"The Importance of Hydrocarbons in the Global Economy – Fundamentals of the International Oil Market"

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School of Economics, Business & International Studies
University of Piraeus

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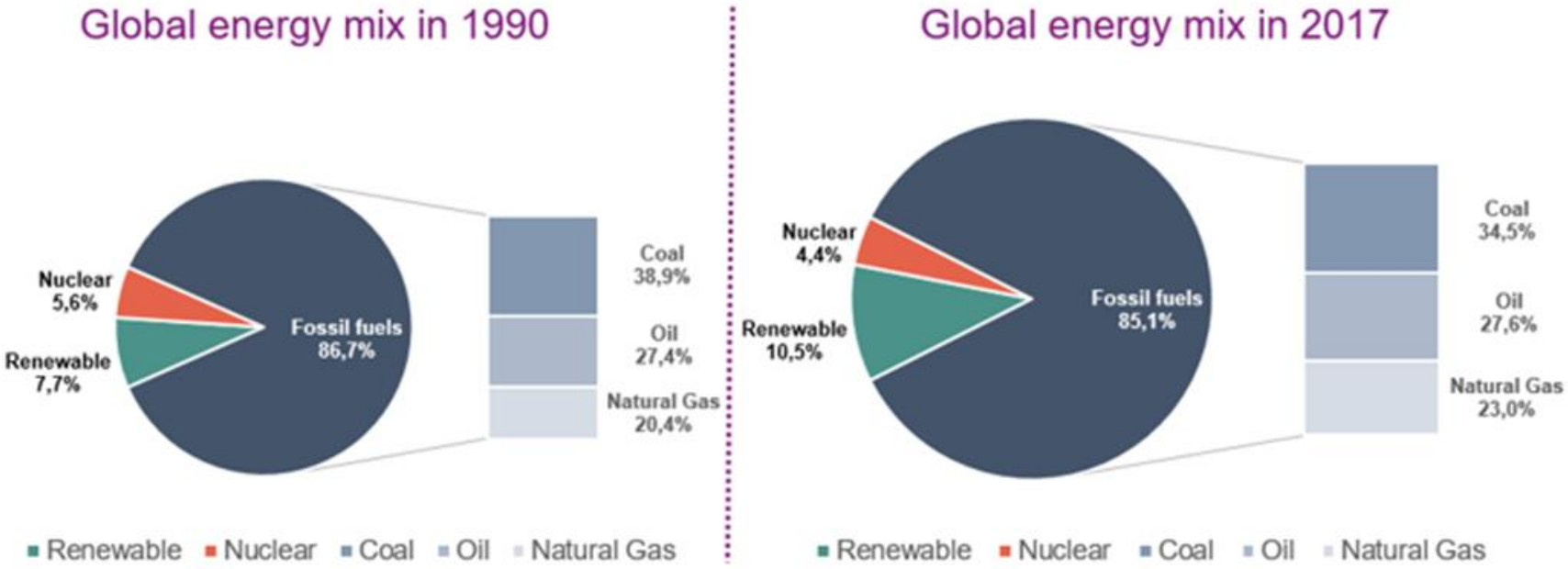
INSTITUTE OF ENERGY
FOR SOUTH EAST EUROPE

Oil: The Fateful Dependence

Lecture Outline

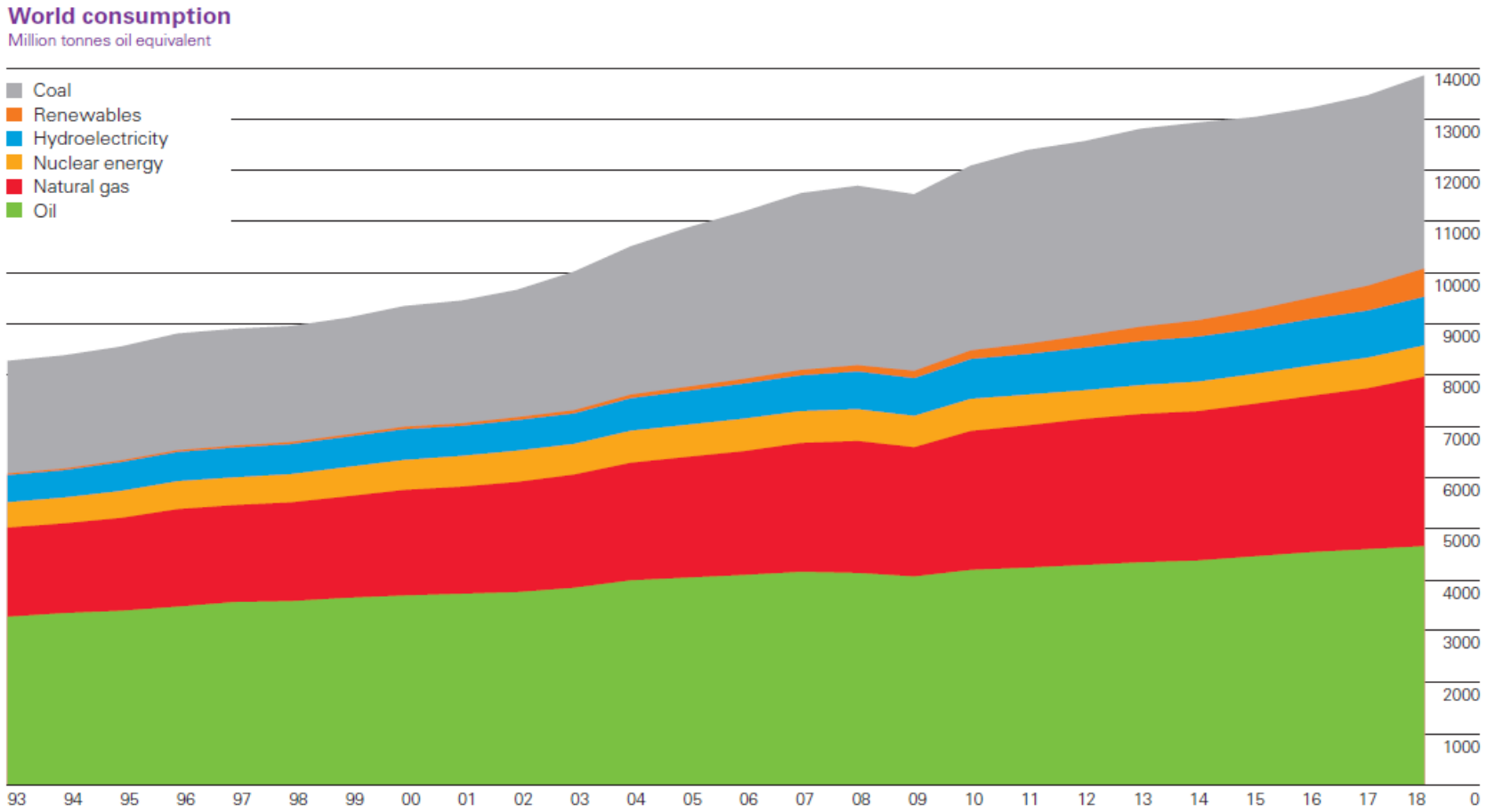
1. The Global Economy and the Geography of Hydrocarbons
2. Economic Growth and the Role of Oil
3. The Global Energy Mix
4. Historical Background – Ancient Roots
5. Pennsylvania and Baku
6. Russian Oil and the Birth of Shell
7. Persia and the Birth of BP
8. Winston Churchill Promotes Oil in Modern Warfare and His Security Axiom
9. Mr. 5% and the Birth of Iraq
10. The Seven Sisters
11. OPEC: The Oil Cartel
12. The Oil Crises of 1973, 1979 and the Price of Oil
13. Demand and Supply in the Global Oil Market
14. Factors Contibuting to Demand
15. Oil Transportation, Storage and Refining
16. Oil Production Within OPEC and Outside OPEC
17. The Pivotal Role of OPEC and Saudi Arabia in Particular
18. The Role of International Oil Companies (IOC's) and of National Oil Companies (NOC's)
19. Oil Price Formation
20. Oil and Gas: A Parallel Path
21. Changes in the Global Energy Mix and Contributing Factors
22. Towards Energy Transition
23. Hydrocarbons in Greece

The Evolution of the Global Energy Mix (1990 and 2017)



Sources: Edmond de Rothschild Financial Group, IEA

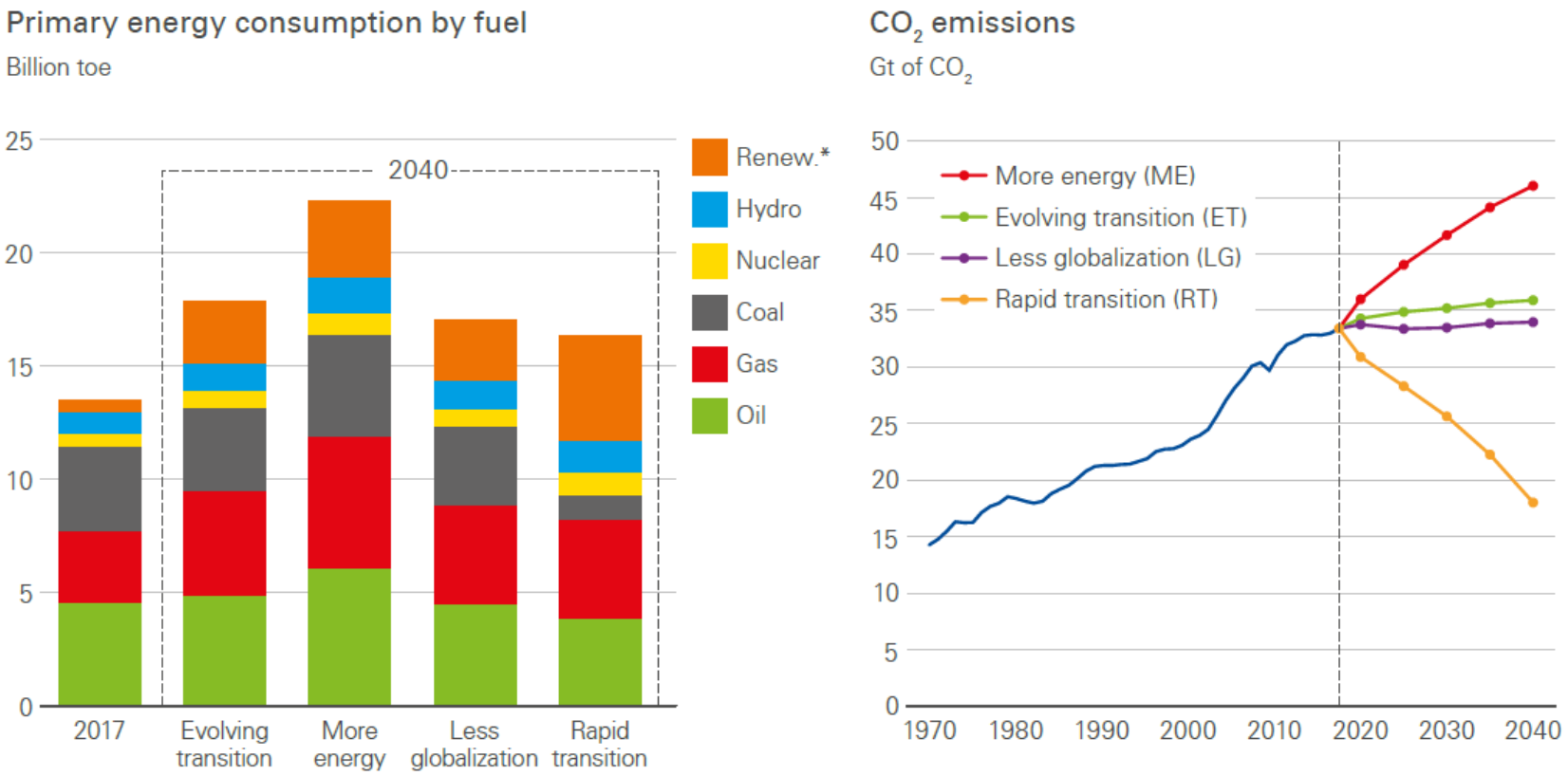
Global Energy Consumption (1993-2018)



Global energy consumption increased by 2.9% in 2018. Growth was the strongest since 2010 and almost double the 10-year average. The demand for all fuels increased but growth was particularly strong in the case of gas (168 mtoe, accounting for 43% of the global increase) and renewables (71 mtoe, 18% of the global increase). In the OECD, energy demand increased by 82 mtoe on the back of strong gas demand growth (70 mtoe). In the non-OECD, energy demand growth (308 mtoe) was more evenly distributed with gas (98 mtoe), coal (85 mtoe) and oil (47 mtoe) accounting for most of the growth.

Source: BP Statistical Review of World Energy 2019

Primary Energy Consumption by Fuel and CO_2 Emissions



*Renewables includes wind, solar, geothermal, biomass, and biofuels. For full list of data definitions see p138

Source: BP Energy Outlook 2019

Why Oil Matters?

i. Oil will continue to be a prime fuel over the next 30-40 years

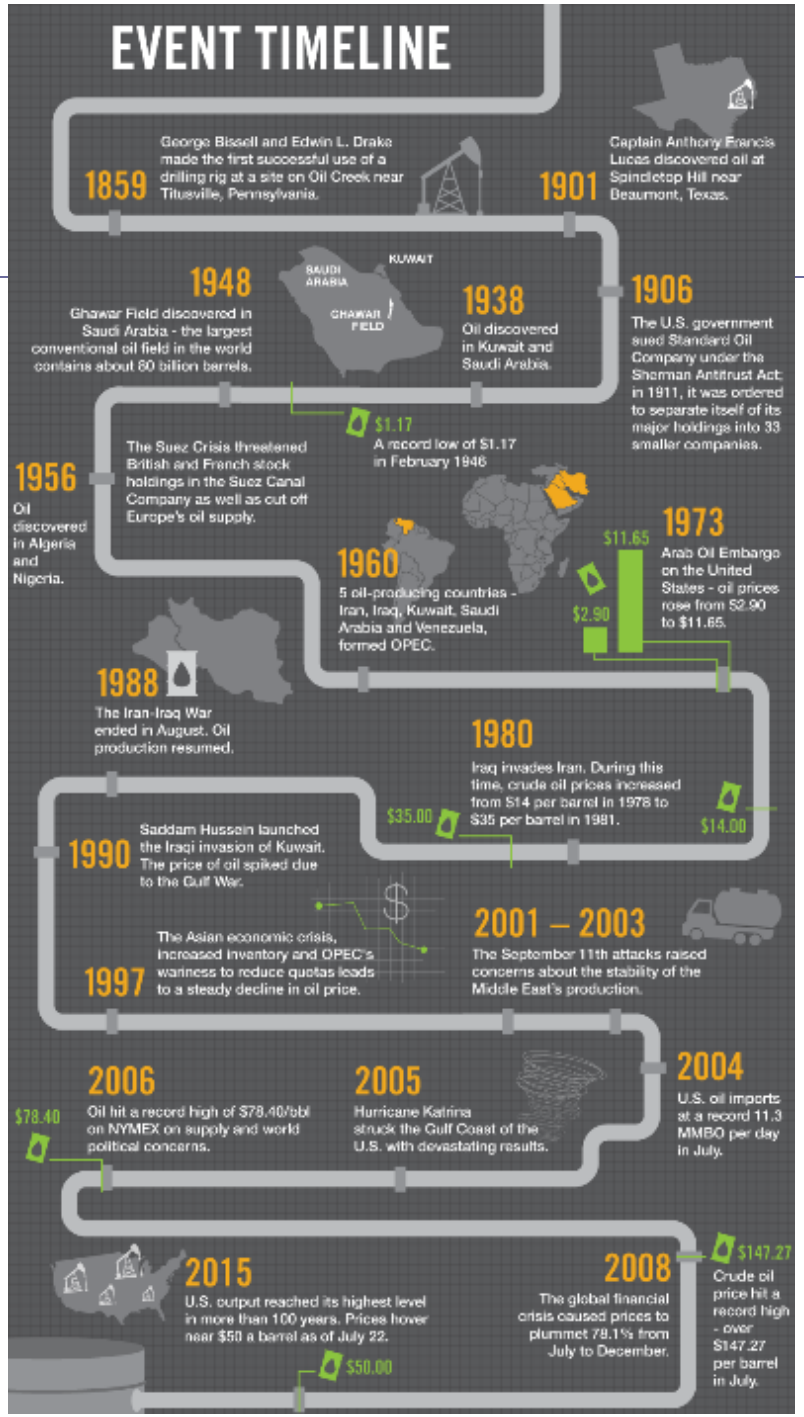
ii. Oil will continue to be a key economic parameter which affects global economic developments

iii. Oil prices affect cost of natural gas, petrochemicals, food (through fertilizers and pesticides) the automotive industry and transportation in general

iv. Oil prices today affect a lot less certain important economic parameters such as inflation and wage indexation

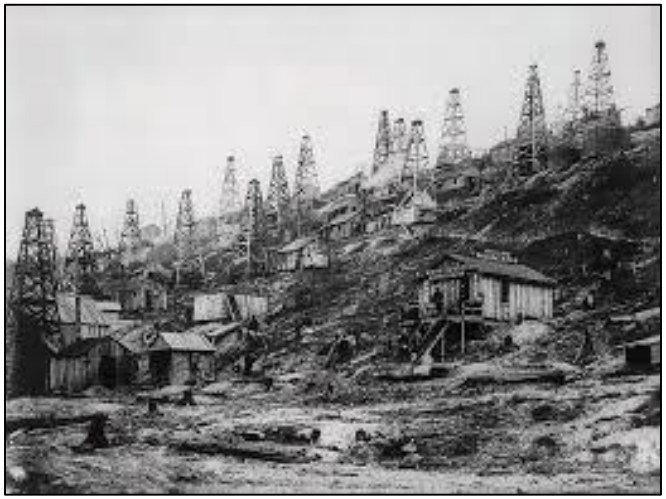
v. Oil prices are part of mechanism for the massive transfer of funds from consumer to producing countries and hence to global financial imbalances.

