INTERNATIONAL ENERGY FORUM

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International Oil and Gas Markets: Energy Security

Session IV G20 Energy Transitions Working Group

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Summary

I. Global Trends and Projections Compared

- Trilateral workprogramme with the IEA and OPEC
- Collaboration with the IGU, GECF, and other Agencies

I. 3 Key Energy Security Themes

- Volatility
- Change
- Investment

III. IEF producer-consumer dialogue achievements

- Orderly and inclusive transitions
- Enhanced data transparency
- Efficient and sustainable markets

8th IEA-IEF-OPEC Symposium on Energy Outlooks

14 February 2018 Riyadh, Saudi Arabia

Dialogue on varied producer and consumer outlooks is better informed and more collegial. This enhances predictability and policy cohesion through cooperation on historical baseline data, classifications and methods underlying outlook scenarios.

6th IEA-IEF-OPEC Workshop on Physical-Financial Linkages

15 March 2018 Vienna, Austria

Complex physical and financial energy market interactions are made more transparent. This tempers volatility, reinforces confidence in price mechanisms, evolving financial market regulations, and improves risk management.

4th IEA-IEF-OPEC Gas and Coal Market Outlooks Symposium

6November 2018 Paris, France

Dialogue focused on sustainable demand and supply balances for coal and for natural gas. Building consensus on new technologies and renewables to sustainable development goals and achieve climate change mitigation targets.

Ministerial Meeting Outcomes

Transit | Technology | Trade & Investment

Dialogue on the mutual reinforcing role of hydrocarbon, renewables and clean technologies Enabling reliable and realistic transformations all can afford, with rational responses to global challenges. Focusing on energy poverty alleviation and more sustainable and competitive supply.

IEF IGU

6TH IEF IGU MINISTERIAL GAS FORUM

Inclusive growth towards a sustainable energy future:
The role of gas technologies and innovation

21 - 22 NOVEMBER 2018 | BARCELONA, SPAIN

Dialogue enabling gas market stakeholders to unite behind a clear vision to stimulate inclusive growth and create sustainable energy futures faster together. Focus on new gas technologies from Hydrogen and CCUS to Green Gas and synergies with other sectors and sources.

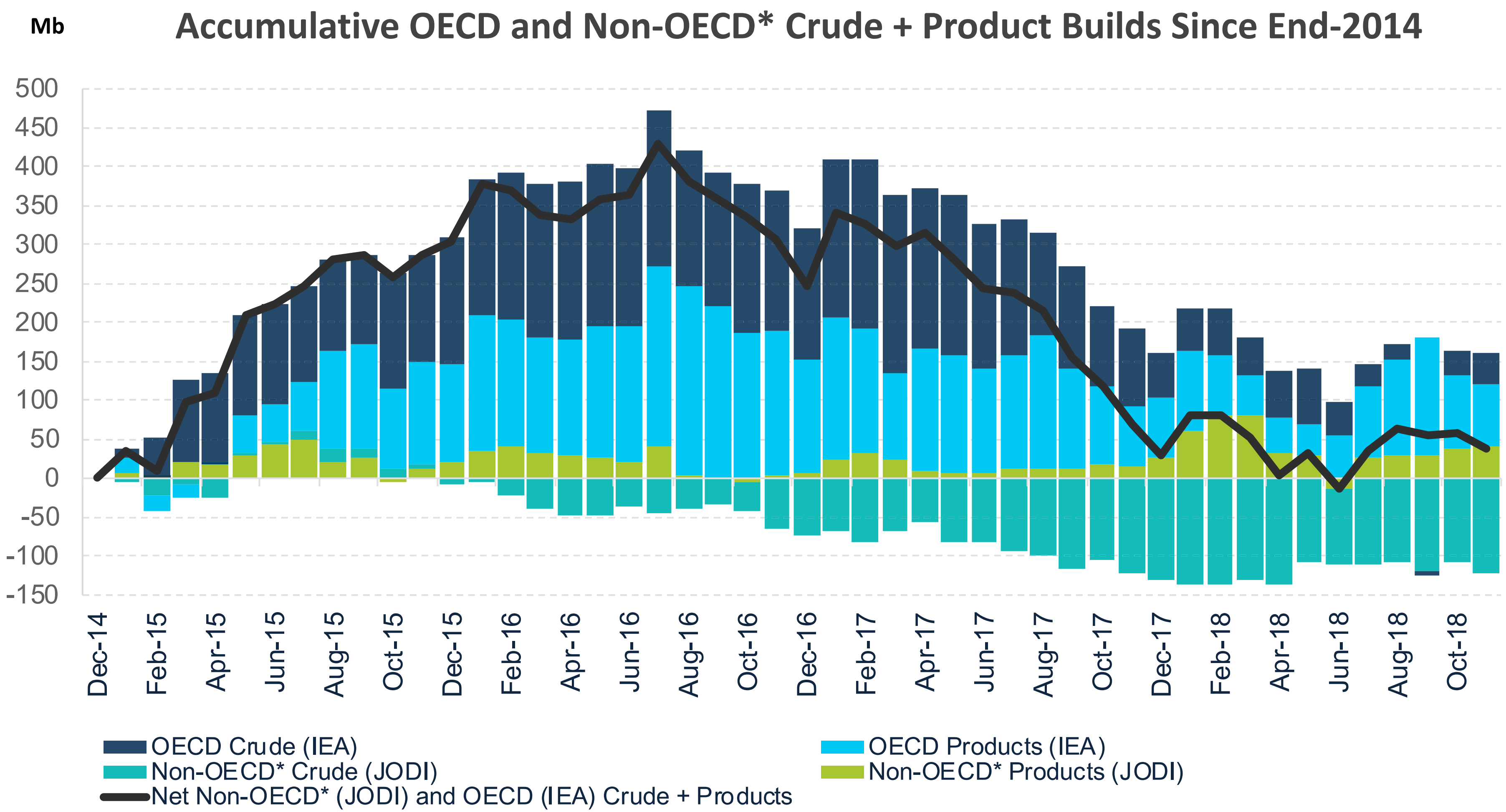
6th Meeting of Heads of JODI Partner Organisations

