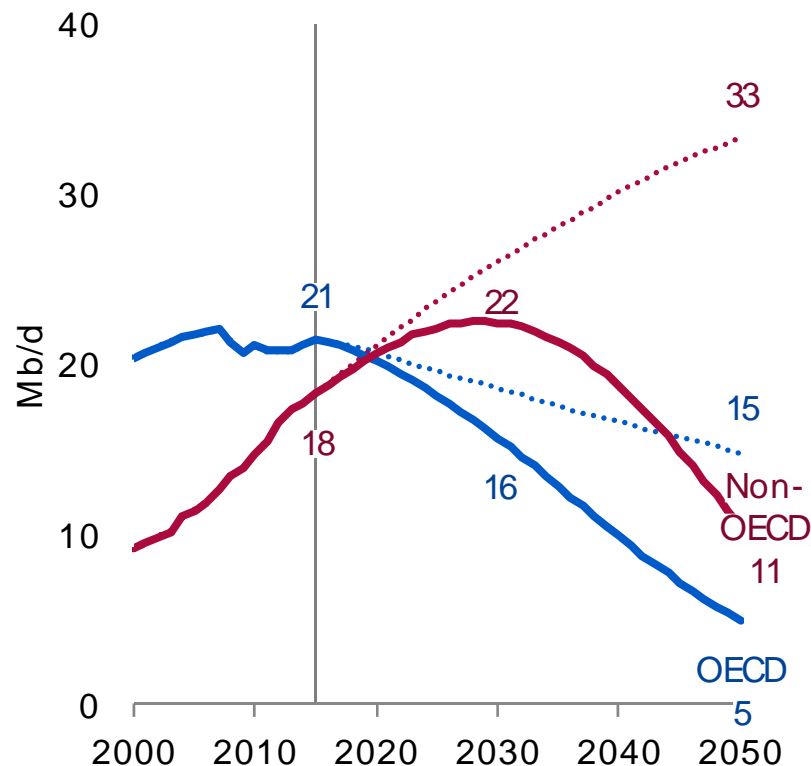
Oil demand peaks by rapid penetration of ZEVs

Oil consumption



In the Peak Oil Demand Case, oil consumption hits a peak of 98 Mb/d around 2030 then declines. The reduction from the Reference Scenario is 7 Mb/d and 33 Mb/d in 2030 and in 2050, respectively.

Oil for Road [Peak Oil Demand Case]