Historical Background – Ancient Roots



Pennsylvania and Baku

Pennsylvania

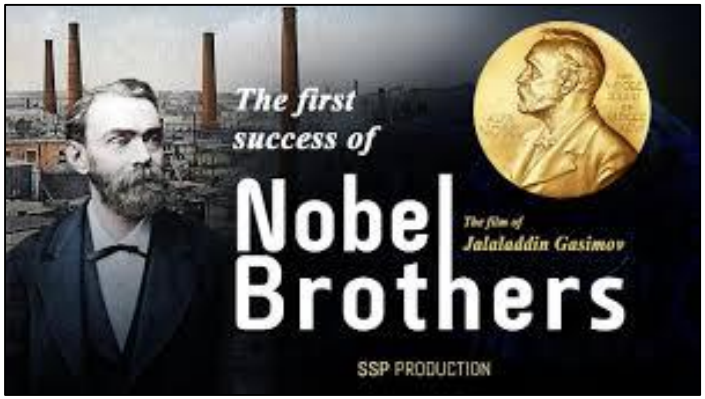


Baku

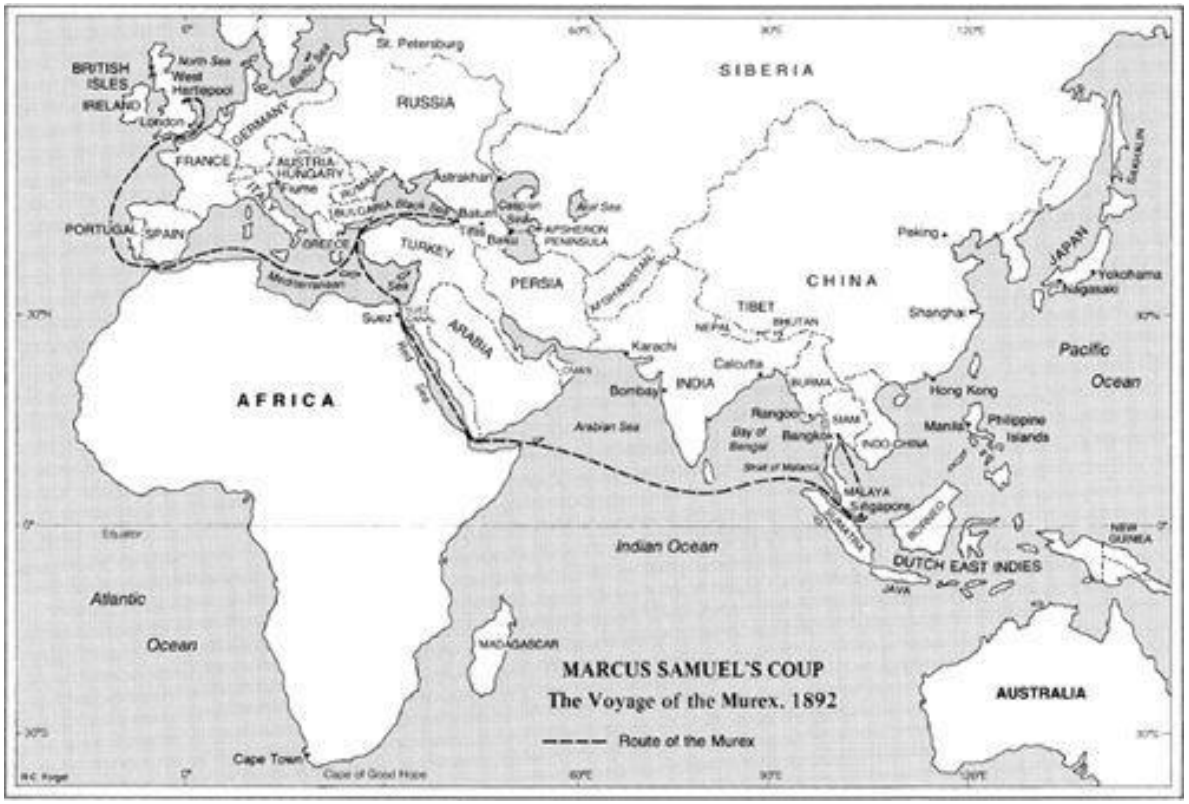
Russian Oil and the Birth of Shell (I)

Russian Oil

Shell



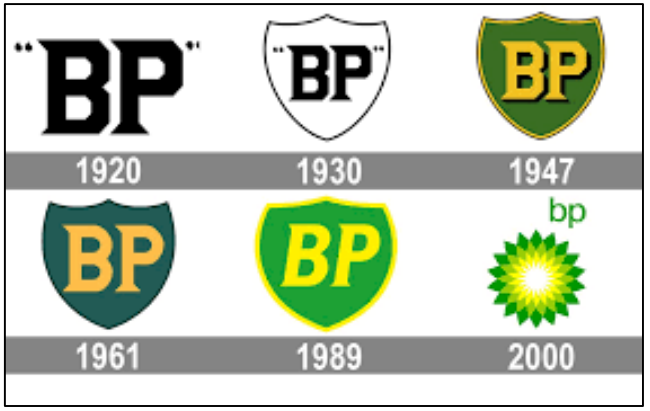
Russian Oil and the Birth of Shell (II)

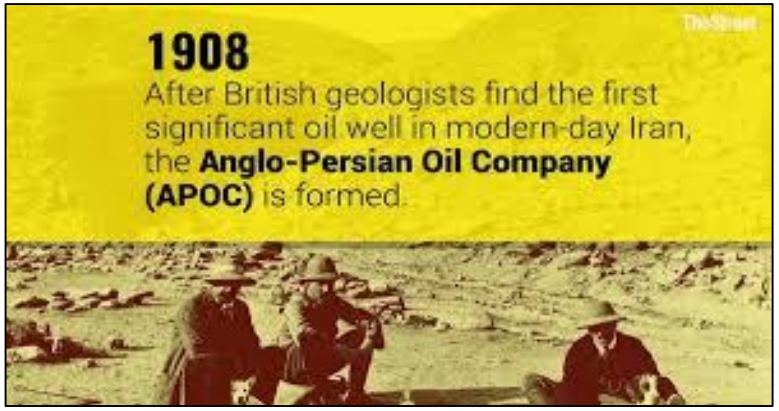


Persia and the Birth of BP (I)

Persian Oil

BP



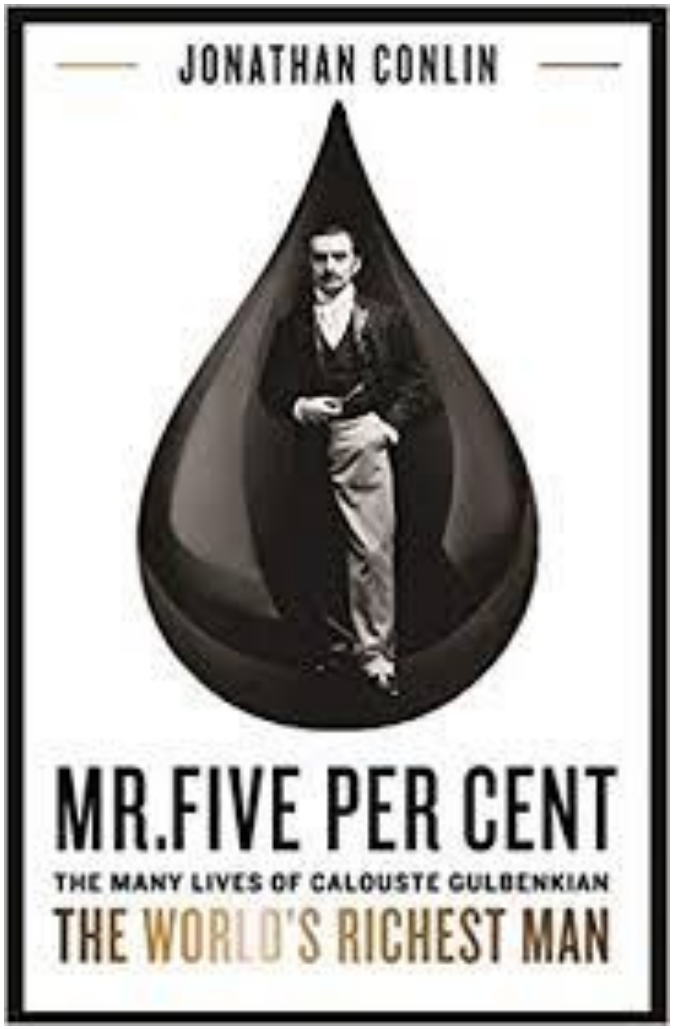


Persia and the Birth of BP (II)

Winston Churchill and His Security Axiom

- On July 17, 1913, Churchill, in a statement to Parliament that the Times of London described as an authoritative presentation on the national interest in oil, took the idea one step further. “If we cannot get oil,” he warned, “we cannot get corn, we cannot get cotton and we cannot get a thousand and one commodities necessary for the preservation of the economic energies of Great Britain.”
- In order to assure dependable supplies at reasonable prices – because the “open market is becoming an open mockery” – the Admiralty should become “the owners or, at any rate, the controllers and the source” of a substantial part of the oil it required. It would begin by building up reserves, then develop the ability to deal in the market. The Admiralty should also be able “to retort, refine … or distil crude oil” – disposing of surplus as need be. There was no reason to “shrink from making this further extension of the vast and various business of the Admiralty.” Churchill added, “On no one quality, no one process, on no one country, on no one route and no one field must we be dependent. Safety and certainty in oil lie in variety and variety alone.”

Mr. 5% and the Birth of Iraq

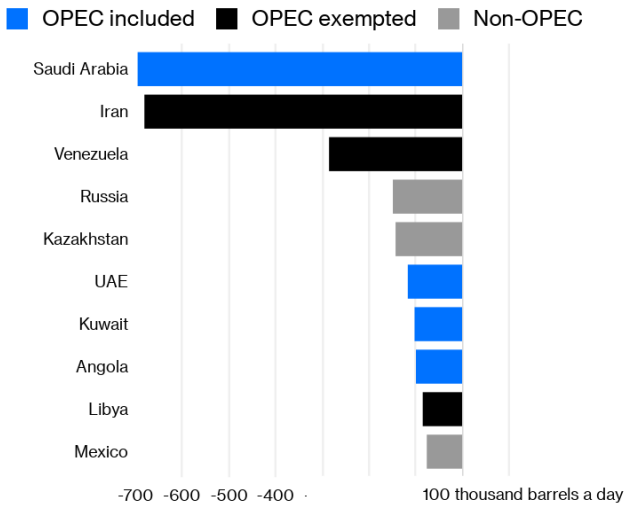


TÜRKİYE PETROLLERİ ANONİM ORTAKLIĞI
TURKISH PETROLEUM CORPORATION

Red Line Agreement

The Seven Sisters

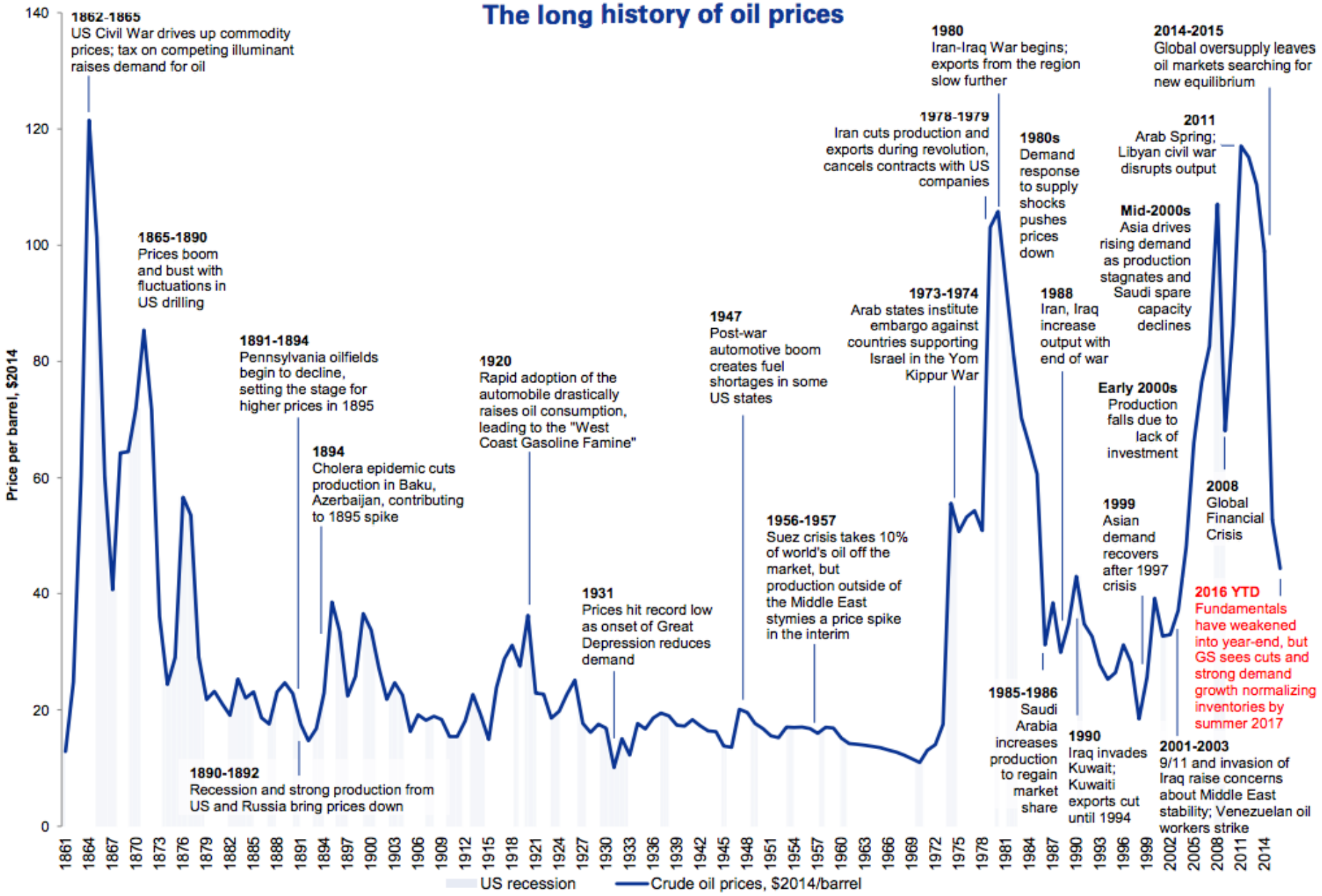
OPEC – The Oil Cartel



Note: Average oil-supply cuts, January-May 2019. Data for OPEC exempted calculated versus October 2018 supply.
Source: International Energy Agency, Bloomberg Opinion analysis

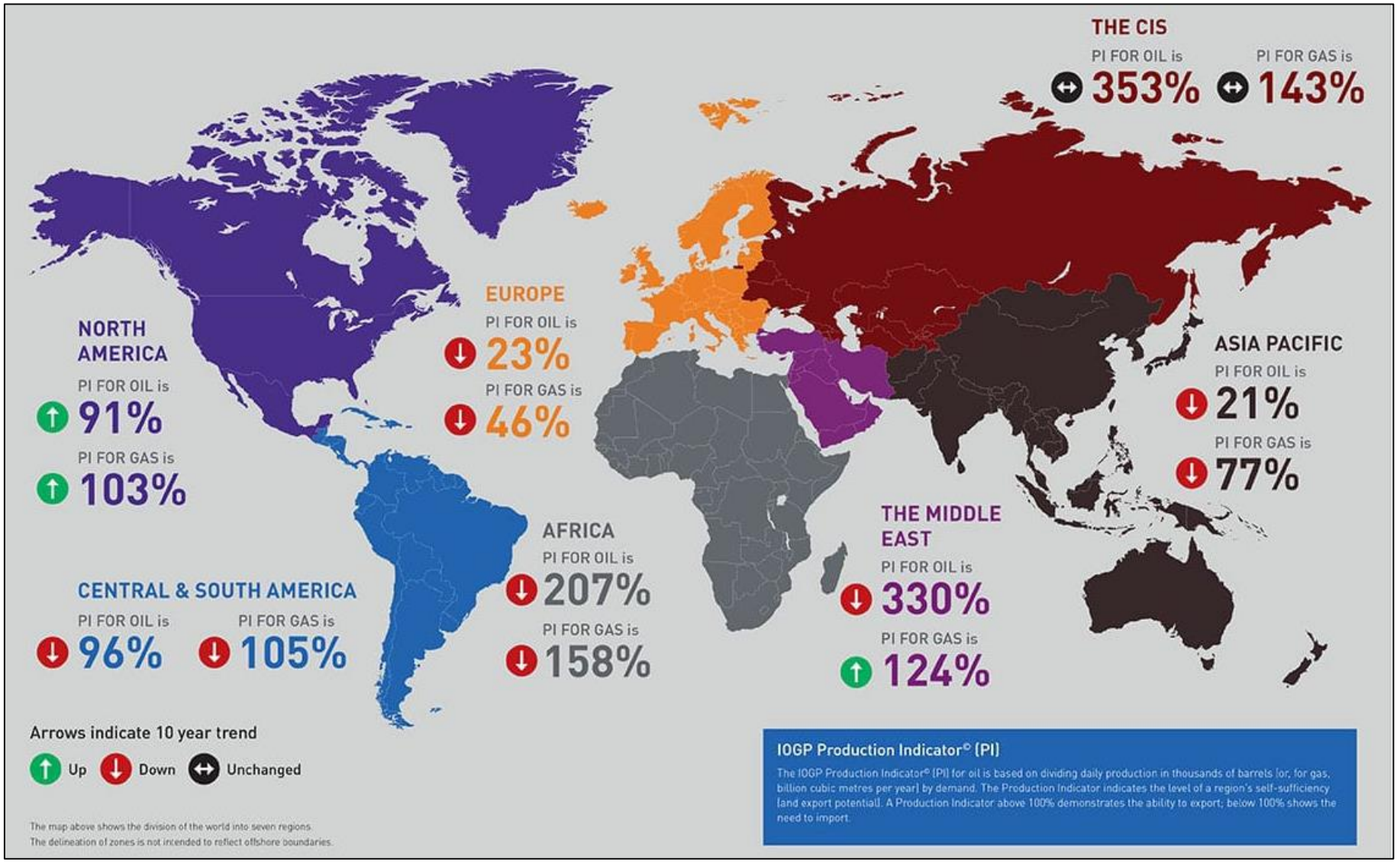
BloombergOpinion

The long history of oil prices



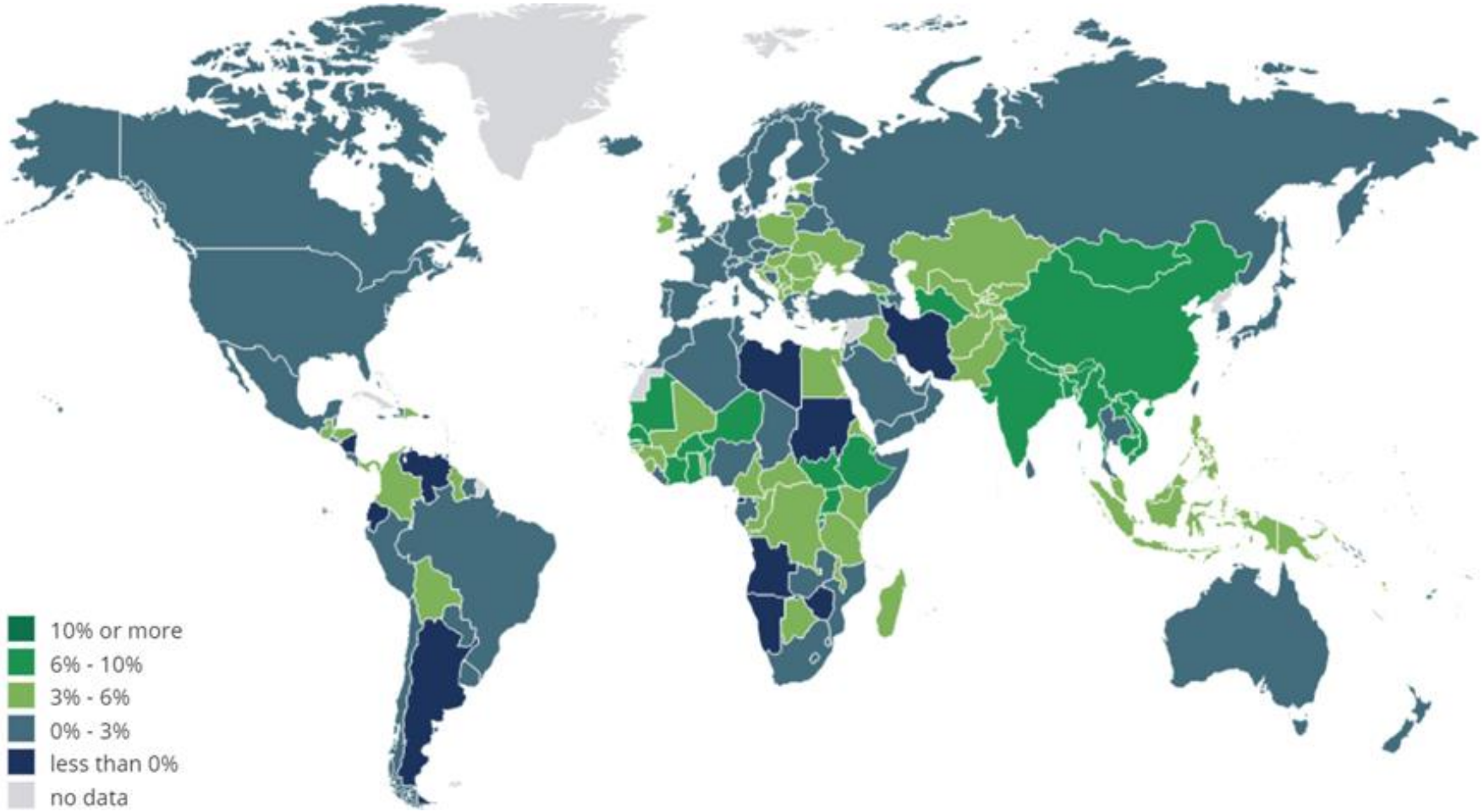
An earlier version of this chart appeared on pg. 16 of Top of Mind Issue #52: OPEC and Oil Opportunities.
Note: 2016 price shown is YTD average as of Dec. 19, 2016.
Source for data: BP, NBER/Federal Reserve Bank of St. Louis, Haver Analytics.
Source for annotations: ©James Hamilton, "Historical Oil Shocks," University of California, San Diego, February 2011; various news sources; Goldman Sachs Global Investment Research.