10 April 2018 New Delhi, India

Implementing the 5-Year Action Plan to 2020 and dialogue on scope of work to 2025.
Enhancing energy data transparency visibility on new platforms with new members and on sources such as better data on LNG trade flows and non-OCED inventories.

Enhancing data transparency on Non-OECD inventories

Becomes more important as East - East flows rise to 80% of global



Data Sources JODI IEA Rapidan

Additions of New JODI-Oil Participating Countries During JODI 5 Year Action Plan Period toward 2020

Armenia
Belarus
Bangladesh
Gambia
Niger
Tajikistan
the FYR of Macedonia
Mauritius
Moldova
Bermuda

2018

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Additions of New JODI-Gas Participating Countries During JODI 5 Year Action Plan Period toward 2020

Angola
Algeria
Iraq
the FYR of Macedonia
Nigeria
Kazakhstan

2018

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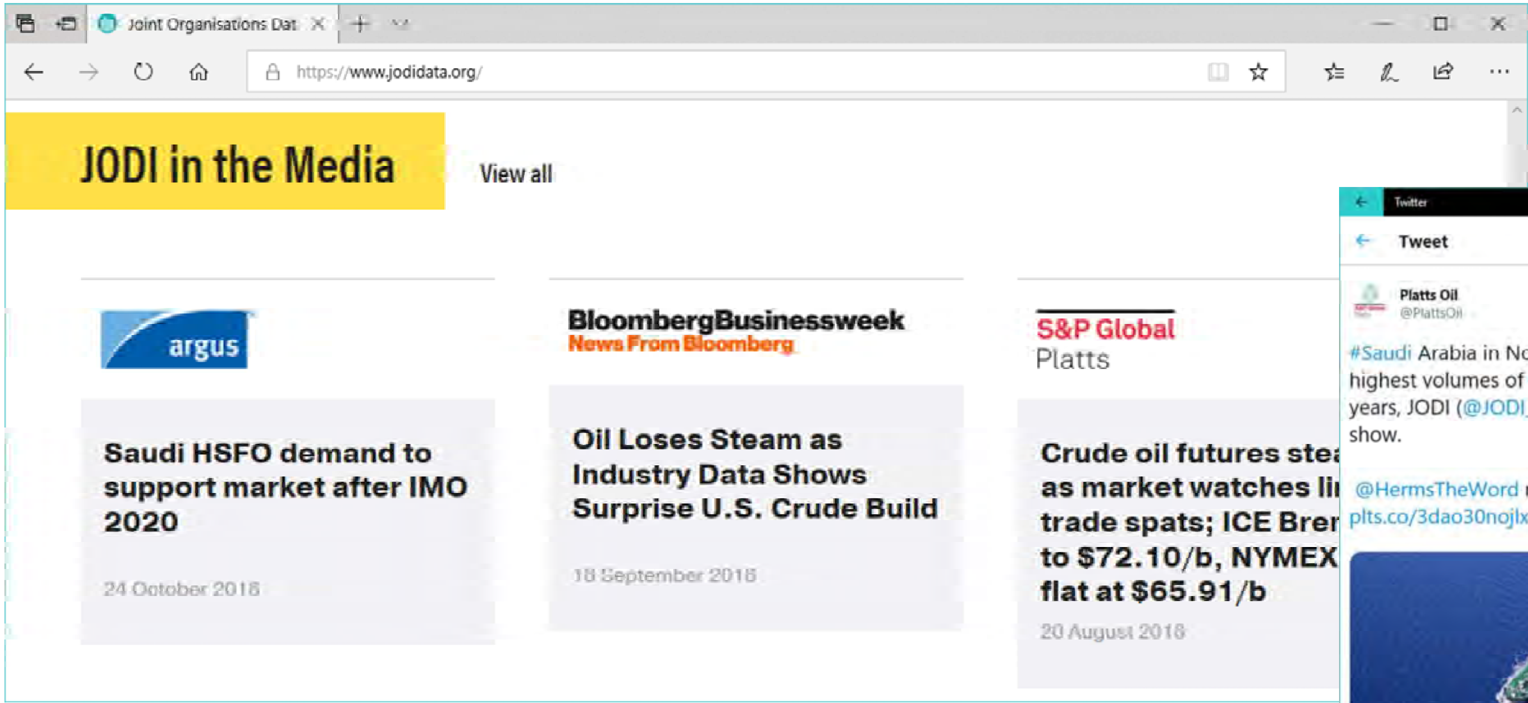
Improved JODI visibility