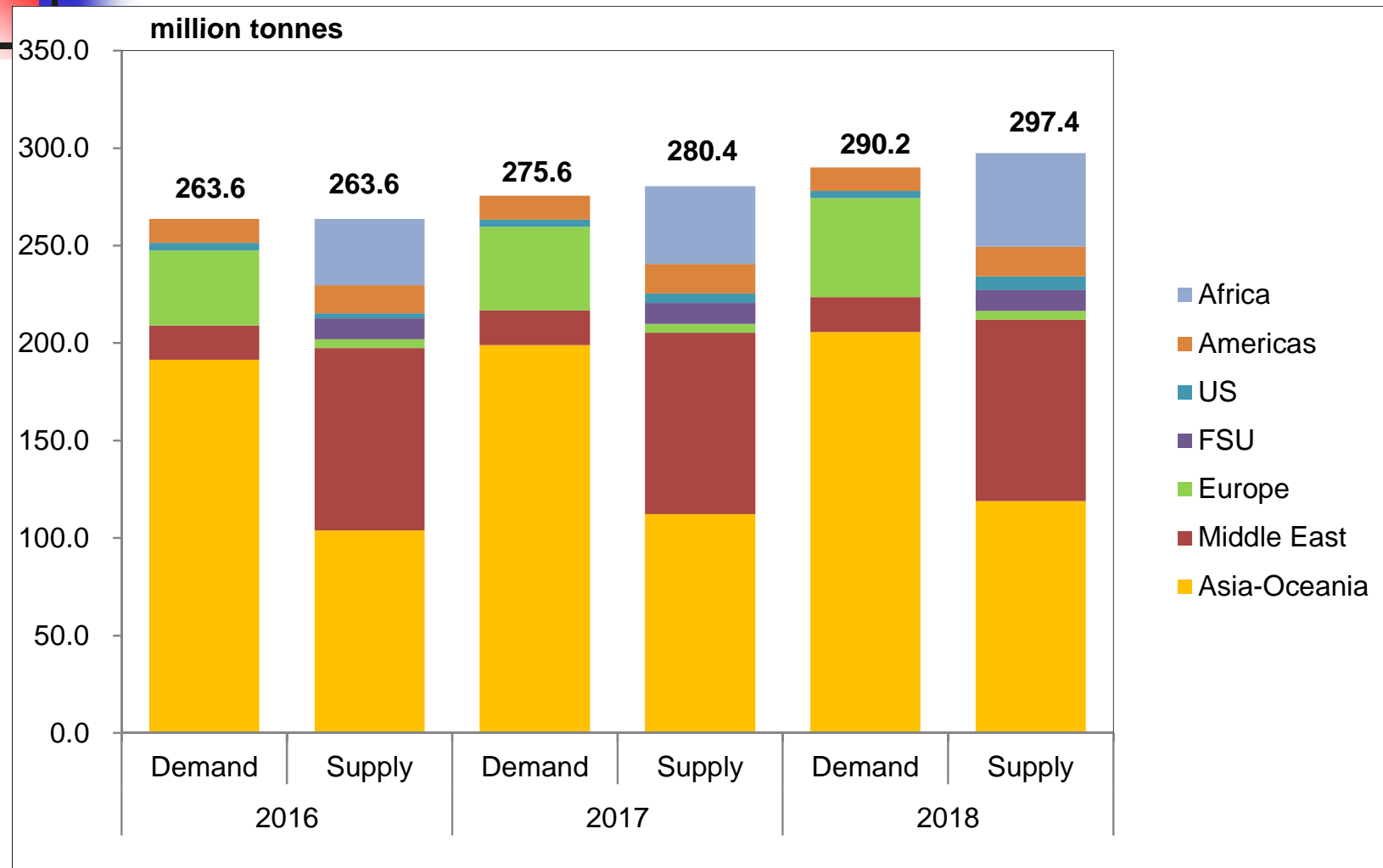


Note: Dotted lines are the Reference Scenario

Oil consumption by cars in Non-OECD, which continues to increase rapidly in the Reference Scenario, also declines from around 2030. It is as much as one third of the Reference Scenario in 2050.

IEE JAPAN LNG Market Outlook up to 2018

- LNG supplies continues to be abundant up to 2018 and beyond due mainly to substantial increase in supplies from new projects



Source: Yoshikazu Kobayashi, "Outlook for the World Gas Market" (July 25, 2017)