Oil and Gas Production Indicator Map 2019



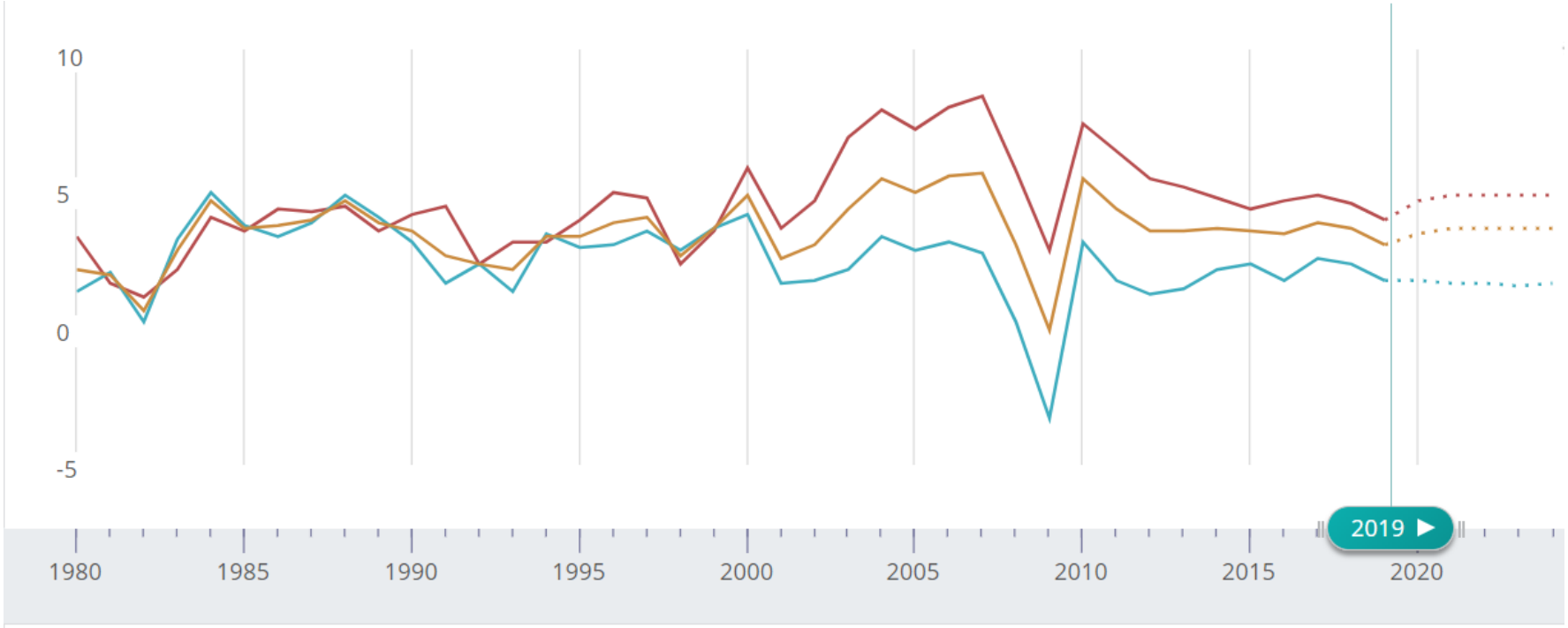
Source: International Association of Oil and Gas Producers

Real GDP Growth (Annual % Change) (I)



Source: IMF World Economic Outlook (October 2019)

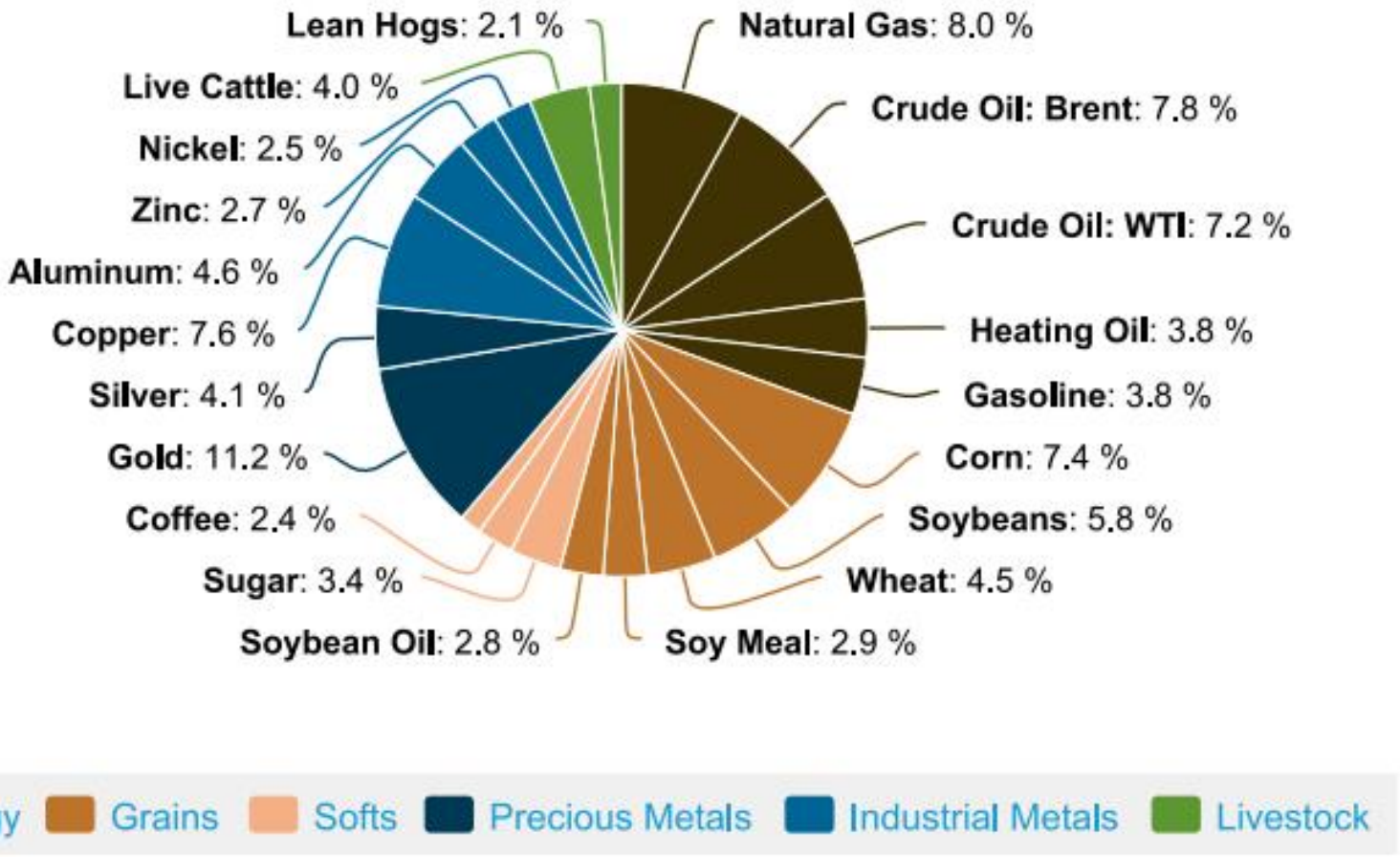
Real GDP Growth (Annual % Change) (II)



Emerging market and developing economies	all indicators	3.9
Advanced economies	all indicators	1.7
World	all indicators	3

Source: IMF World Economic Outlook (October 2019)

Crude Oil Plays A Major Role In Commodity Investment



Source: Bloomberg

The Role of IOCs, NOCs and OFSCs

International Oil Companies (IOCs)

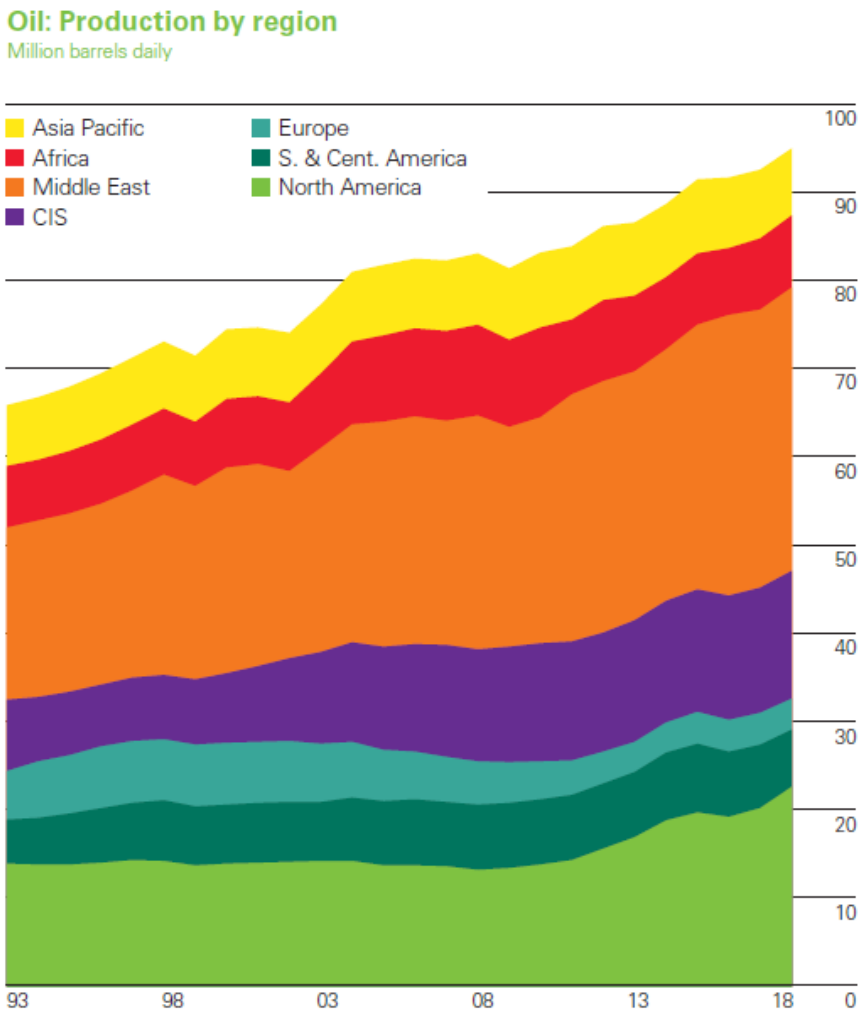
- ✓ The competitive advantage of the IOCs has been traditionally based on their great experience in the sector, on great investor muscle and on advanced technological development. However, forty years ago the IOCs had access to over 85% of the global reserves and they negotiated almost lifelong concessions with the governments of producer countries.
- ✓ Nowadays, the IOCs have access to only 14% of the proven global reserves and they are finding increasing difficulties in acquiring new oil and natural gas reserves.

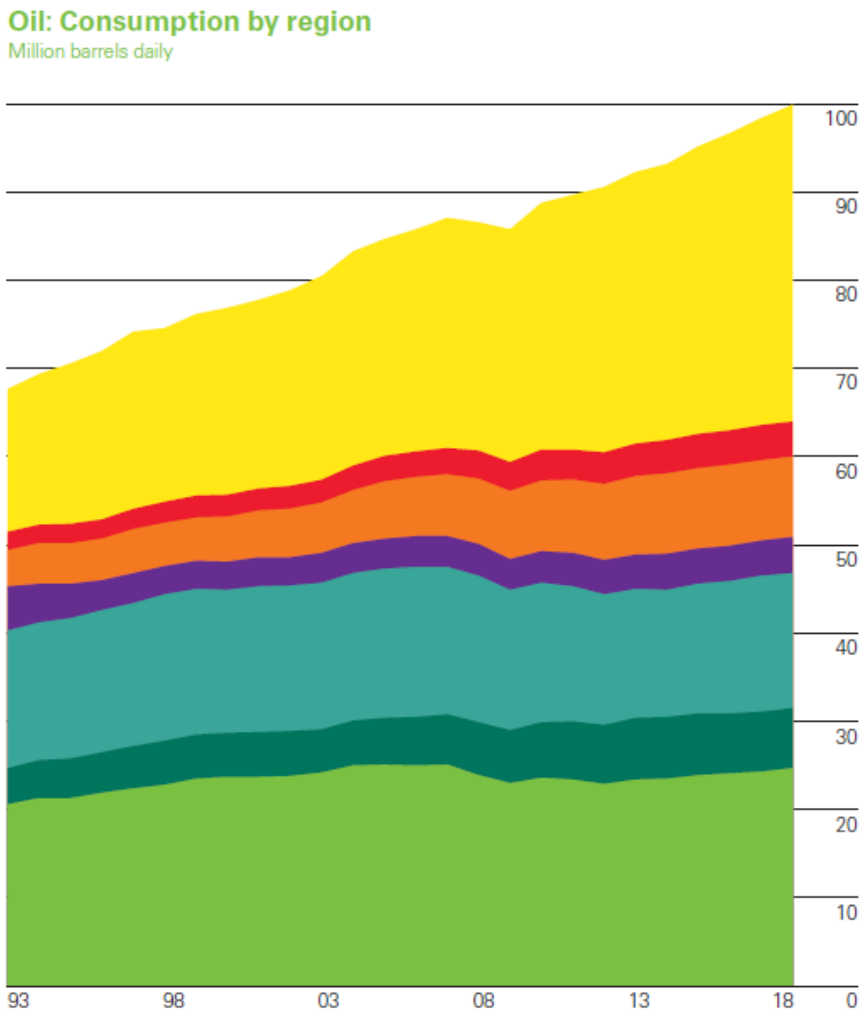
National Oil Companies (NOCs)

- ✓ The NOCs have developed sufficient financing capacity in order to expand their business in the domestic and international markets, but what is important is not to overlook the fact that both the IOCs and the NOCs are facing a common challenge of great dimensions. This challenge is the growing demand from emerging countries, a new environment that affects two-thirds of the world's population.

- ❖ IOCs have tended to focus on **more challenging and less profitable domains**, shale gas, unconventional oil, and deep-water operations. **Oil-field Services Companies (OFSCs)** have been offering NOCs more services and specialized operations with high technical experience at a lower cost than IOCs offer. As these trends continue, IOCs are likely to adopt a new business model that may require changes in collaborative efforts and cooperative relationships. Partnering with IOCs and OFSCs is a good step for NOCs that undertake a globalization strategy.

Global Oil Production and Consumption By Region (1993-2018)





Source: BP Statistical Review of World Energy 2019

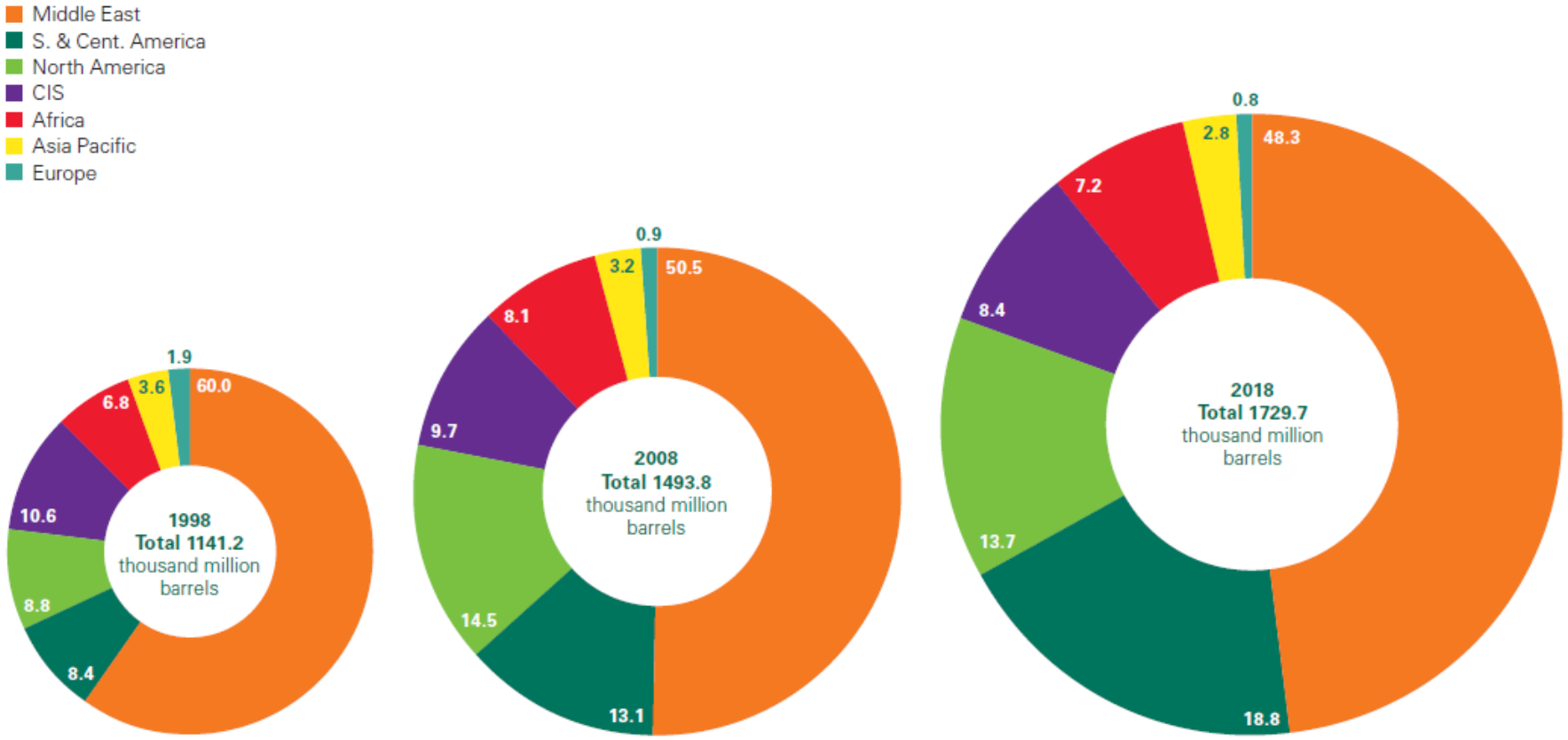
Global Oil Demand (2018-2020)

Global Oil Demand (2018-2020) (million barrels per day)*	1Q18	2Q18	3Q18	4Q18	2018	1Q19	2Q19	3Q19	4Q19	2019	1Q20	2Q20	3Q20	4Q20	2020
Africa	4.3	4.2	4.1	4.3	4.2	4.3	4.3	4.2	4.3	4.3	4.4	4.4	4.2	4.4	4.3
Americas	31.6	31.7	32.3	32.0	31.9	31.6	31.7	32.3	32.4	32.0	31.6	31.9	32.7	32.6	32.2
Asia/Pacific	35.4	35.0	34.6	35.3	35.1	35.9	35.5	35.3	36.5	35.8	36.7	36.4	36.1	37.4	36.7
Europe	14.8	14.9	15.4	14.9	15.0	14.7	14.8	15.4	15.0	15.0	14.7	15.0	15.4	15.2	15.1
FSU	4.5	4.6	4.9	4.8	4.7	4.6	4.8	5.0	5.0	4.8	4.7	4.8	5.1	5.0	4.9
Middle East	8.1	8.4	8.7	8.2	8.3	8.1	8.2	8.8	8.2	8.3	8.0	8.2	8.7	8.2	8.3
World	**98.7**	**98.9**	**100.0**	**99.5**	**99.3**	**99.3**	**99.4**	**100.9**	**101.4**	**100.2**	**100.1**	**100.8**	**102.3**	**102.8**	**101.5**
Annual Chg (%)	2.1	0.5	1.3	0.6	1.1	0.5	0.5	0.9	1.9	1.0	0.8	1.4	1.4	1.4	1.2
Annual Chg (mb/d)	2.0	0.5	1.3	0.6	1.1	0.5	0.5	0.9	1.9	1.0	0.8	1.4	1.4	1.4	1.2
Changes from last OMR (mb/d)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.4	0.0	0.0	0.1	0.0	-0.3	0.1	0.0

* Including biofuels

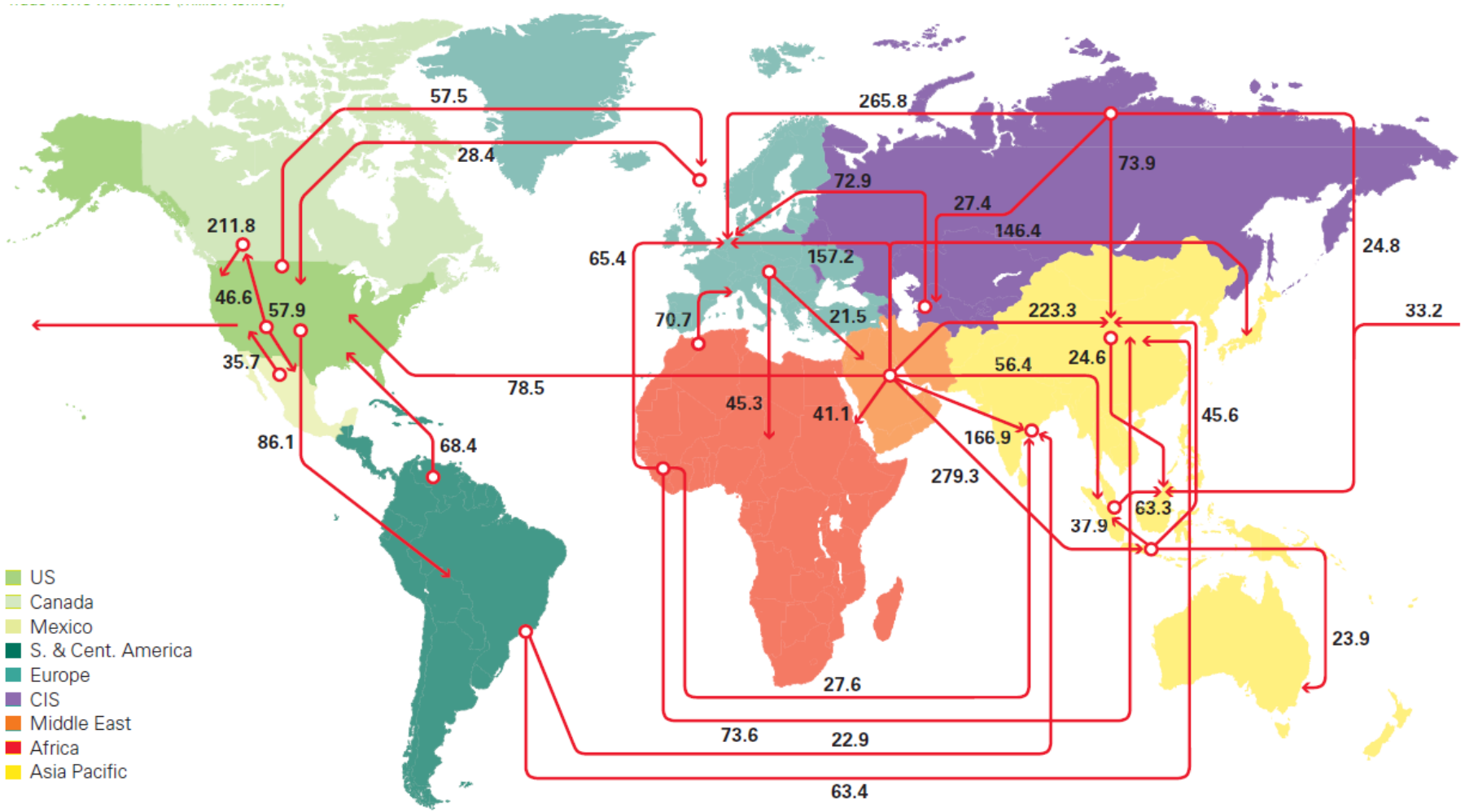
Source: IEA

Distribution of Oil Proved Reserves in 1998, 2008 and 2018 (In Percentage)