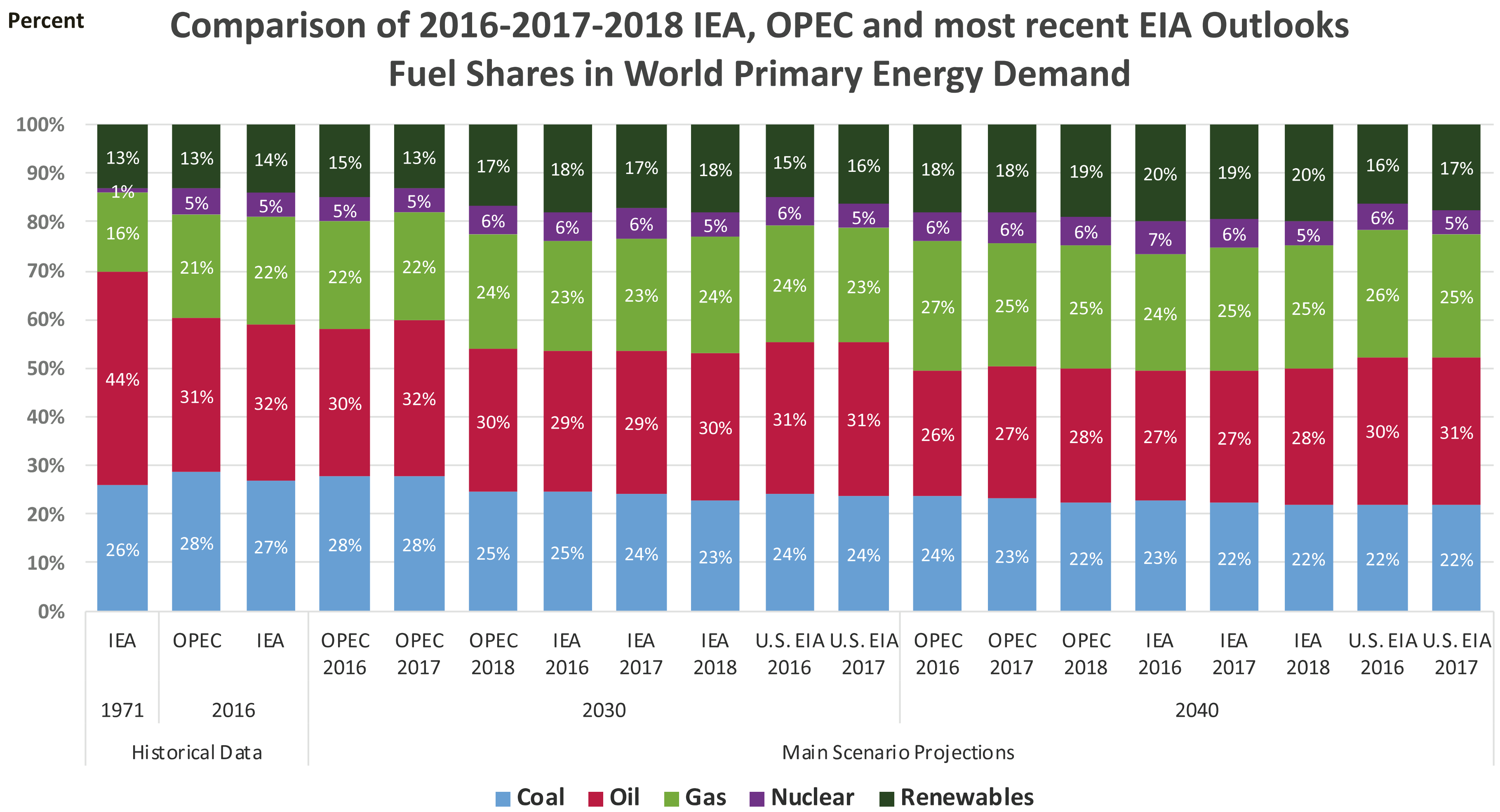
The media increasingly features JODI as a unique data source