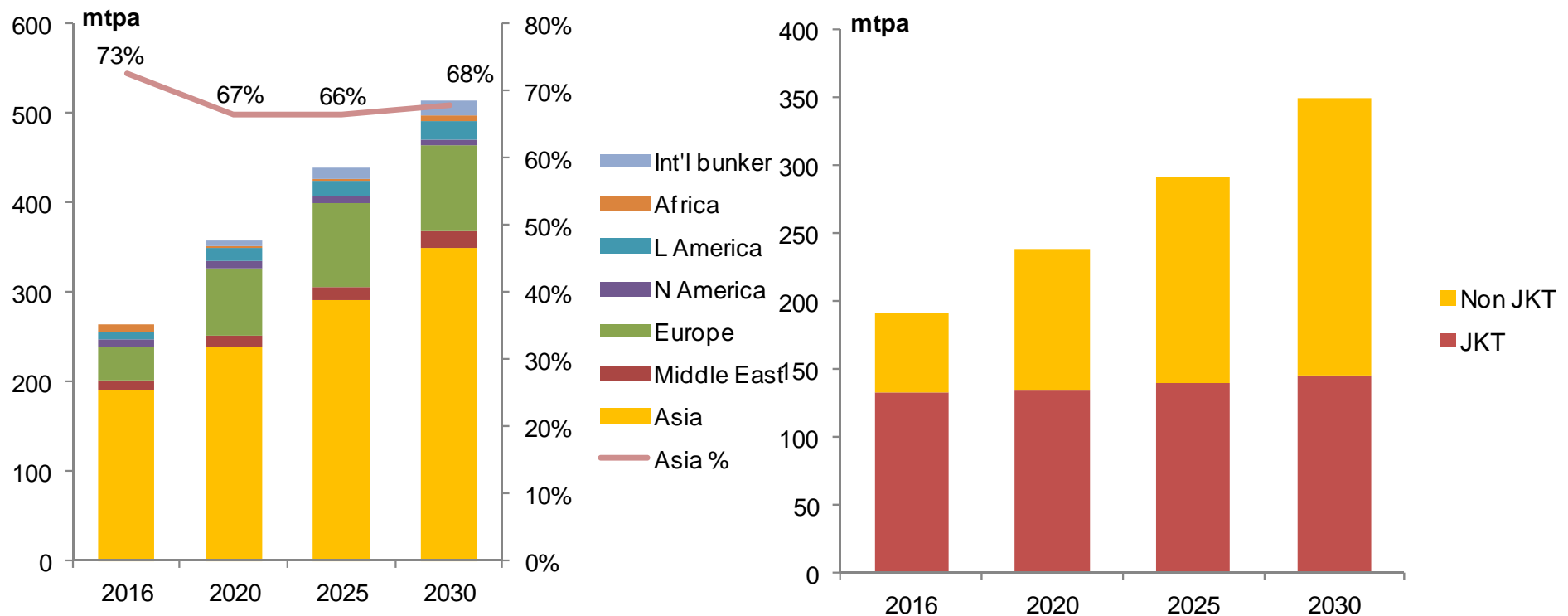


LNG demand in Asia

- The share of Asia will remain high despite emerging countries start to import LNG.
- The market becomes more price-elastic.
- Emerging countries prefer more flexibilities in supply.