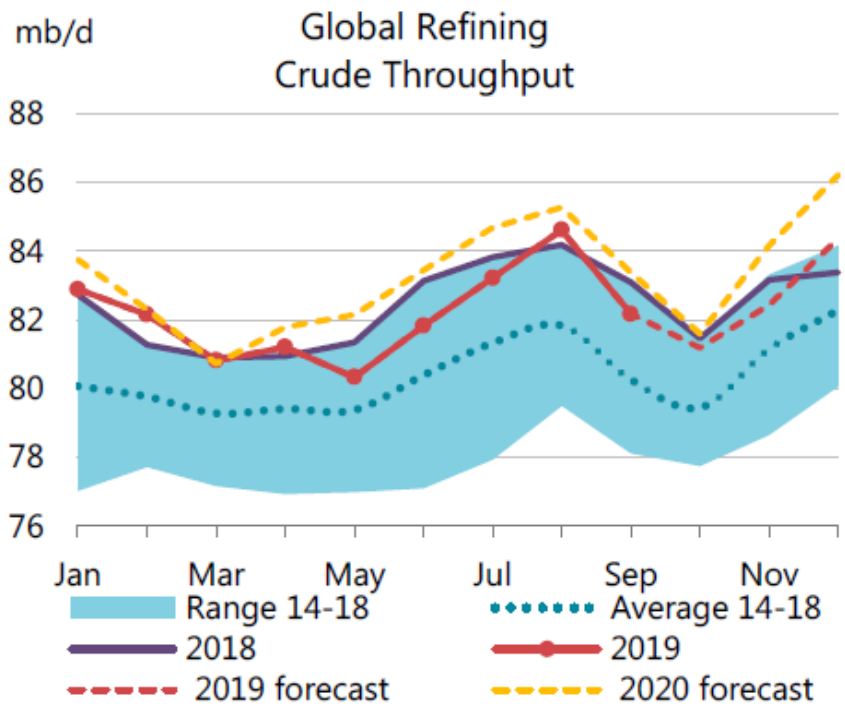
Source: BP Statistical Review of World Energy 2019

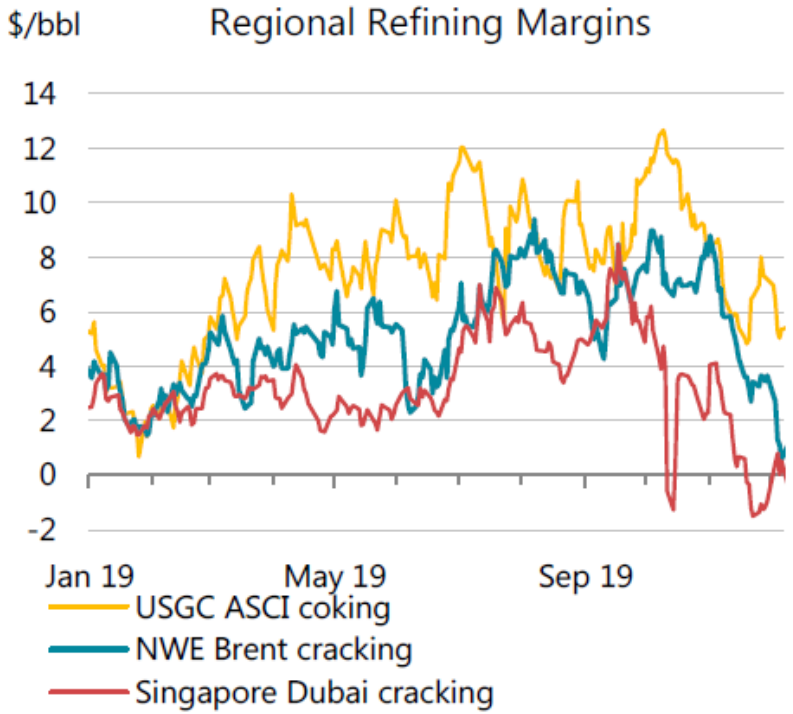
Major Oil Trade Movements 2018



Source: BP Statistical Review of World Energy 2019

Global Refining Throughput and Margins



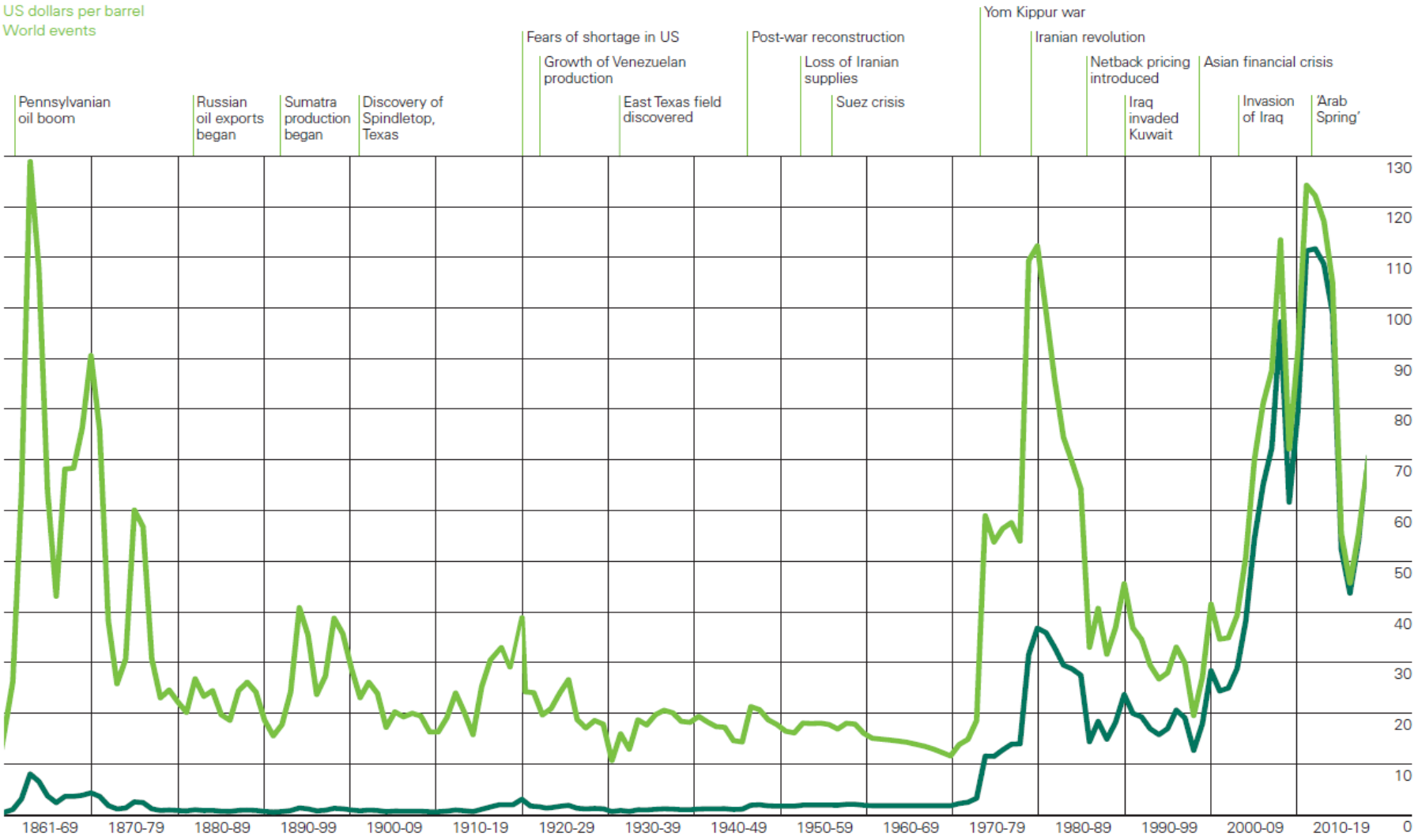


Source: IEA Oil Market Report (December 12, 2019)

Regional Refining Margins (USD/bbl)

Source: BP Statistical Review of World Energy 2019

Crude Oil Prices (1861-2018)



Source: BP Statistical Review of World Energy 2019

ICE Brent Crude Oil Futures (Five Years) (USD/bbl)

Source: The ICE, Financial Times

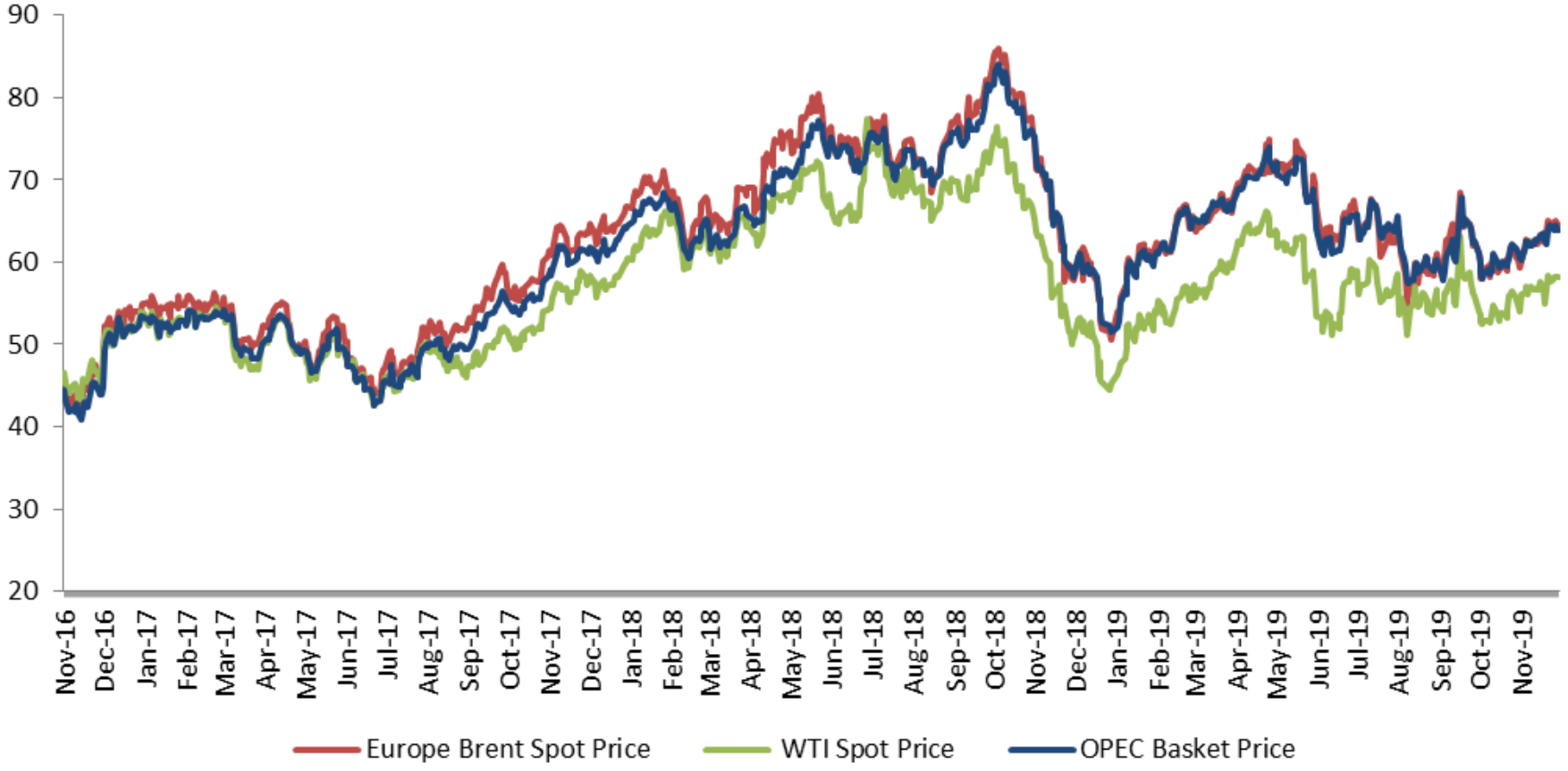
ICE Brent Crude Oil Futures (One Month) (USD/bbl)

Source: The ICE, Financial Times

ICE Brent Crude Oil Futures (One Week) (USD/bbl)

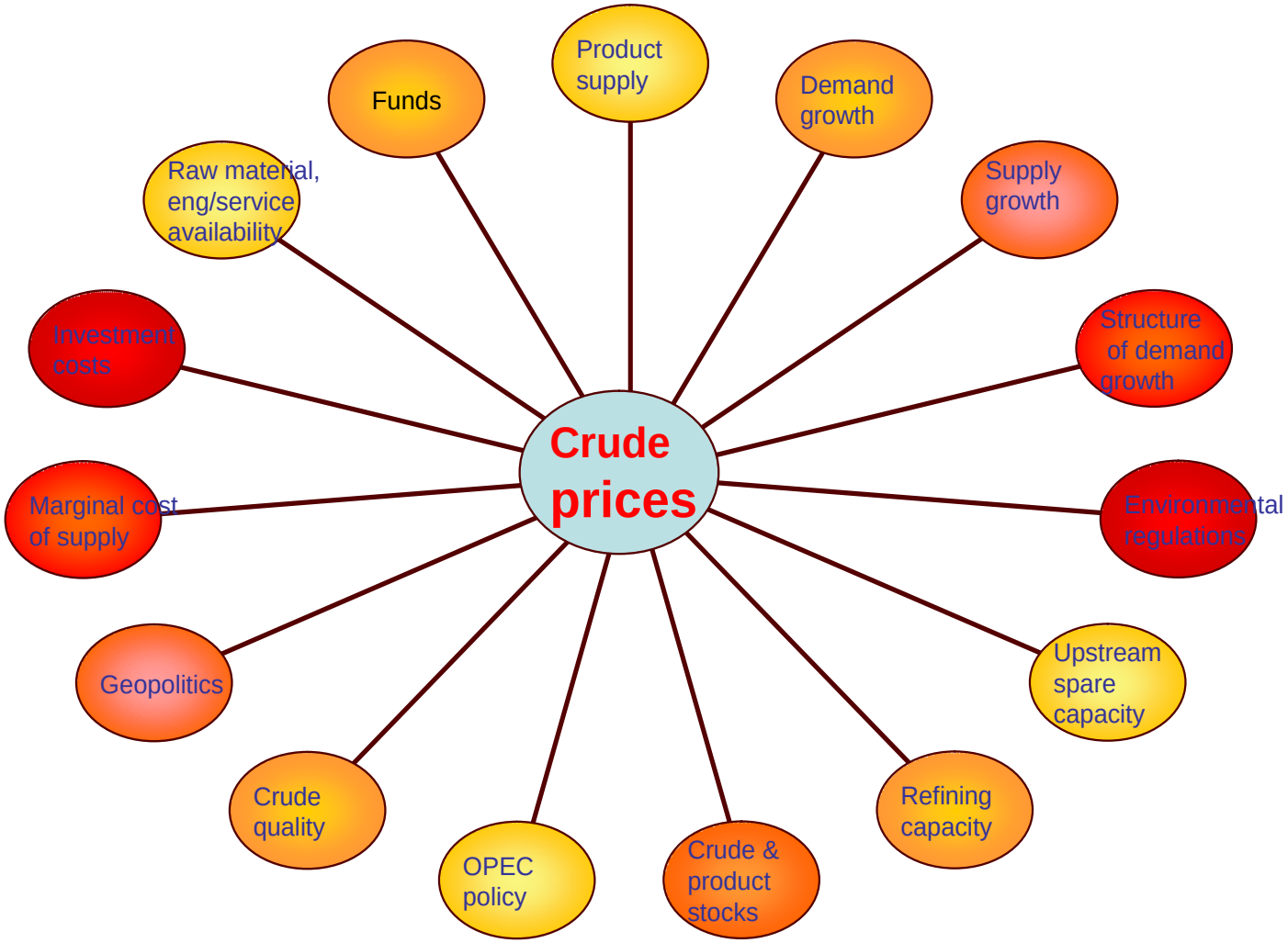
Source: The ICE, Financial Times

Crude Oil Price Movement, November 1, 2016 – November 29, 2019 (USD/barrel)



Source: US EIA, OPEC

Price Formation: No Single Driver (I)



Source: IEA

Price Formation: No Single Driver (II)

- OPEC's overall level of compliance with the quotas agreed in Vienna on the 30th of November 2016
- The scale of the inevitable leakage over time
- Whether the OPEC pact is extended in June this year
- The scale of the response of US shale production to higher crude oil prices
- The responsiveness of oil demand to higher oil prices, which also depends on the movement of the trade-weighted USD and global inflation
- The speed of global economic growth, which will be affected by possible headwinds associated with Brexit, the EU's difficulties, President Trump's policies and China's slowdown

Price Formation: No Single Driver (III)

Upward Pressures

- Reduction in OPEC oil supply
- Syria's civil war and spill over danger
- The effect of Arab Spring
- Resurgence of terrorist attacks against oil and gas installations
- Mounting fears of Israeli strike against Iranian nuclear facilities
- Fears of Gulf oil and gas supply disruptions
- Decline in US and global oil inventories
- Fears of disruption of Russian gas exports to Europe
- Weakening of US dollar relative to Euro
- Adverse weather pattern in northern hemisphere

Price Formation: No Single Driver (IV)

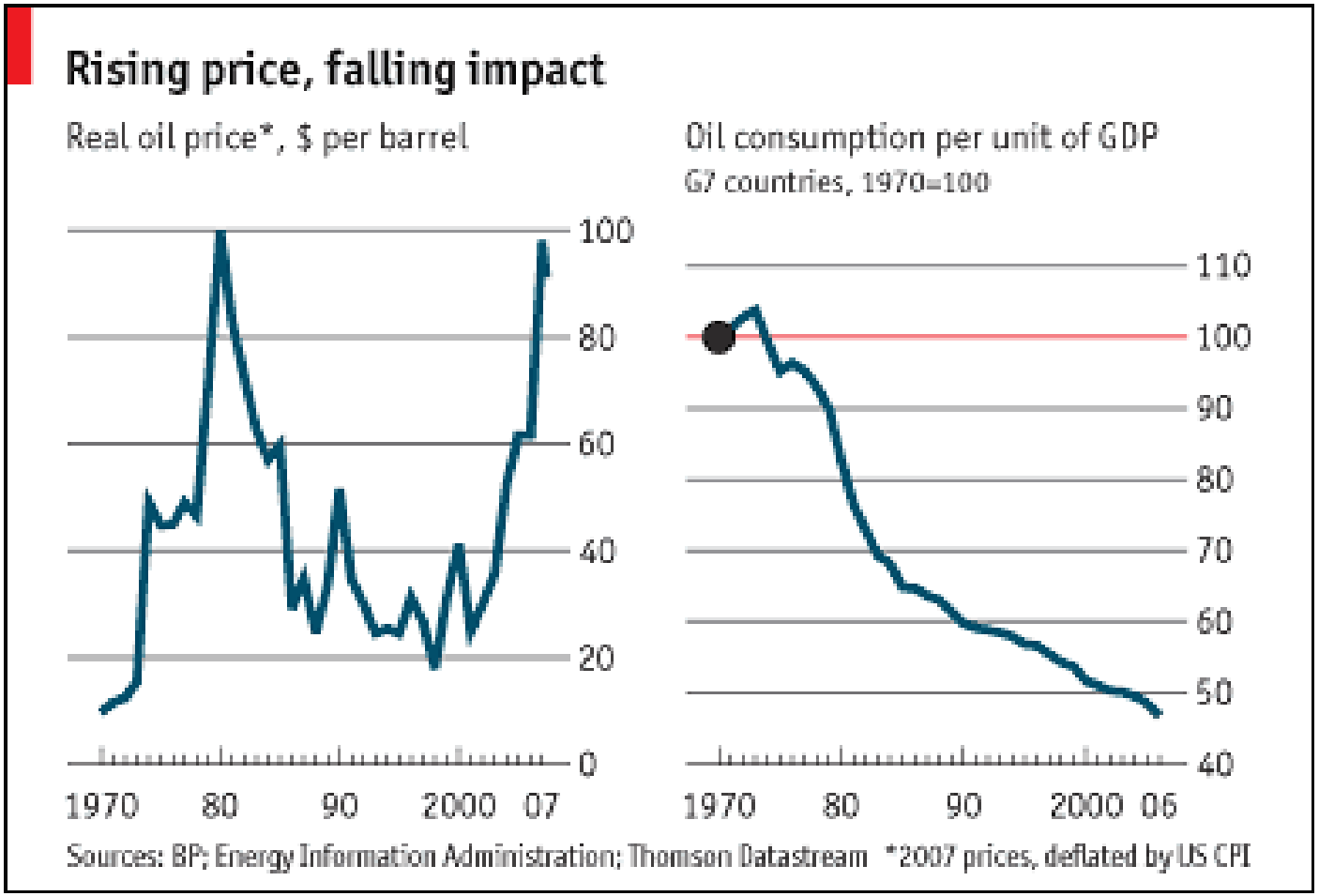
Downward Pressures

- Disappointing German manufacturing output
- Strengthening of Euro relative to US dollar
- Reduced estimates for global economic growth
- Increased US oil and gas production and possible new legislation by US congress allowing oil and gas exports
- Warm winter in northern hemisphere