Source: JODIdata.org

IEA, OPEC and most recent U.S. EIA Outlooks

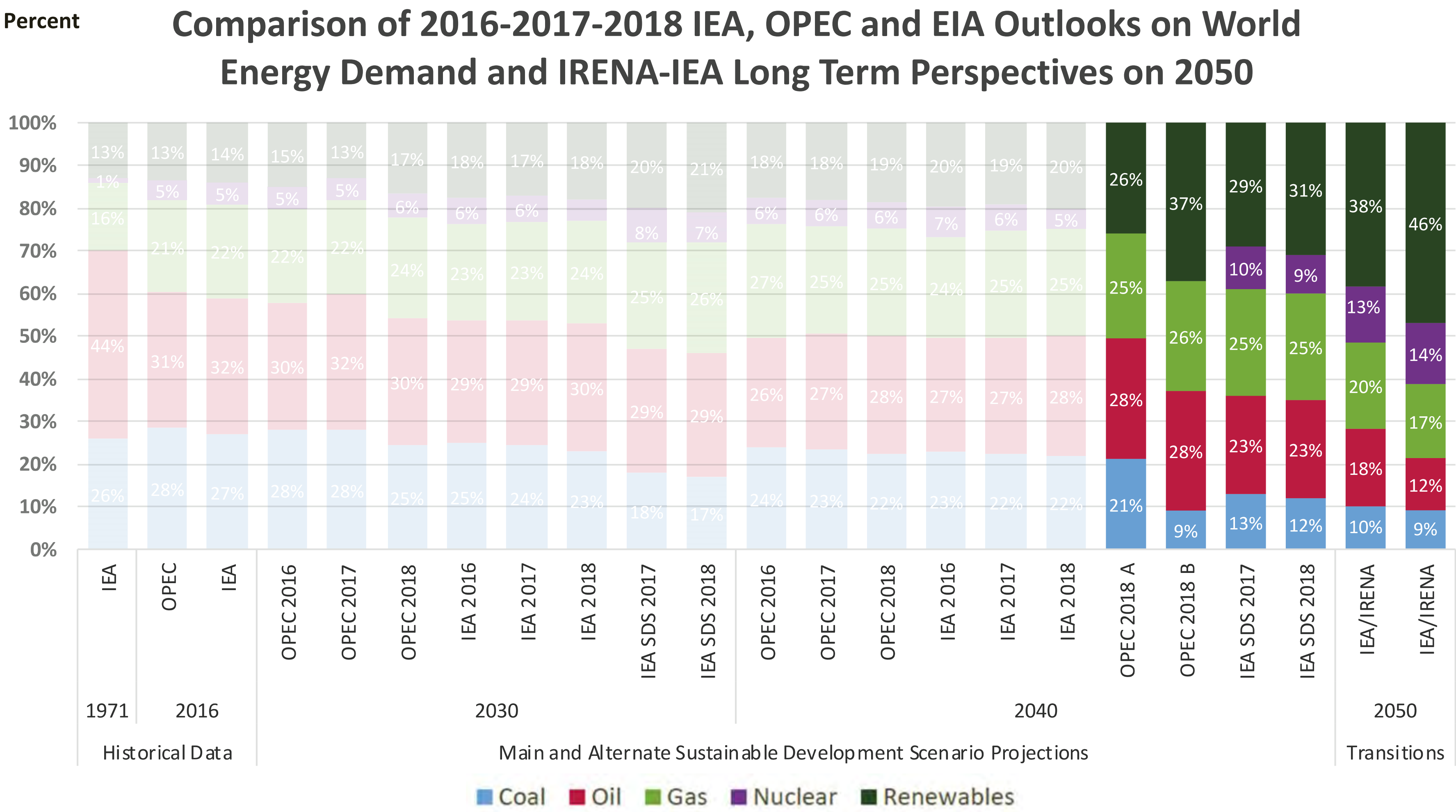
Small changes in fuel shares over the years also compared to historical data