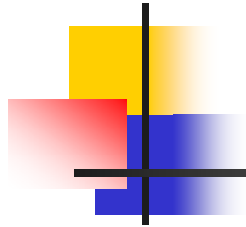
The share of Asia in world LNG demand

LNG demand of JKT and other Asia





Factors to affect Gas/LNG Demand in Asia

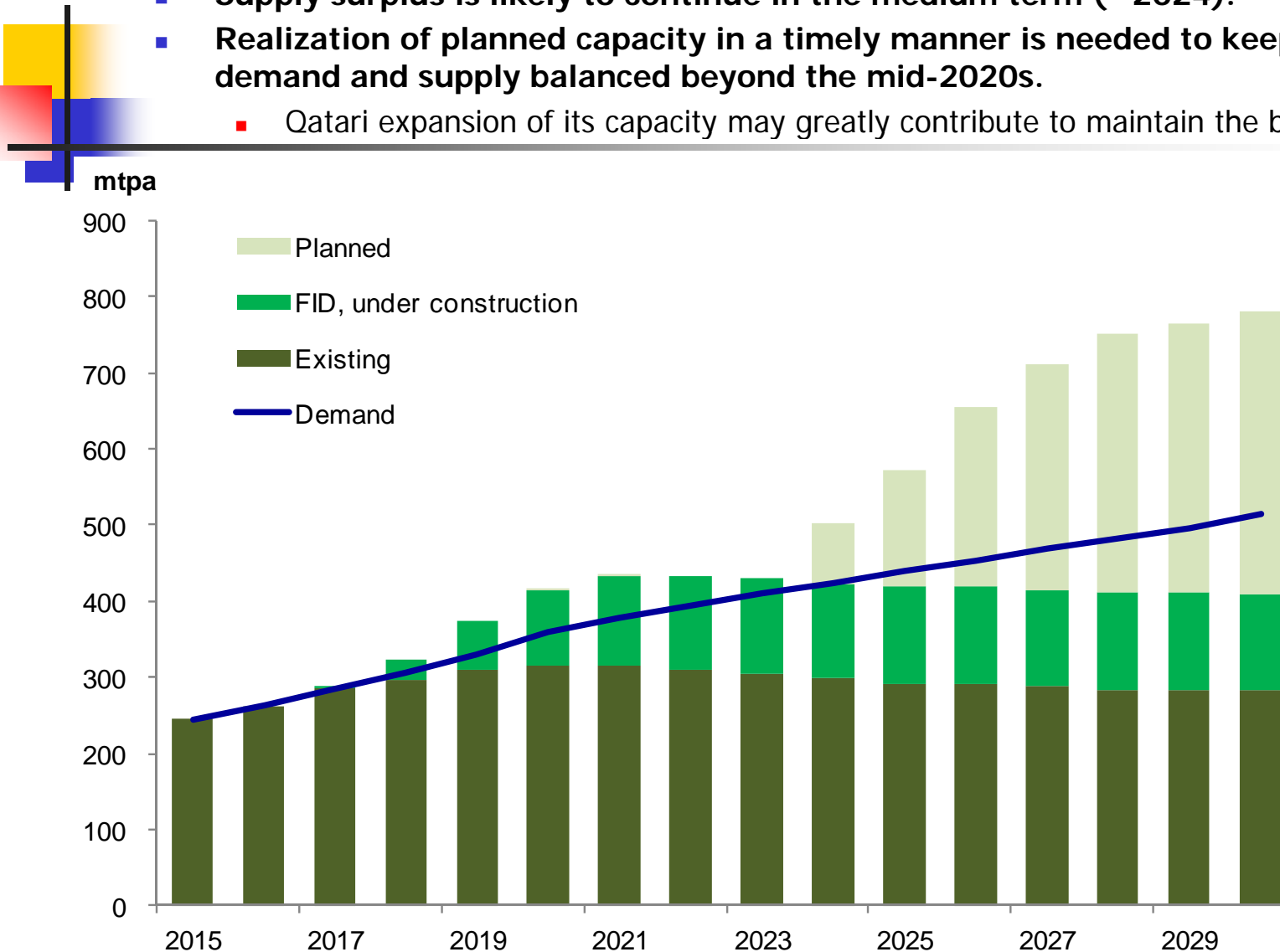


- **Economic growth**
- **Need to protect environment**
- **Lower price**
- **Competition against coal**
- **Future of nuclear power**
- **Competition against renewable energy**
- **Competition with LPG**
- **Impact of power/gas market reform**
- **Pipeline vs. LNG**



World LNG Supply-Demand Outlook

- Supply surplus is likely to continue in the medium term (~2024).
- Realization of planned capacity in a timely manner is needed to keep the demand and supply balanced beyond the mid-2020s.
 - Qatari expansion of its capacity may greatly contribute to maintain the balance.