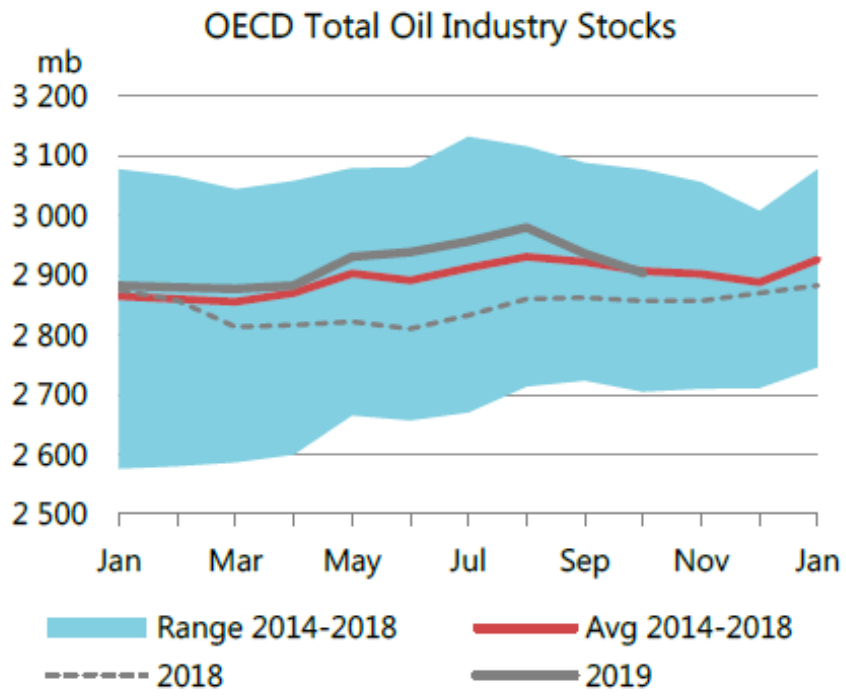
ICE Brent Crude Oil Futures (2009-2014) (USD/bbl)

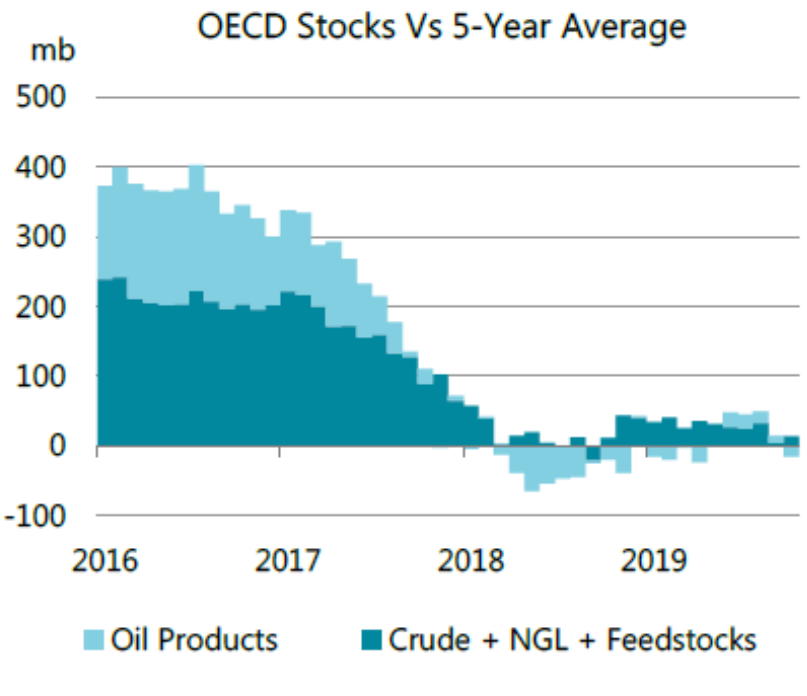
Source: The ICE, Financial Times

High Oil Prices, Falling Impact on Industry



OECD Total Oil Stocks





Source: IEA Oil Market Report (December 12, 2019)

The Role of International Oil Exchanges

- The role of the **international oil exchanges** in London and New York is crucial to the oil game. NYMEX in New York and the ICE Futures in London today control global benchmark oil prices which in turn set most of the freely traded oil cargo. They do so via oil futures contracts on two grades of crude oil—West Texas Intermediate and North Sea Brent.

- A third rather new oil exchange, the Dubai Mercantile Exchange (DME), trading Dubai crude, is more or less a daughter of Nymex, with Nymex President, James Newsome, sitting on the board of DME and most key personnel British or American citizens.

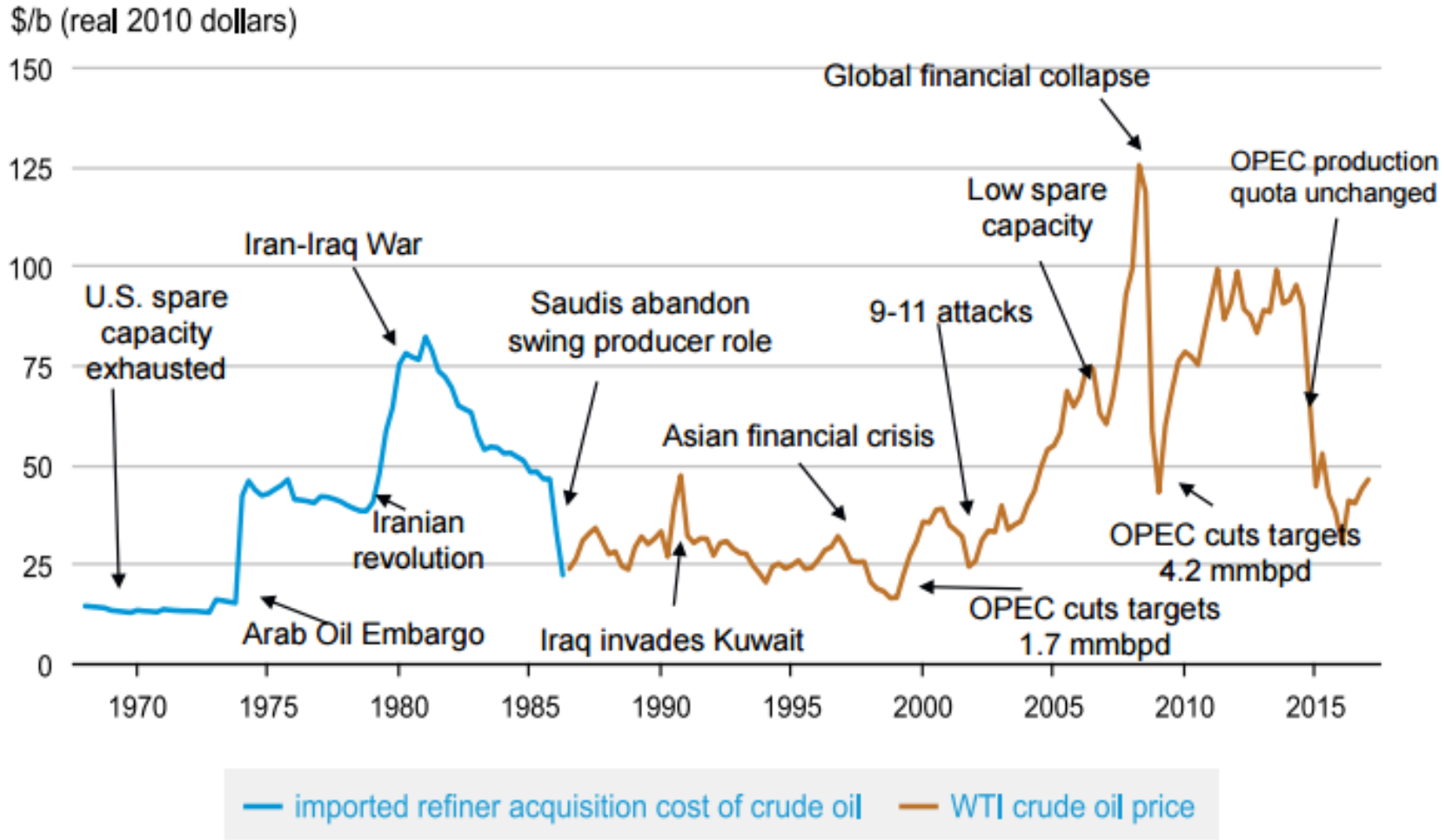
- Brent is used in spot and long-term contracts to value as much of crude oil produced in global oil markets each day. The Brent price is published by a private oil industry publication, Platt's. Major oil producers including Russia and Nigeria use Brent as a benchmark for pricing the crude they produce. Brent is a key crude blend for the European market and, to some extent, for Asia.

- WTI has historically been more of a US crude oil basket. Not only is it used as the basis for US-traded oil futures, but it's also a key benchmark for US production.

Natural Hazards

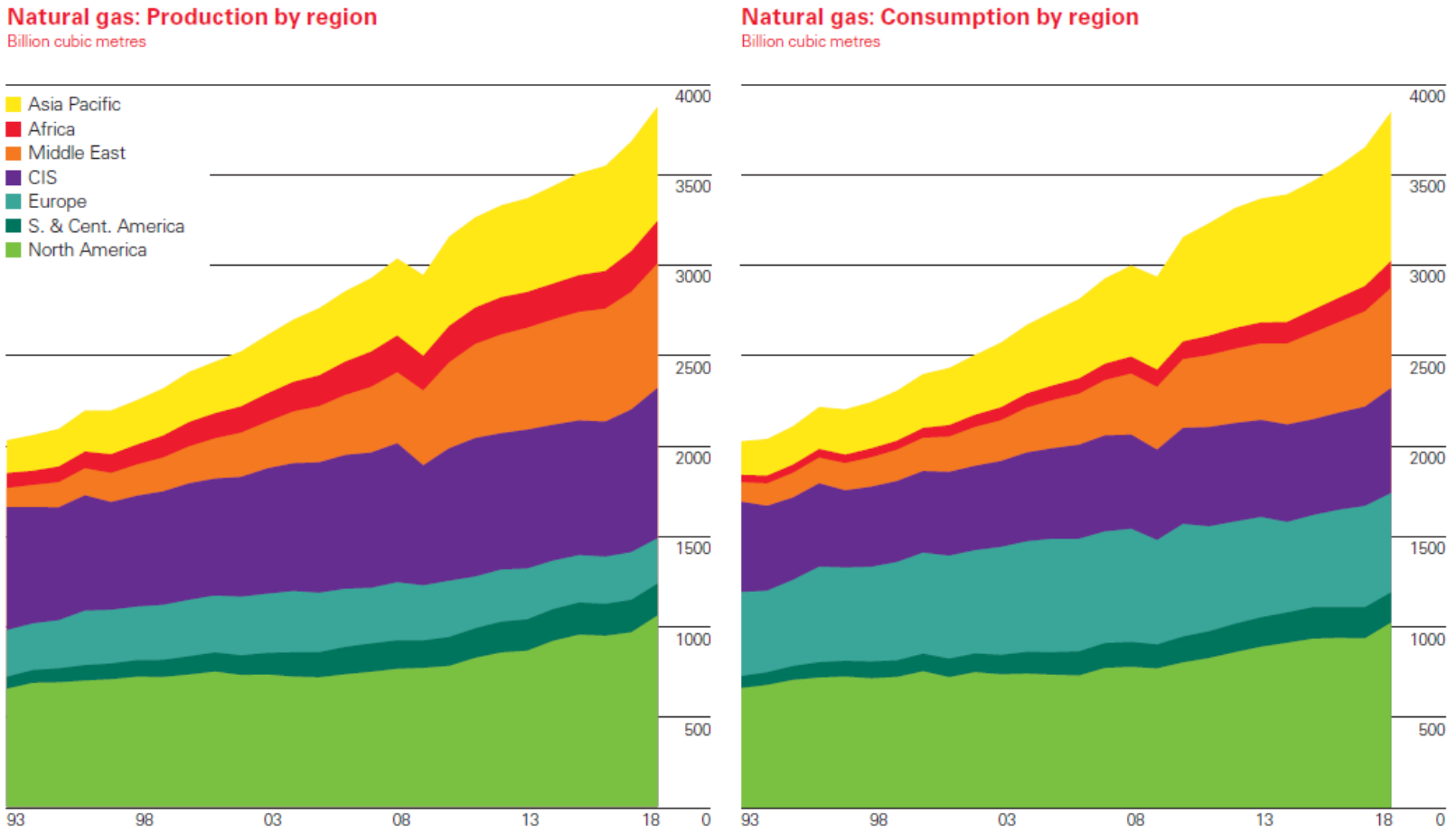
- **2005: Hurricane Katrina** caused severe damage to US refinery and production capacity in the Gulf of Mexico. Oil prices briefly spiked to above $70 per barrel before dropping after President Bush decided to release 30 million gallons from the country's Strategic Petroleum Reserve (SPR).
- **2008:** Two significant hurricanes affected oil and gas production. **Hurricane Gustav**, which made landfall in Cocodrie, Louisiana, on September 1, and **Hurricane Ike**, which made landfall in Galveston, Texas, on September 13. Both of these hurricanes caused considerable damage and led to an average 1.1 mb/d of shut-in crude oil production and 5.5 bcf/d of shut-in gas production in September, according to EIA calculations.
- **2009-11:** Storms during 2009-11 did not result in significant oil and gas production shut-ins. No hurricanes made landfall in the US in 2009 or 2010.
- **2012: Hurricane Isaac** made landfall on August 28 and on that day shut-in production totaled 1.3 mb/d of crude oil and 3 bcf/d of gas. On top of this shut-in production, 0.9 mb/d of petroleum refinery capacity and 1.5 mb/d of petroleum pipeline capacity were temporarily shut down, in addition to more than 10 bcf/d of shut-in gas processing plant capacity, according to EIA calculations.

Crude Oil Prices React to Geopolitical and Economic Events



Source: US EIA, Thomson Reuters

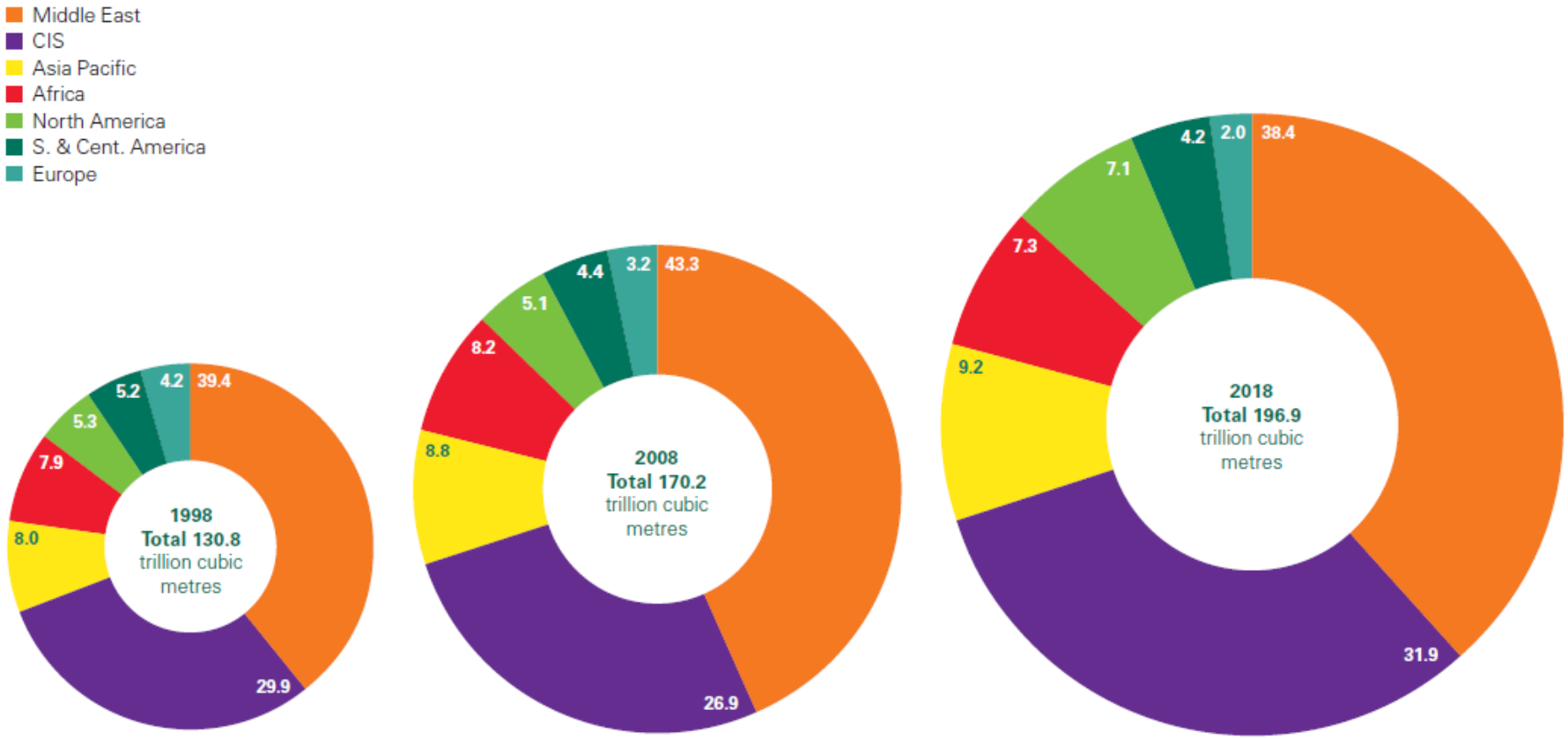
Global Gas Production and Consumption by Region (1993-2018)



Gas production and consumption registered record-high volumetric increases in 2018. Production increased by 5.2%, the highest rate since 2010 and more than double the 10-year average growth rate of 2.3%. US (86 bcm) and Russia (34 bcm) accounted for almost two thirds of global growth. Similarly, gas consumption increased by 5.3%, with the US (78 bcm) registering the strongest growth on record. China also saw above-average growth of 17.7% (43 bcm).