Data Sources U.S. EIA, IEA, OPEC 2016-2018

More Scenarios Show Alternate Futures

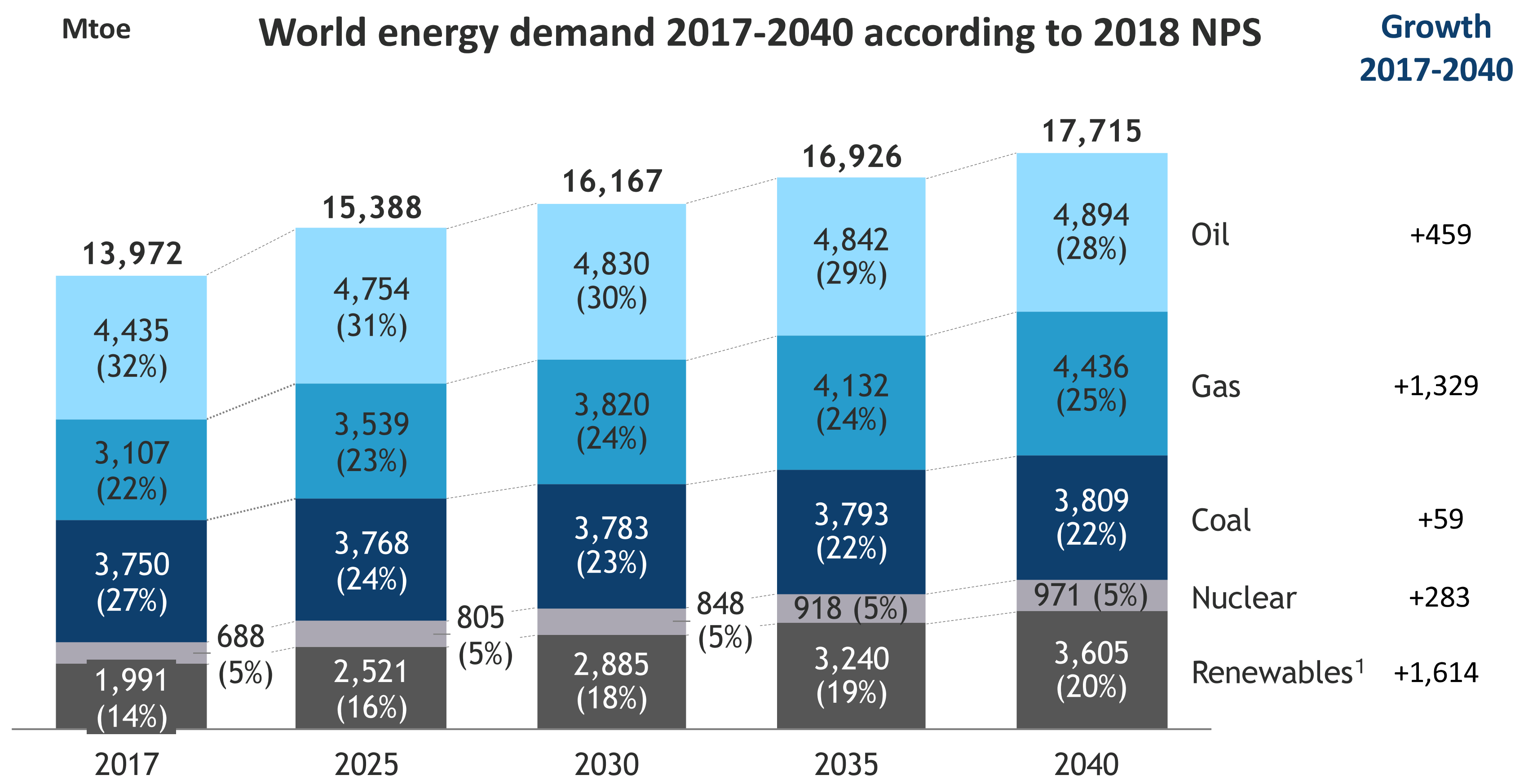
Fossil shares range from 69% to 60% in 2040, and 48% to 38% in 2040/50