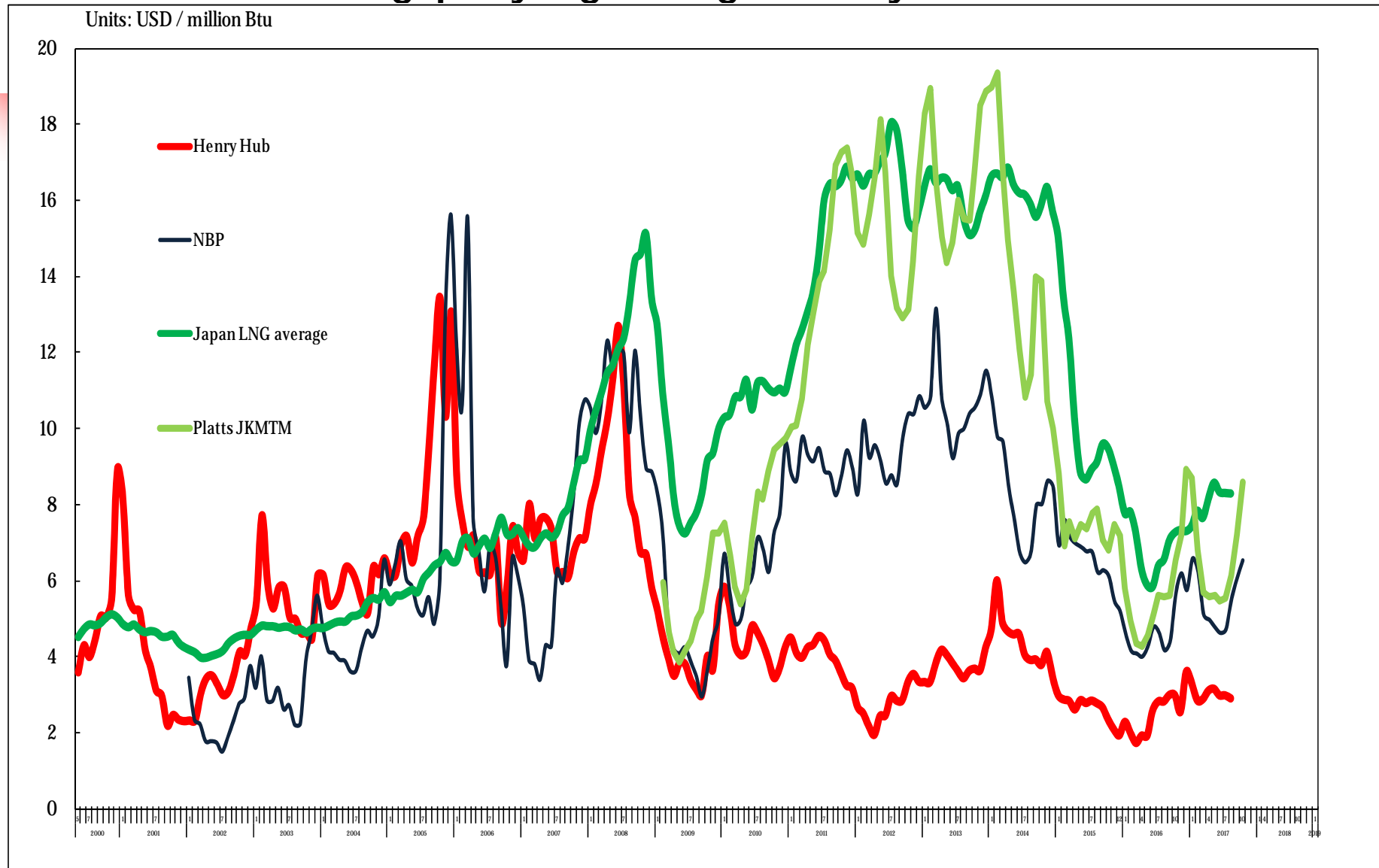


Source: Yoshikazu Kobayashi, "The Role of Natural Gas in Japan and Asia" (September 11, 2017)



World gas prices by region

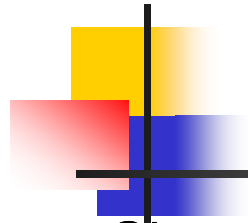
Price gaps by regions significantly narrowed



Source: US EIA and IEA



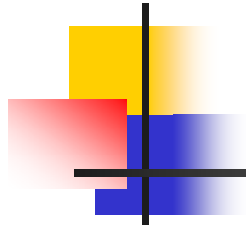
Issues for LNG Pricing in Asia



- Given the dominance of the existing contracts, JCC pricing likely to remain dominant mechanism in Asia at least up to early 2020s
- But tide is changing:
 - ✓ Prevailing over-supplied market
 - ✓ Inflow of US LNG with HH pricing will increase in Asia
 - ✓ Spot/short-term trading continue to grow
 - ✓ Initiatives to create hubs and new price discovery in Asia
 - ✓ Power and gas market reforms in Japan and Asia
- Major Asian buyers such as JERA have a strategy to diversify pricing
- Buyers continue to search for possible alternatives to JCC and the share of JCC pricing will be reduced
- So far there is no clear answer as to what is the best alternative
- What will happen if divergence emerges between LT contract and spot price?



JFTC's study on LNG trading



- Japan Fair Trade Commission (JFTC) published a study of international LNG trading practice.
- Significance of the study
 - The study clearly mentions that the destination restriction in the existing LNG long-term contract violates the Japanese Anti-Monopoly Act.
 - It urges Japanese companies not to accept the destination clause in the new and renewed contract.
 - It recommends the companies to renegotiate the destination restriction also in the existing contracts.
 - It first comments that Take-or-pay provision also can violates the Anti-Monopoly Act.
- Challenges
 - Effectiveness to foreign firms is the biggest challenge.
 - Application to DES contracts
- It can set a standard of long-term contract if FTCs in other countries may follow the JFTC study.