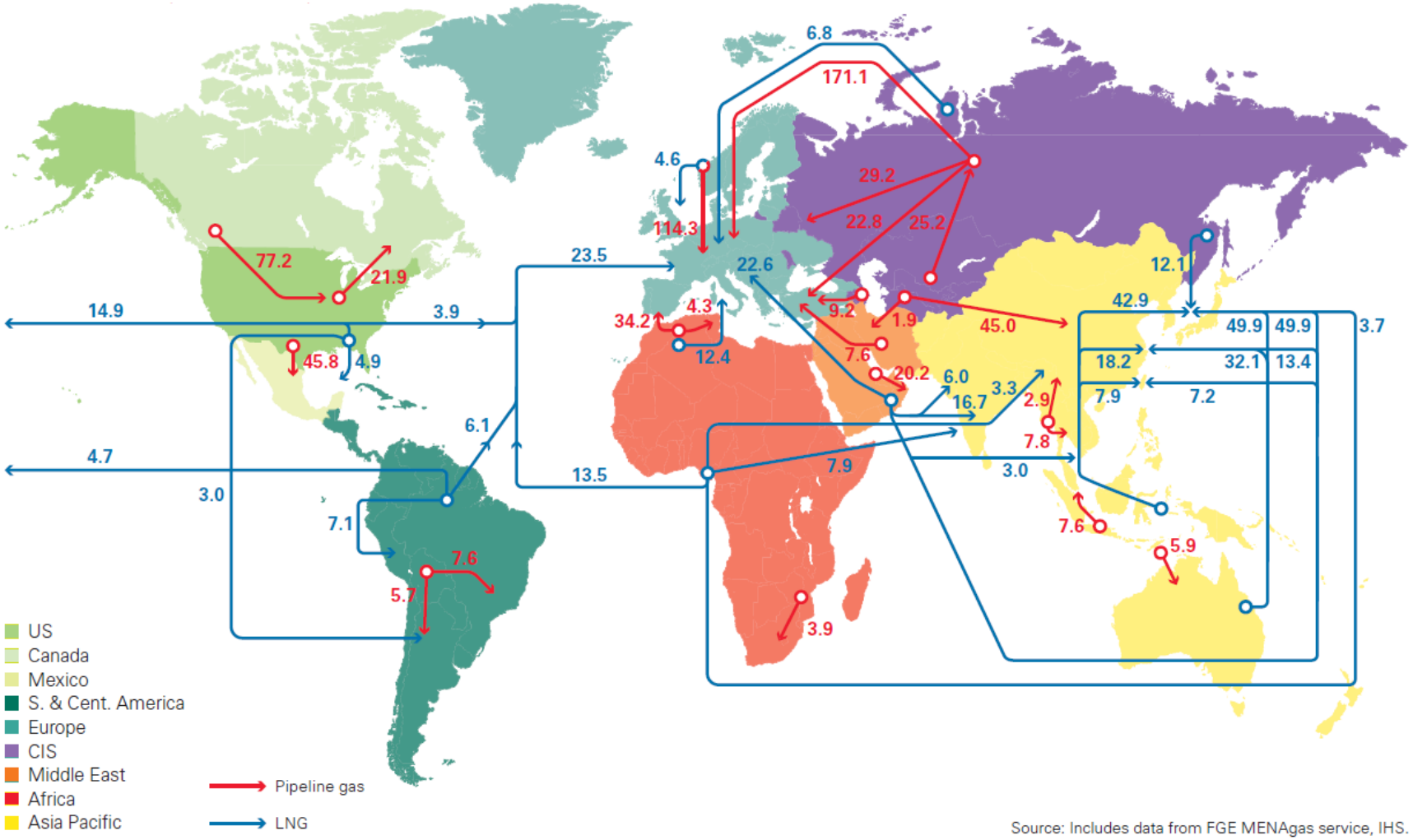
Source: BP Statistical Review of World Energy 2019

Distribution (%) of Gas Proved Reserves (1998, 2008 and 2018)



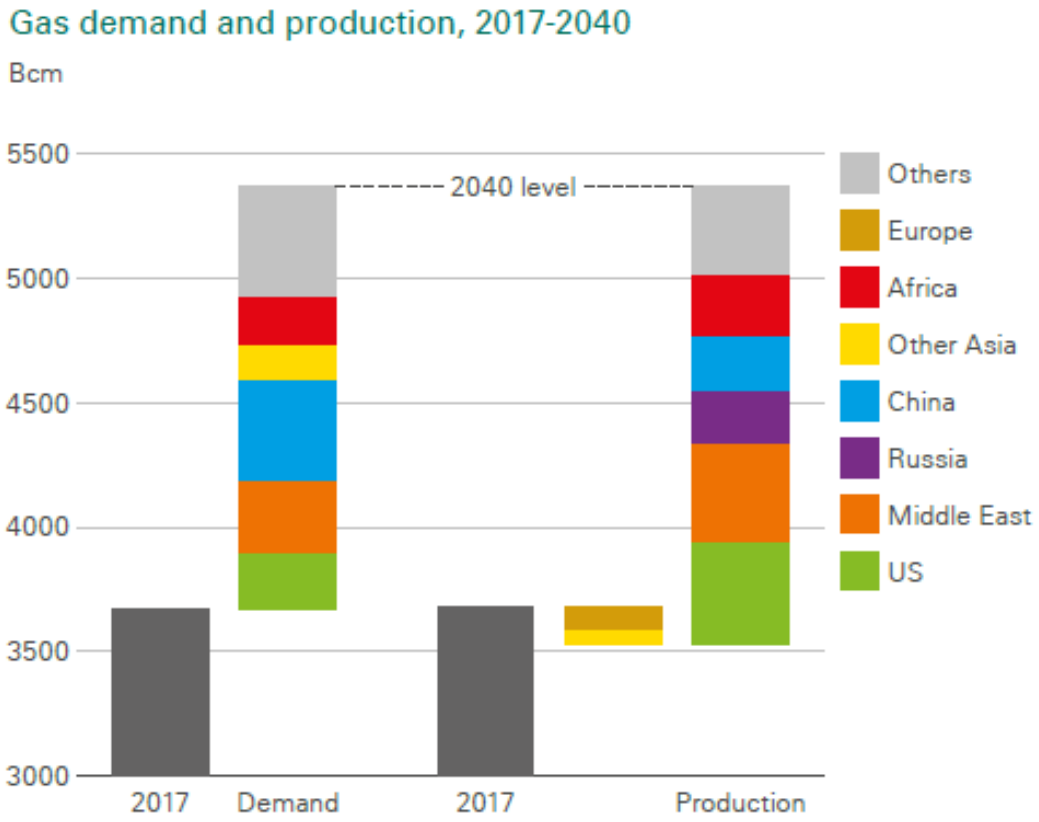
Source: BP Statistical Review of World Energy 2019

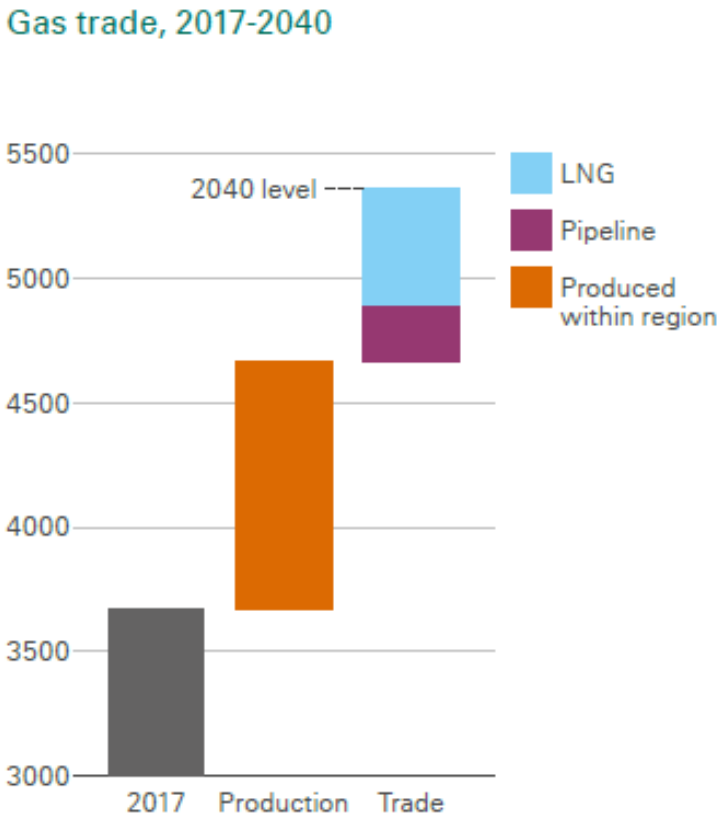
Major Gas Trade Movements 2018



Source: BP Statistical Review of World Energy 2019

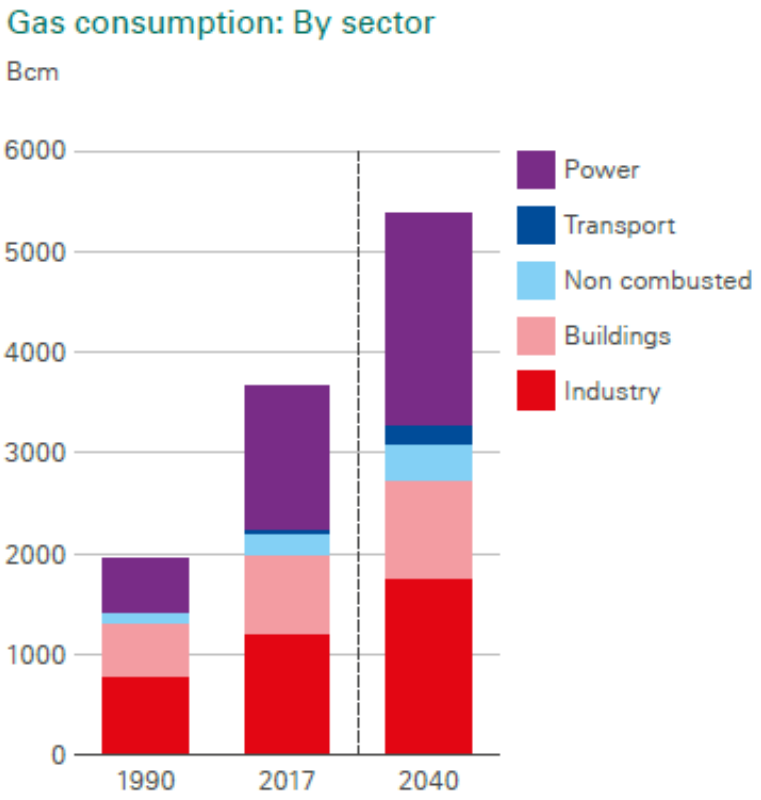
Gas Demand, Production and Trade (2017-2040)

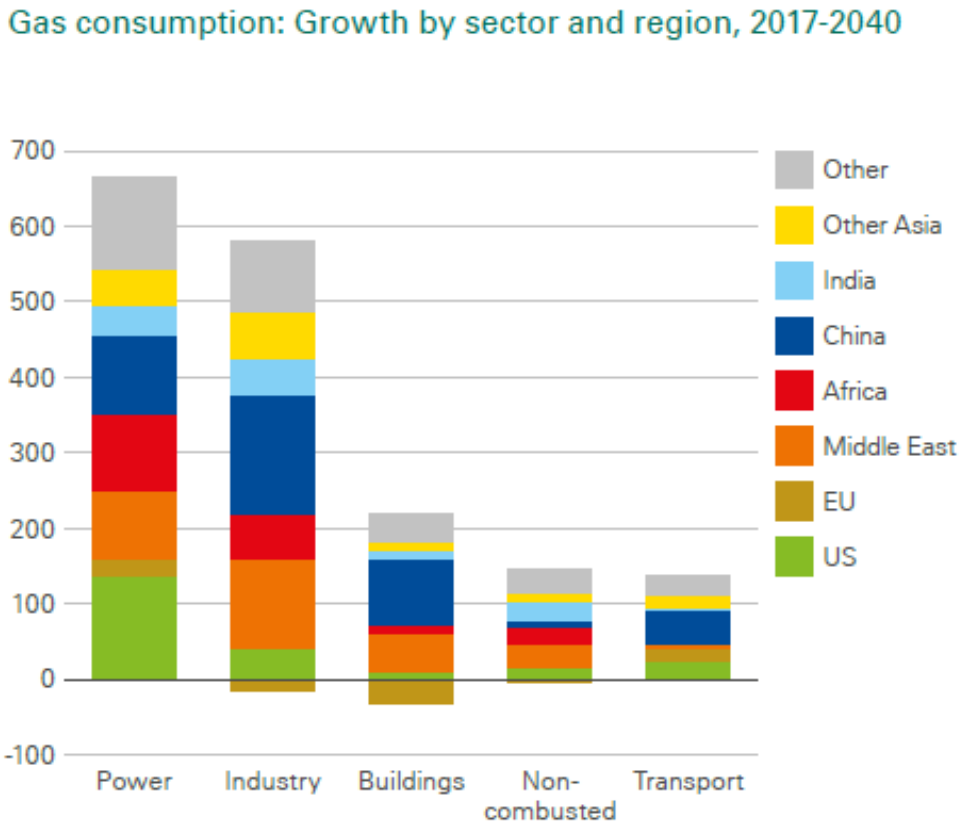




Source: BP Energy Outlook 2019

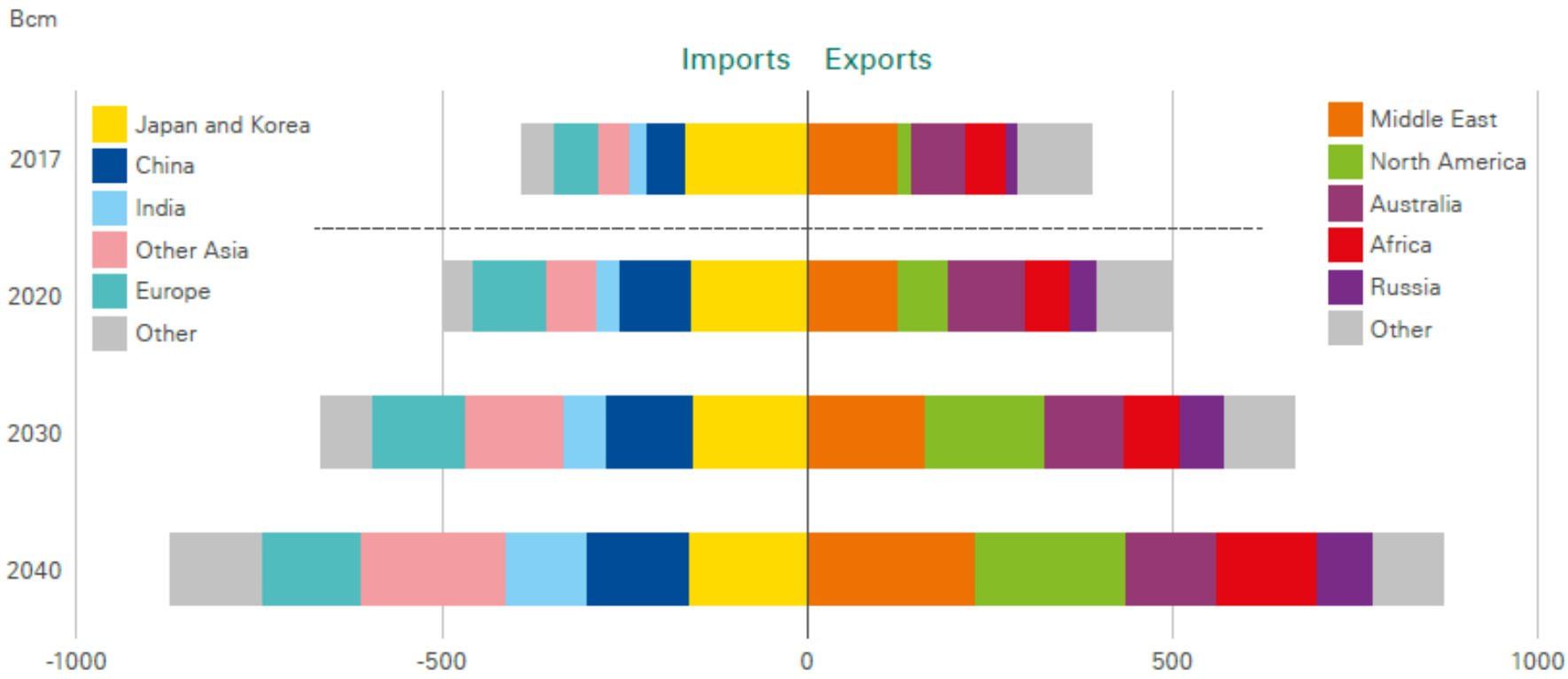
Global Gas Consumption





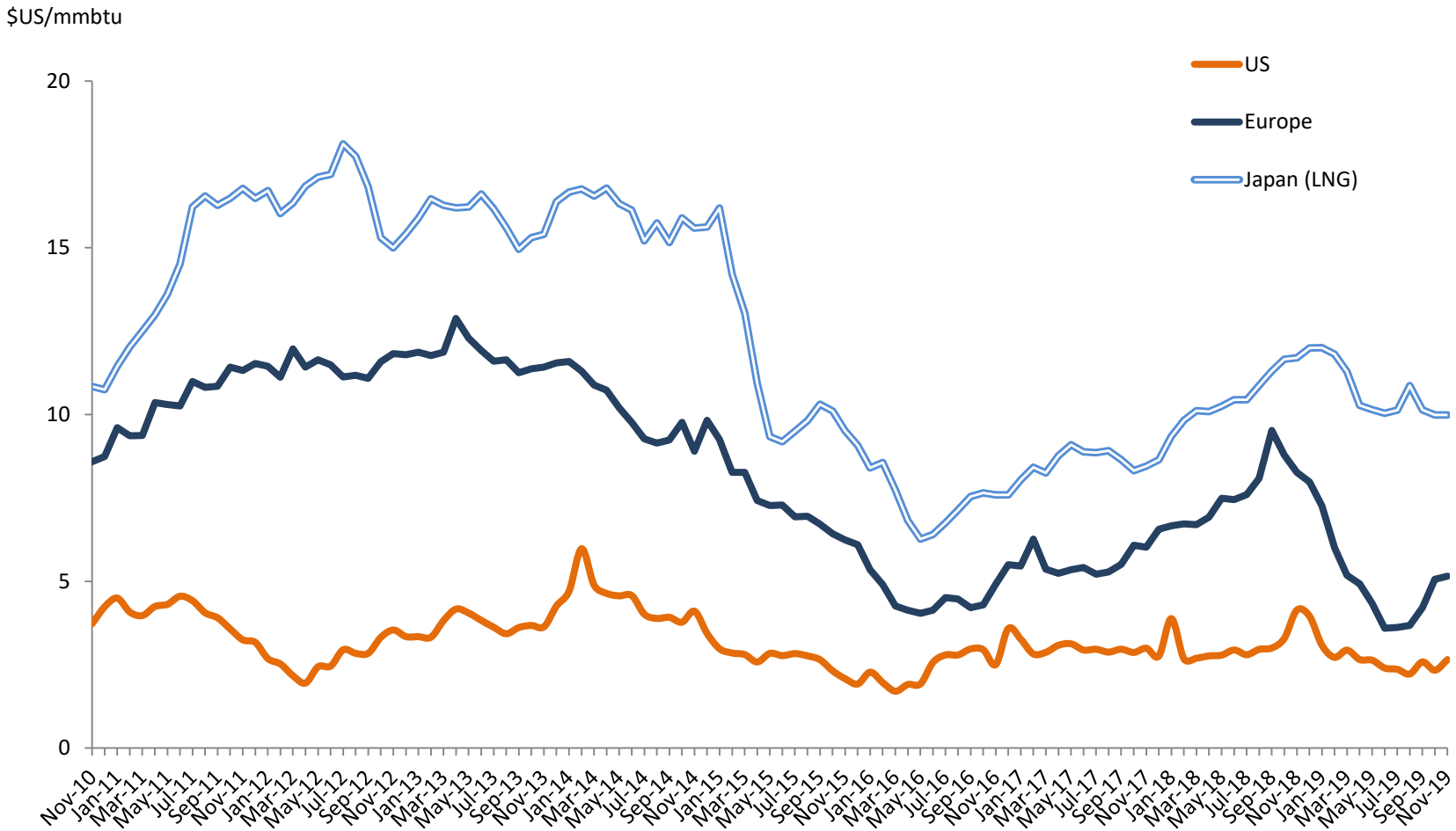
Source: BP Energy Outlook 2019

Global LNG Imports and Exports (2017-2040)