Data Sources IEA OPEC 2016-2018

Though fossil shares decrease volume grows

Renewables, gas, and oil show strongest growth

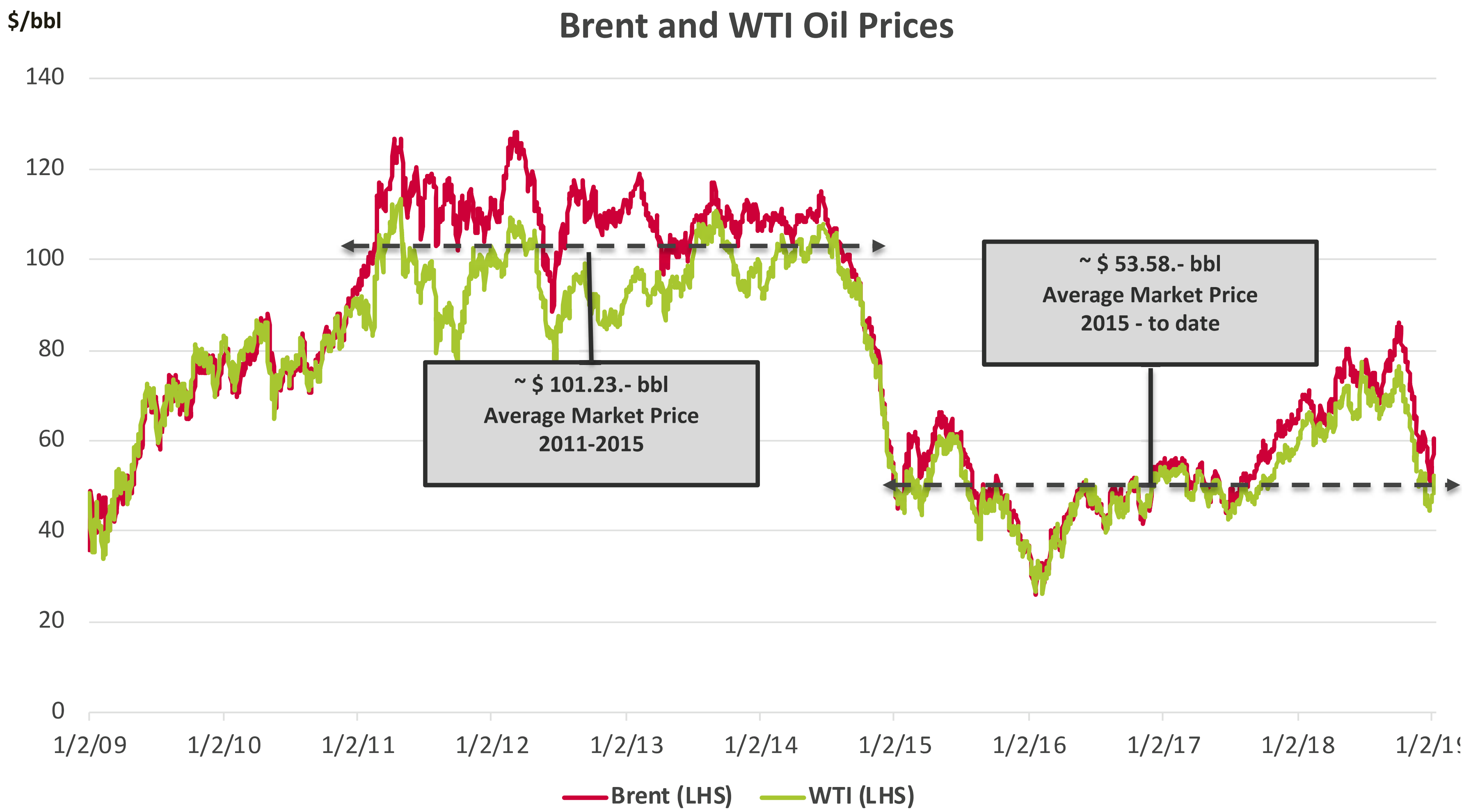


1. Hydropower, Bioenergy, Geothermal, PV, CSP, Wind and Marine

BCG Analysis Source: IEA Energy Outlook 2018 (New Policies scenario)

Down-turn leaves oil market without clear direction

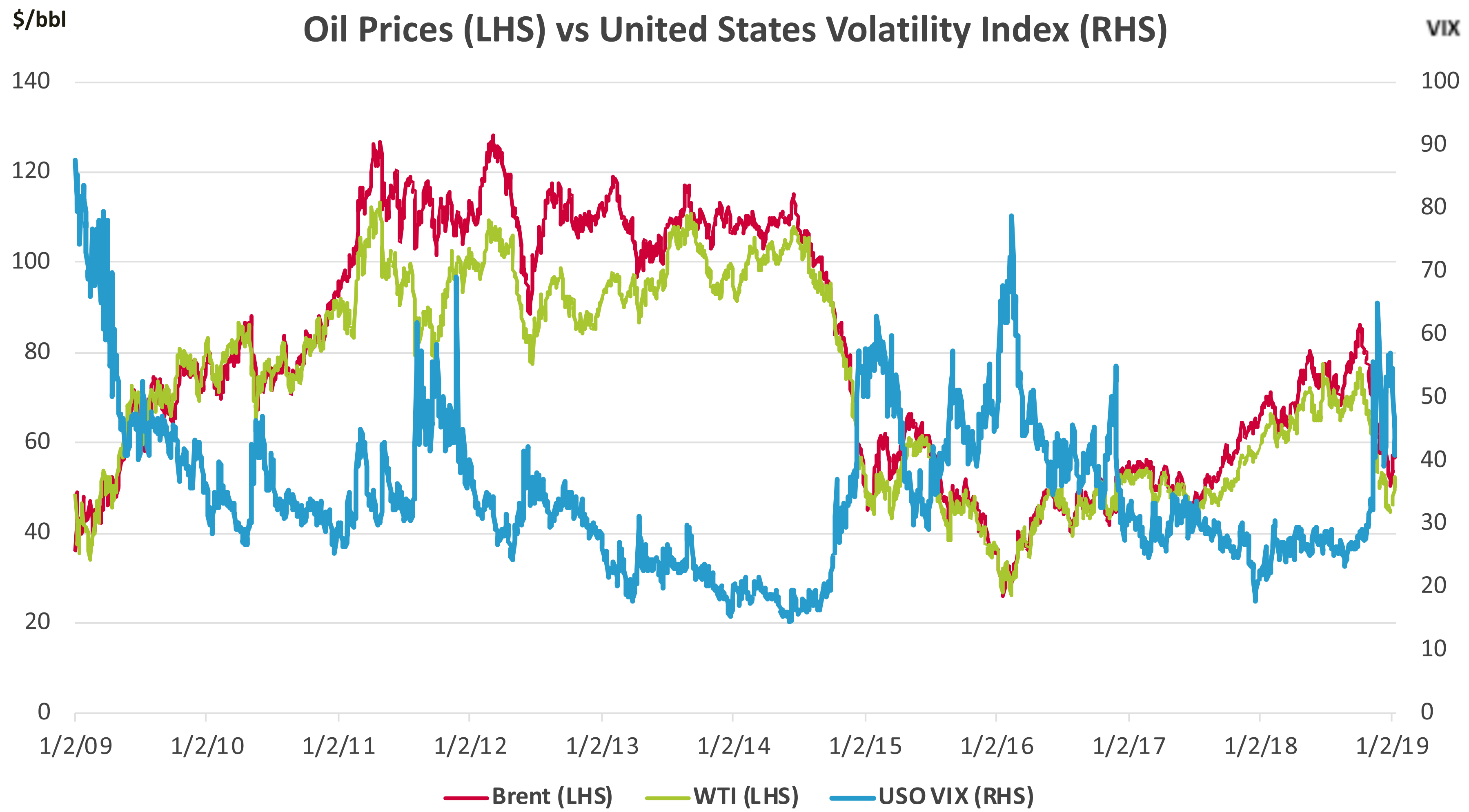
Between unconventional production surges and OPEC+ agreements



Data Source: CBOE 2019

Volatility set to increase

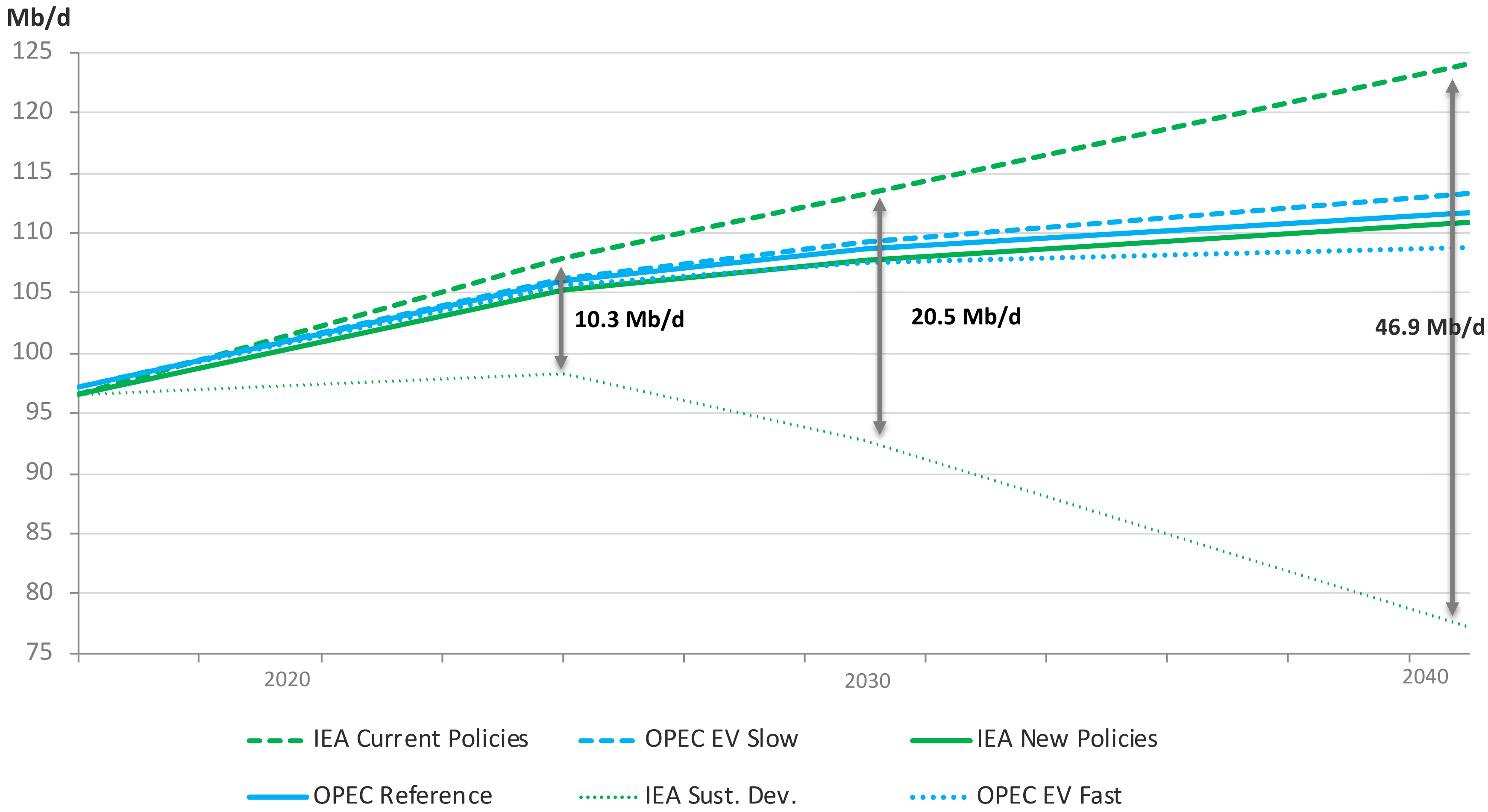
On shifting market fundamentals, transitions, and geopolitics