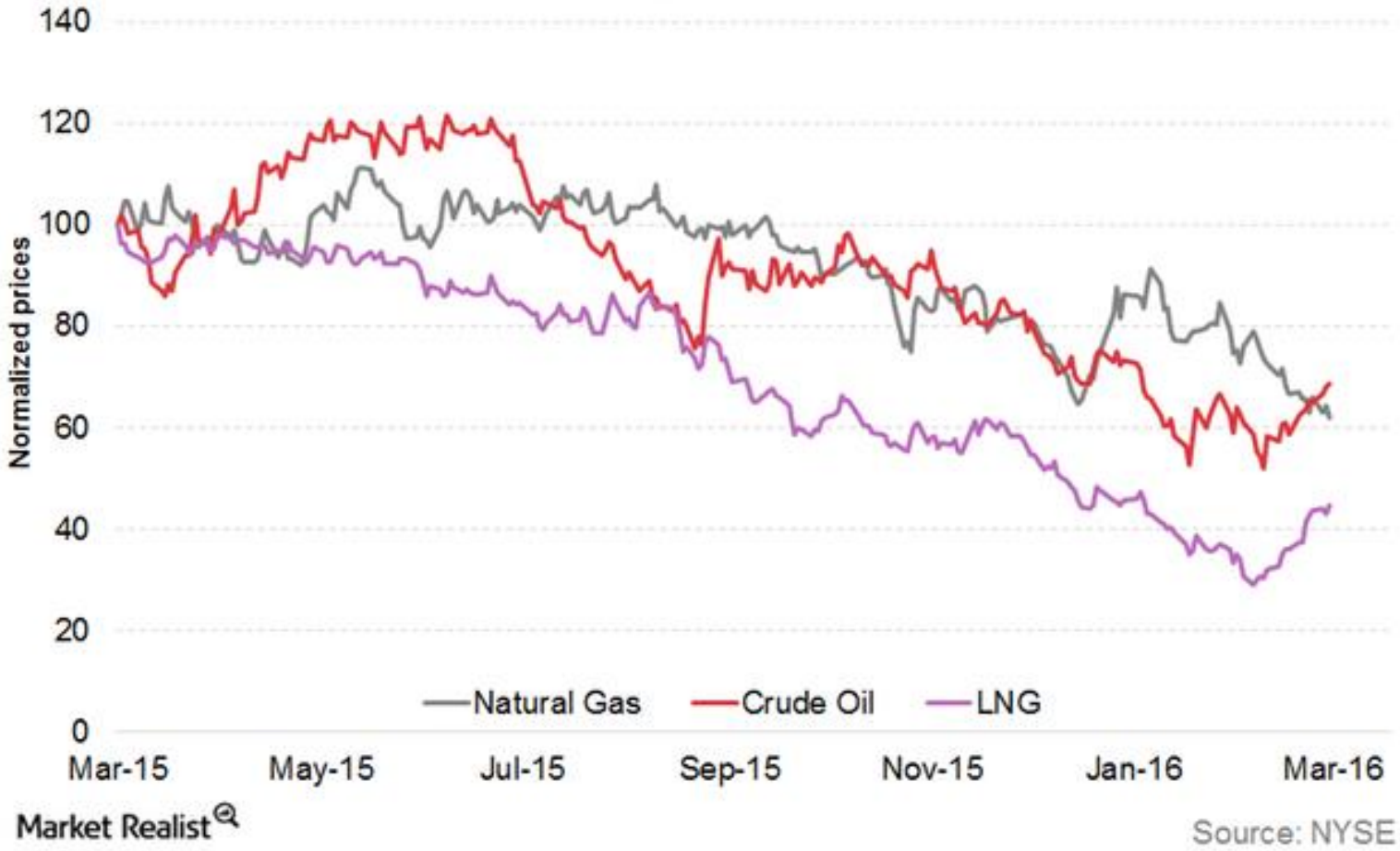
Source: BP Energy Outlook 2019

Natural Gas Prices



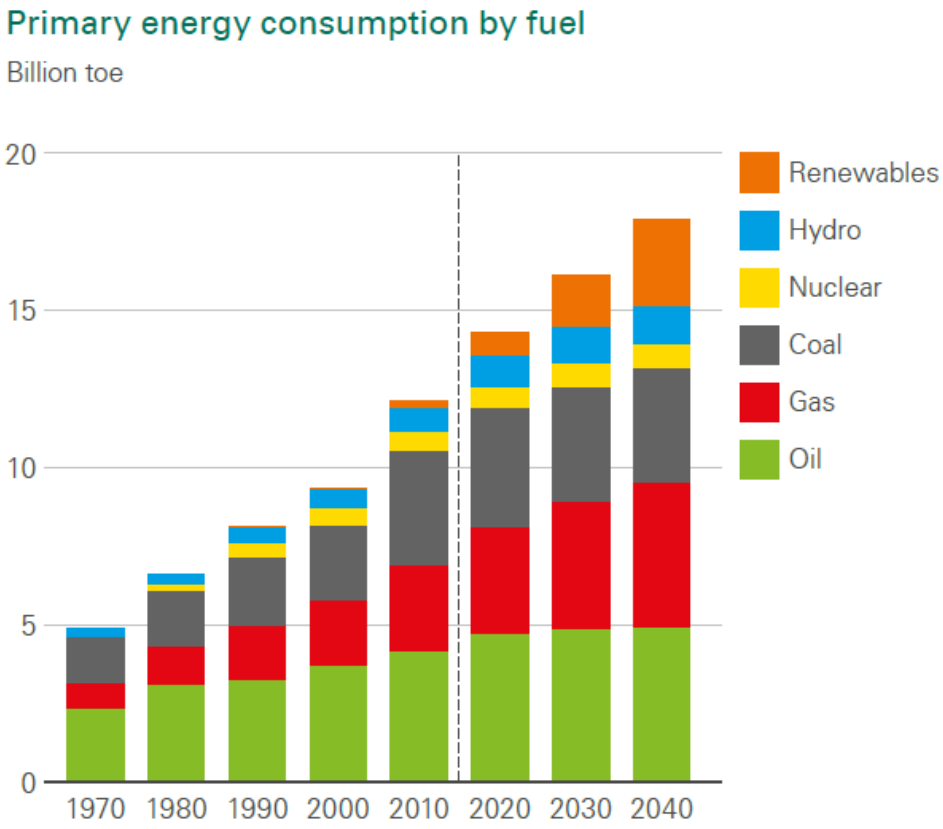
Source: World Bank

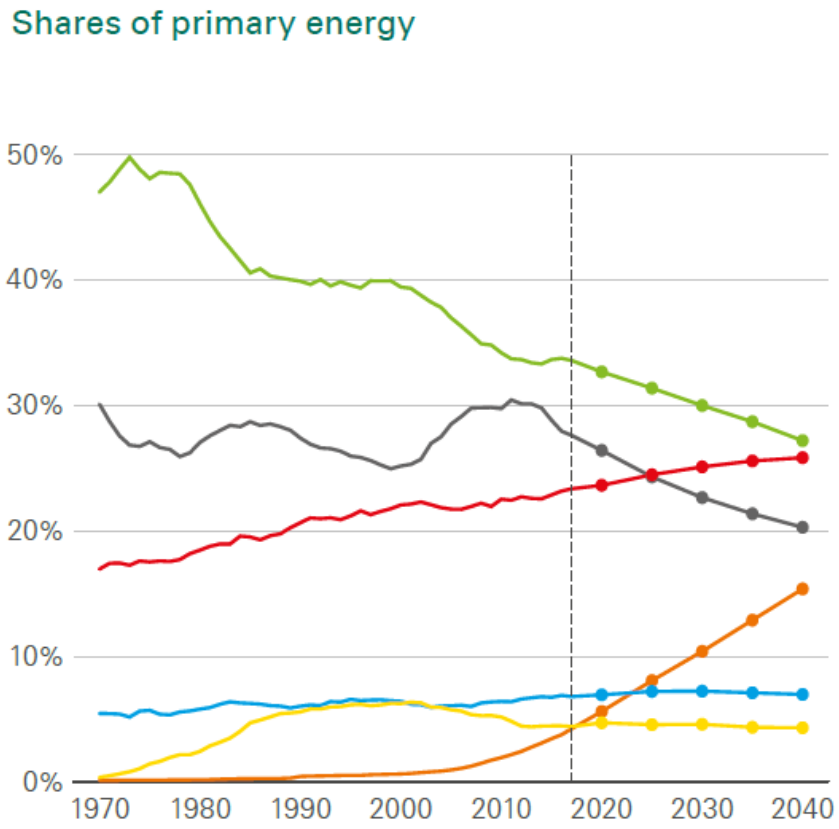
Correlation Between Oil and Gas Prices



Source: NYSE

The Transition to a Lower-carbon Fuel Mix Continues, Led By Renewables and Natural Gas





Source: BP Energy Outlook 2019

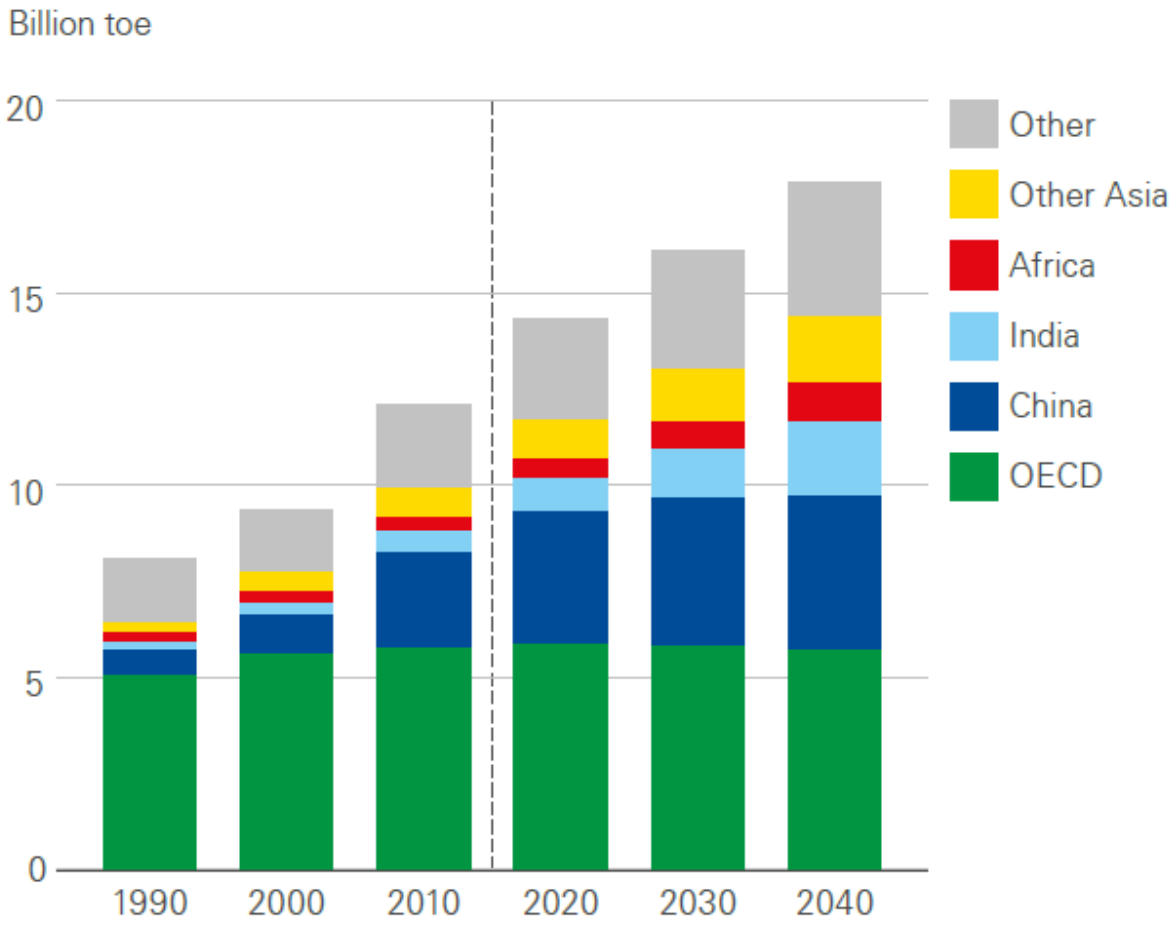
World Primary Energy Demand By Fuel and Scenario (Mtoe)

			Stated Policies		Sustainable Development		Current Policies	
	2000	2018	2030	2040	2030	2040	2030	2040
Coal	2 317	3 821	3 848	3 779	2 430	1 470	4 154	4 479
Oil	3 665	4 501	4 872	4 921	3 995	3 041	5 174	5 626
Natural gas	2 083	3 273	3 889	4 445	3 513	3 162	4 070	4 847
Nuclear	675	709	801	906	895	1 149	811	937
Renewables	659	1 391	2 287	3 127	2 776	4 381	2 138	2 741
Hydro	225	361	452	524	489	596	445	509
Modern bioenergy	374	737	1 058	1 282	1 179	1 554	1 013	1 190
Other	60	293	777	1 320	1 109	2 231	681	1 042
Solid biomass	638	620	613	546	140	75	613	546
Total	10 037	14 314	16 311	17 723	13 750	13 279	16 960	19 177
Fossil fuel share	*80%*	*81%*	*77%*	*74%*	*72%*	*58%*	*79%*	*78%*
CO_2 emissions (Gt)	23.1	33.2	34.9	35.6	25.2	15.8	37.4	41.3

Notes: Mtoe = million tonnes of oil equivalent; Gt = gigatonnes. Other includes wind, solar PV, geothermal, concentrating solar power and marine. Solid biomass includes its traditional use in three-stone fires and in improved cookstoves.

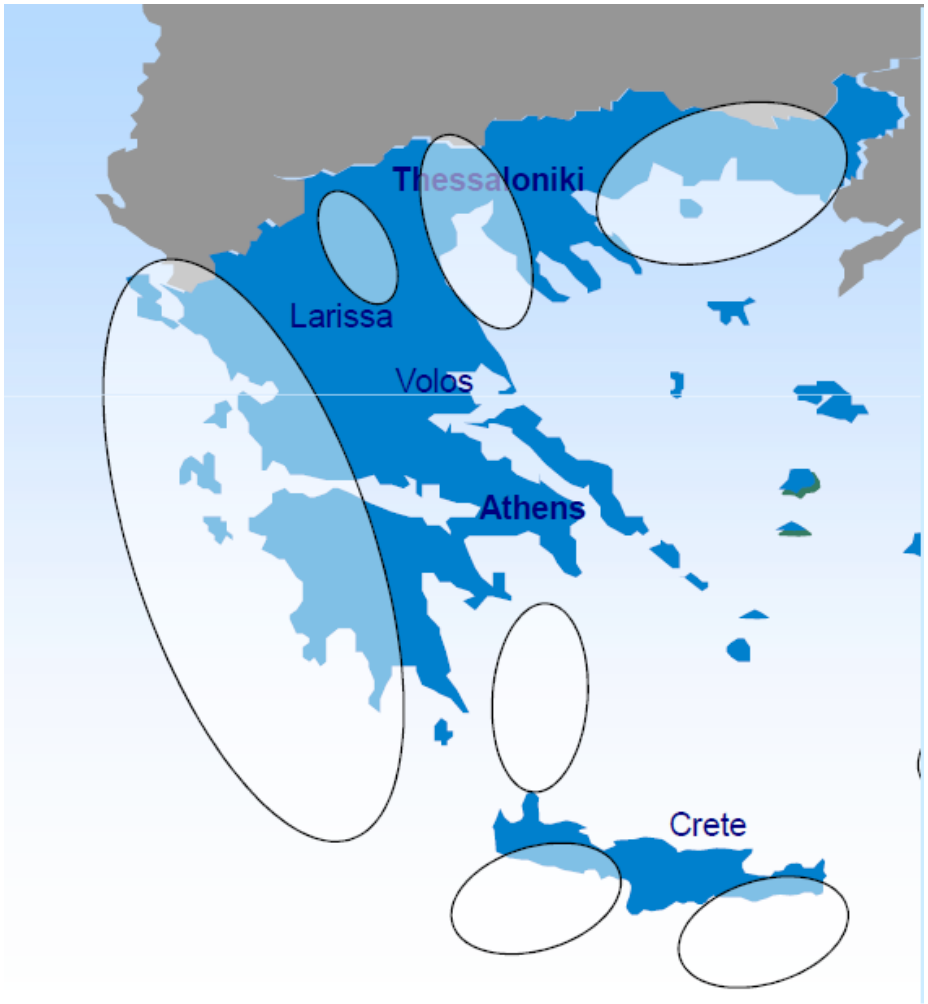
Source: IEA World Energy Outlook 2019

Primary Energy Consumption By Region (Billion toe)



Source: BP Energy Outlook 2019

Unexplored Areas and Geological Targets in Greece



Source: HELPE

Hydrocarbon Resources in Greece (Contingent, Proven and Prospective Resources, in million barrels)

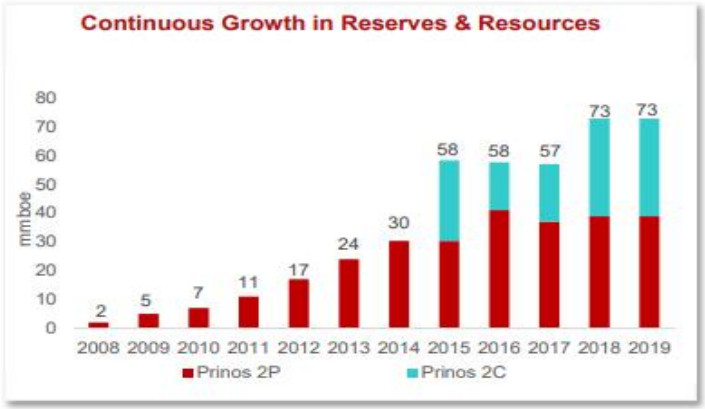
Field	Date*(a)	Company	Estimated reserves or resources (in million barrels)	Category
East Thassos I	1971	Oceanic-Colorado	350.0	Contingent resources (Heavy oil)
East Thassos II	1971	Oceanic-Colorado	80.0	Prospective resources
Babouras	1971 /72	Oceanic-Colorado	150.0	Prospective resources
Stavros	1971 /72	Oceanic-Colorado	122.0	Prospective resources
Nike I	1971 /72	Oceanic-Colorado	60.0	Prospective resources
Nike II	1971 /72	Oceanic-Colorado	63.0	Prospective resources
South Kavala (natural gas)	1972	Oceanic-Colorado	(950.0 million m^3 gas)	Depleted Gas field
Amodes (heavy oil)	1972	Oceanic-Colorado	45.0	Contingent resources
Athos	1972	Oceanic-Colorado	45.0	Contingent resources
Prinos[b]	2018	Energean	17.8 21.6	Proven recoverable (P2) Contingent (2C)
West Katakolo	1982 2018	DEP/EKY Energean	(4.0) 10.0	Contingent resources Proven reserves (P2)
Alikes Zakinthou	1984 /85	DEP/EKY	35.0[c]	Contingent
Epanomi (natural gas)	1987	DEP/EKY	3.0	Contingent resources
Prinos- North Prinos	2015 2018	Energean Energean	3.3 2.4	Proven recoverable (P2) Contingent (2C)
Patraikos Gulf	1998/99 2016/2017	Enterprise Oil – Triton ΕΛΠΕ	100.0	Prospective
Prinos-Epsilon	2015	Energean	19.0	Proven recoverable (P2)
Total proven recoverable reserves			51.0	Proven recoverable (P2)
Total contingent reserves			502.0	Contingent (2C)
Total prospective reserves			575.0	Prospective
Total reserves and resources (proven, contingent and prospective)			1,128	

*(a) Date of discovery or latest evaluation, (b) Some 116 million barrels of oil had been recovered by the end of 2014. Estimated original reserves in place: 290, (c) Asphalt contingent resource base has been found but considered to be non-explorable duet to environmental

Source: IENE

Mature Basin Operating Expertise in Greece

Demonstrable Operational Track Record



Prinos Basin Highlights

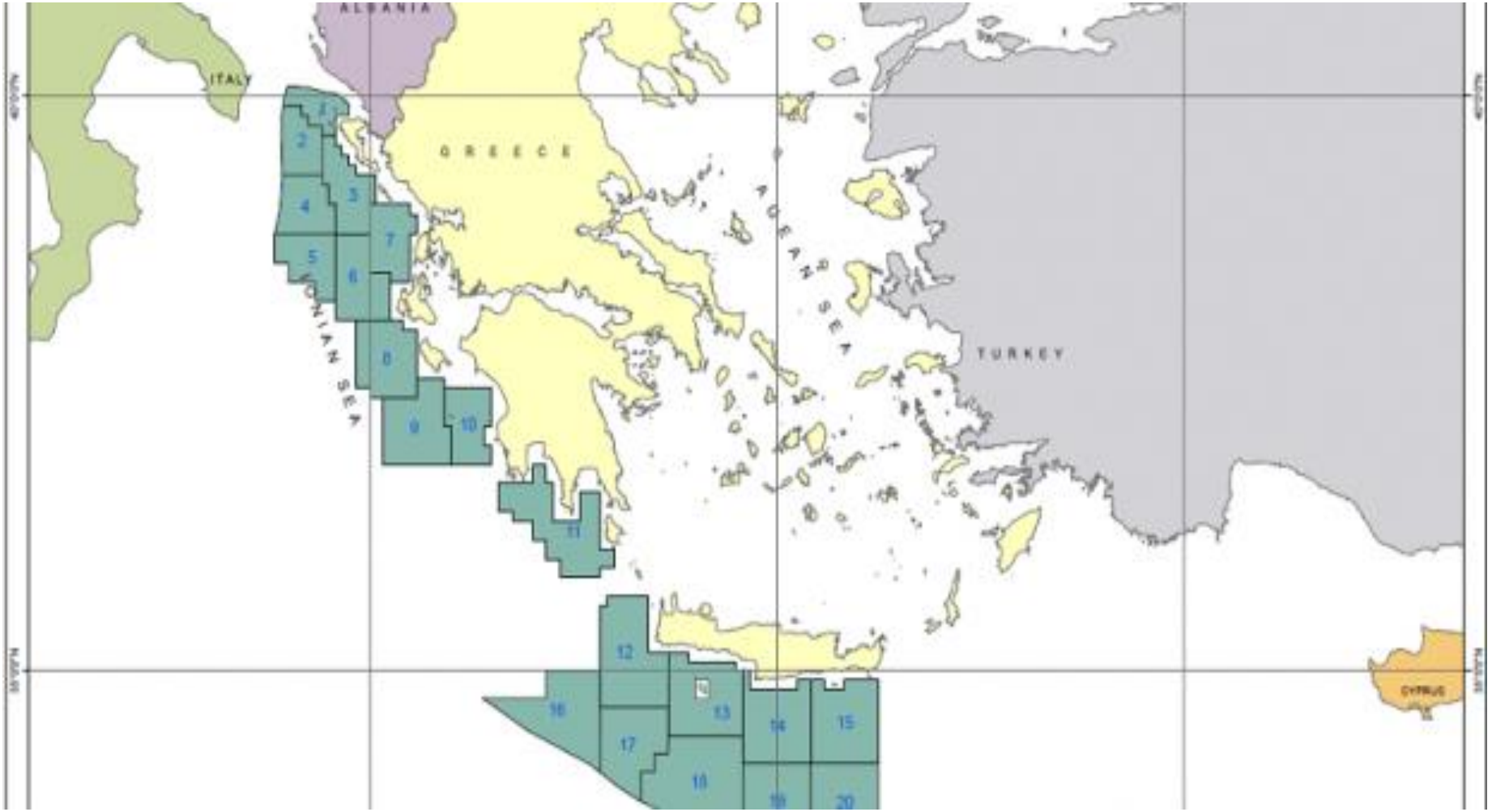
- Operator, 100% WI
- Shallow water – 36 meters
- Four platforms operating next to traditional tourist destinations (Thasos Island)
- c. 120 million barrels of oil produced – offtaker BP
- Production increase from 1.2 kbopd to 4.1 kbopd
- Production costs decreased to $17.6/ boe in 2018 from $24.7/ boe in 2017
- Currently developing Epsilon satellite - $100 million investment
    - Expecting first oil from the Lamda platform in 2H 2020