Data Source: CBOE 2019

Oil demand outlooks vary more sharply overtime

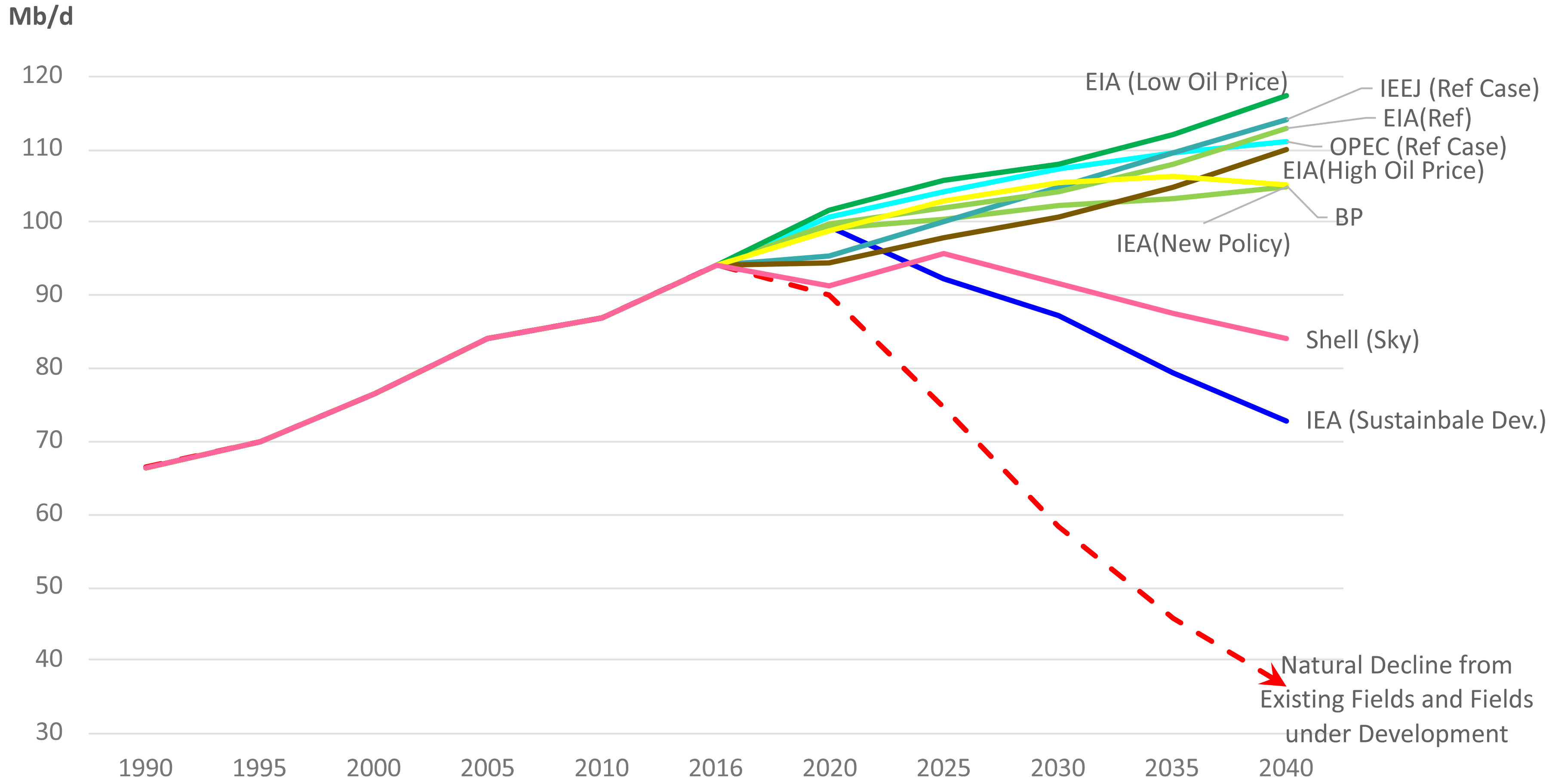
Growing uncertainty impacts upstream investment



IEF-RFF Based on IEA and OPEC 2018 data

Focus on change must factor in decline rates

Enhanced producer-consumer dialogue is needed to manage transitions



IEF-KAPSARC Based on IEA, OPEC, IEEJ, EIA, BP, Shell, and Rystad data

3 Key Questions

1. How can countries and regions achieve more secure sustainable and inclusive energy futures?

2. What policy and market initiatives must be leveraged to respond to the challenges that population growth, urbanization and climate change impose?

3. Where can different energy policy and technology pathways reinforce each other to optimise synergies and enhance cohesion?

2019/20 Key Dialogue Meetings

1. **3rd IEF-EU Energy Day on Renewable Deployment in GCC and beyond**
   26 February 2019 | Riyadh

2. **9th IEA-IEF-OPEC Symposium on Energy Outlooks**
   27 February 2019 | Riyadh

3. **5th IEF-KAPSARC Thought Leaders' on Competitive and Sustainable Energy Supply**
   28 February 2019 | Riyadh

4. **3rd IEA-IEF-OPEC Technical Workshop on Physical and Financial Energy Markets**
   28 March 2019 | Vienna

5. **4th IEF – OFID Symposium on Energy Poverty (in the JODI Framework)**
   7-8 May 2019 | South Africa

6. **8th Asian Ministerial Energy Roundtable**
   9-10 September 2019 | Abu Dhabi

7. **17th International Energy Forum Ministerial**
   3rd Quarter 2020 | China

8. **7th IEF-IGU Gas Ministerial Forum**
   4th Quarter 2020

2019/20 Key JODI Meetings

1. **JODI Capacity Building Workshop**
   7-8 May | South Africa, 1Q19

2. **JODI Information Seminar and Workshop for the Asia Region**
   11-13 June 2019 | Tokyo

3. **JODI Workshop for the Latin American Region**
   3rd Quarter 2019

4. **14th JODI International Conference**
   4th Quarter 2019 | Egypt

5. **JODI Information Seminar as part of the GECF Summit**
   4th Quarter 2019

6. **7th JODI Head of Organisations Meeting and JODI Seminar**
   3rd Quarter 2020 | China

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