Source: Energean Oil & Gas

Άτυπη Ελληνική ΑΟΖ στη Δυτική Ελλάδα και Νότια της Κρήτης. Τα Εξωτερικά Όρια των Υπό Έρευνα Περιοχών Συμπίπτουν με τα Όρια της ΑΟΖ στην Δυτική και ΝΔ Θαλάσσια Περιοχή της Χώρας

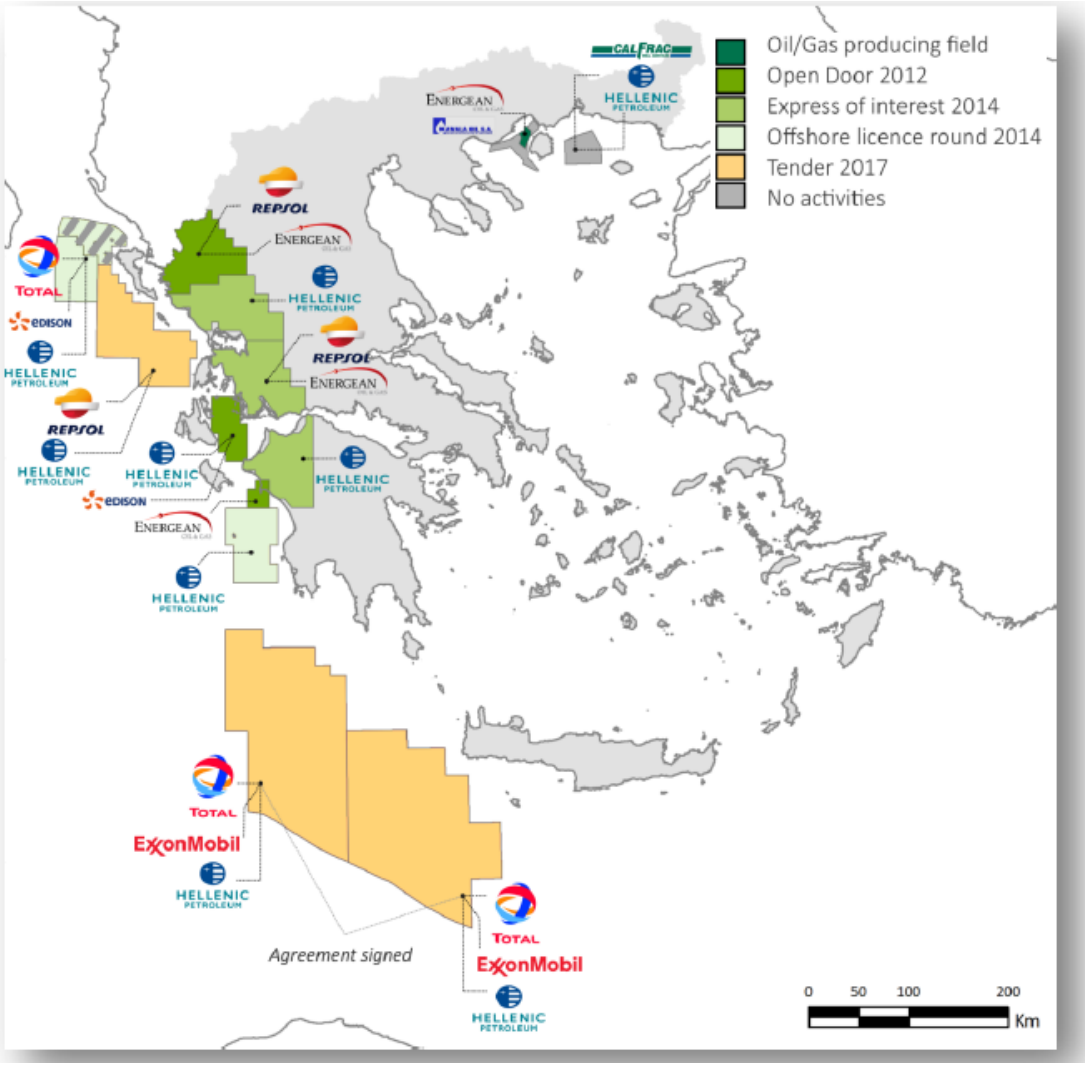
Πηγή: ΥΠΕΝ

Exploration and Production of Hydrocarbons in Greece



Source: Greece's Energy Ministry

Current Status on Greece's Hydrocarbon Activities



Source: HHRM (June 2019)

Turkish Claims in the Eastern Aegean Sea, in Dodecanese Islands and in the East Mediterranean Region

Source: A. Syrigos

Που Οφείλεται η Τουρκική Προκλητικότητα?

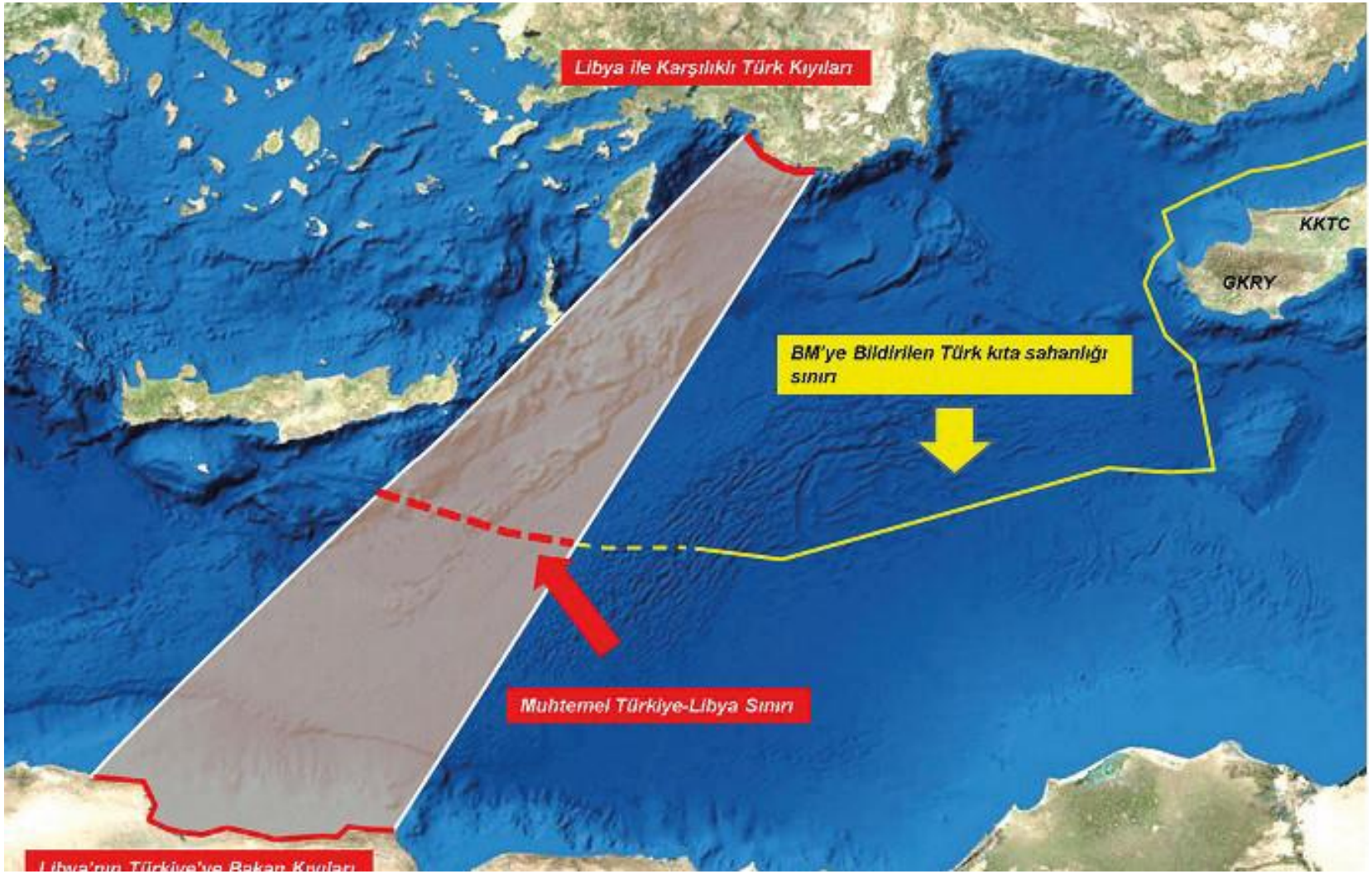
- Η Τουρκική συμπεριφορά στην Αν. Μεσόγειο πρέπει να γίνει αντιληπτή στο πλαίσιο της αναζήτησής της νέων ενεργειακών πηγών.

- Η Τουρκική προκλητικότητα οφείλεται στα εξής:

(α) Βασική αιτία (πέρα από τη διαρκή ανάγκη προβολής της ισχύος της Τουρκίας σε περιφερειακό επίπεδο) αποτελεί η ανάγκη εξασφάλισης ενεργειακών πρώτων υλών, τόσο εγχώριων, όσο και εισαγόμενων για την κάλυψη των διαρκώς αυξανόμενων ενεργειακών αναγκών της. Για αυτό, τα τελευταία 20 και κάτι χρόνια, η Τουρκία έχει κατορθώσει μέσω ενός εκτενούς πλέγματος αγωγών πετρελαίου και φυσικού αερίου που έχει κατασκευάσει να διασυνδεθεί με όλες τις γύρω ενεργειακά πλούσιες χώρες (από τις οποίες εισάγει πετρέλαιο και φυσικό αέριο) και να αναδειχθεί ως ο βασικός ενεργειακός κόμβος της ευρύτερης περιοχής. Επιπλέον, η εξασφάλιση, πάσει θυσία, δικών της κοιτασμάτων υδρογονανθράκων και η αποκλειστική πρόσβαση σε αυτά αποτελεί για τη σημερινή τουρκική ηγεσία όχι απλώς μια στρατηγική επιλογή, αλλά άμεση προτεραιότητα και στόχο πρώτης γραμμής.

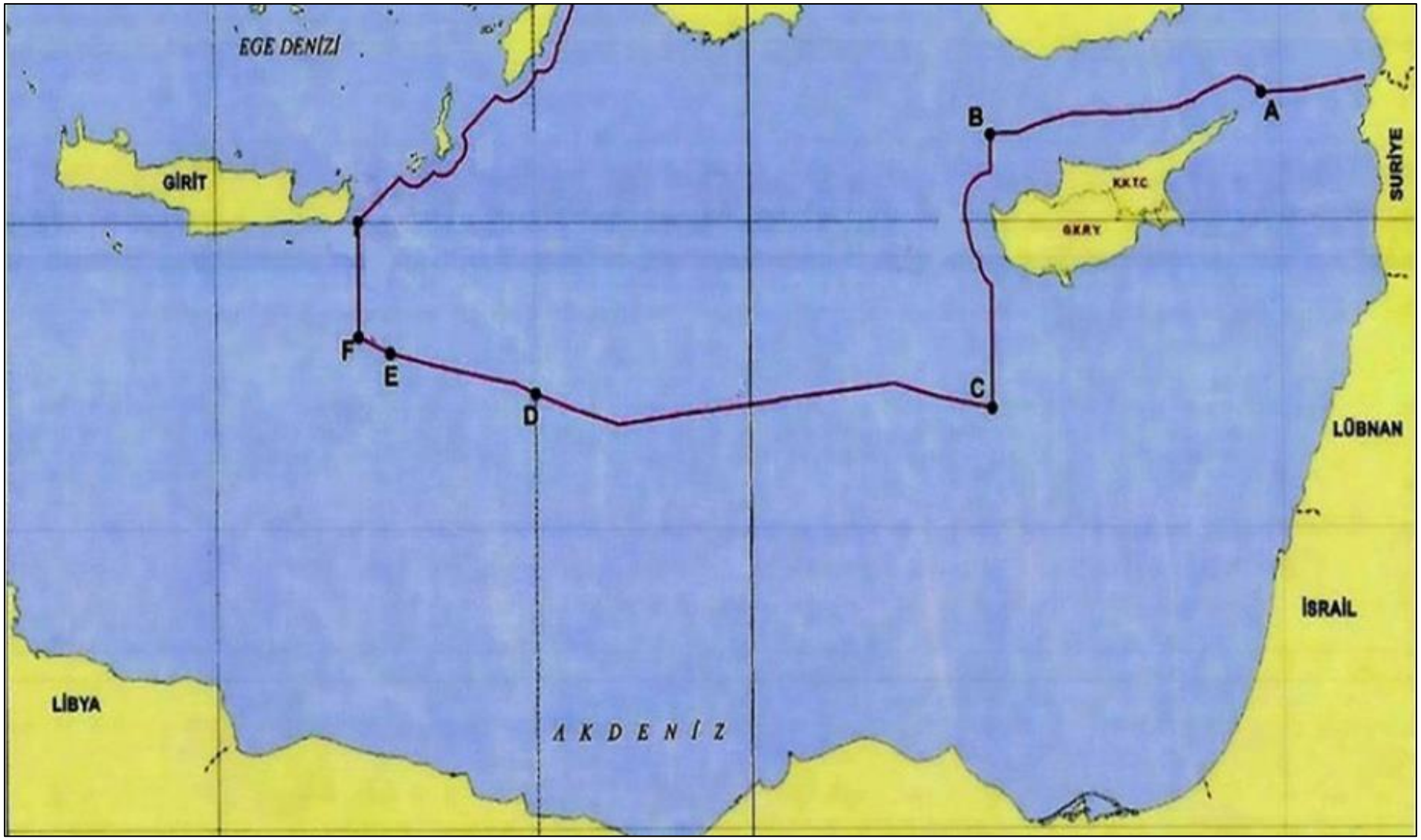
(β) Η Τουρκία αισθάνεται περιθωριοποιημένη και αποκλεισμένη, από την άποψη του άμεσου ελέγχου και της εκμετάλλευσης κοιτασμάτων υδρογονανθράκων, τόσο στα βαθιά νερά της Ανατολικής Μεσογείου, όσο και από τα κοιτάσματα της Μουσούλης και του Κιρκούκ (που ακόμα και σήμερα εποφθαλμιά), τόσο περισσότερο θα αντιδρά με νευρικότητα, προβάλλοντας αξιώσεις, όχι μόνο στο Αιγαίο και στην Κύπρο αλλά και σε Συρία και Ιράκ. Για αυτό η Τουρκία ακόμα και σήμερα συμπεριφέρεται ως αδικημένη και "εκτός νυμφώνος" από τη μοιρασιά που προέκυψε από τη διάλυση της πάλαι ποτέ Οθωμανικής Αυτοκρατορίας μετά το τέλος του Α΄ Παγκοσμίου Πολέμου. Έκτοτε, προσπαθεί με κάθε τρόπο και προσχήματα να επιβάλλει την παρουσία της στο Βόρειο Ιράκ και τη Συρία και τώρα στο θαλάσσιο χώρο πέριξ της Κύπρου με απώτερο στόχο να οικειοποιηθεί ξένα εδάφη και πλουτοπαραγωγικούς πόρους.

Maritime Boundaries Deal Between Turkey and Libya (I)



Source: energia.gr

Maritime Boundaries Deal Between Turkey and Libya (II)



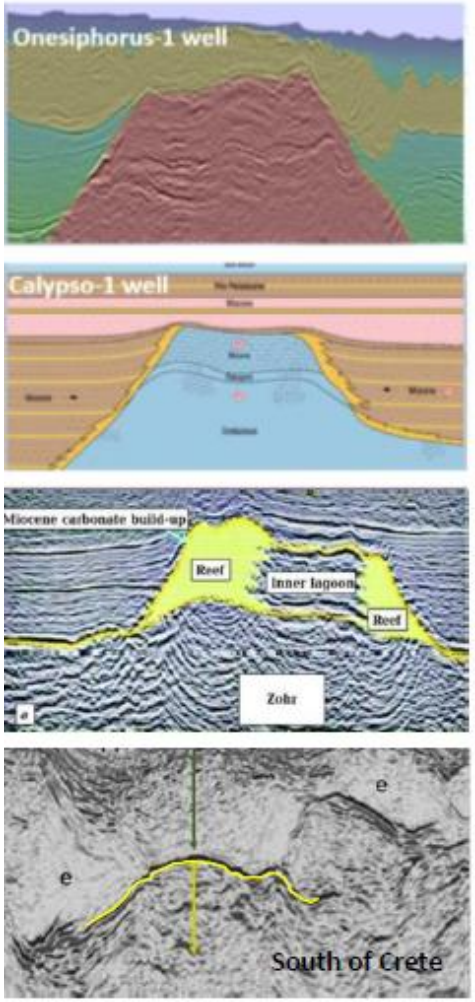
Source: energia.gr

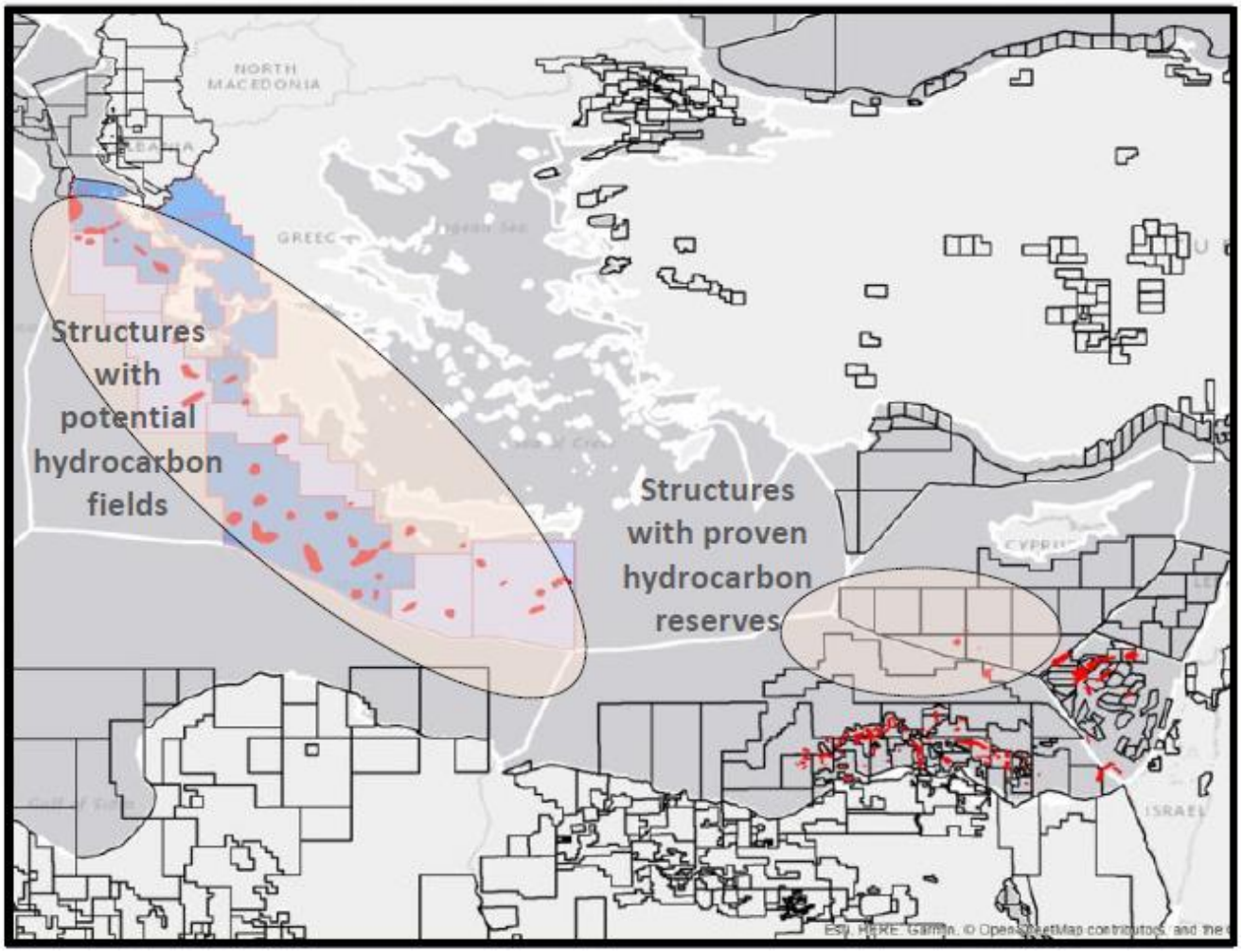
Turkey and “The Blue Homeland”

Source: K. Nikolaou

Sykes-Picot or Asia Minor Agreement, May 1916

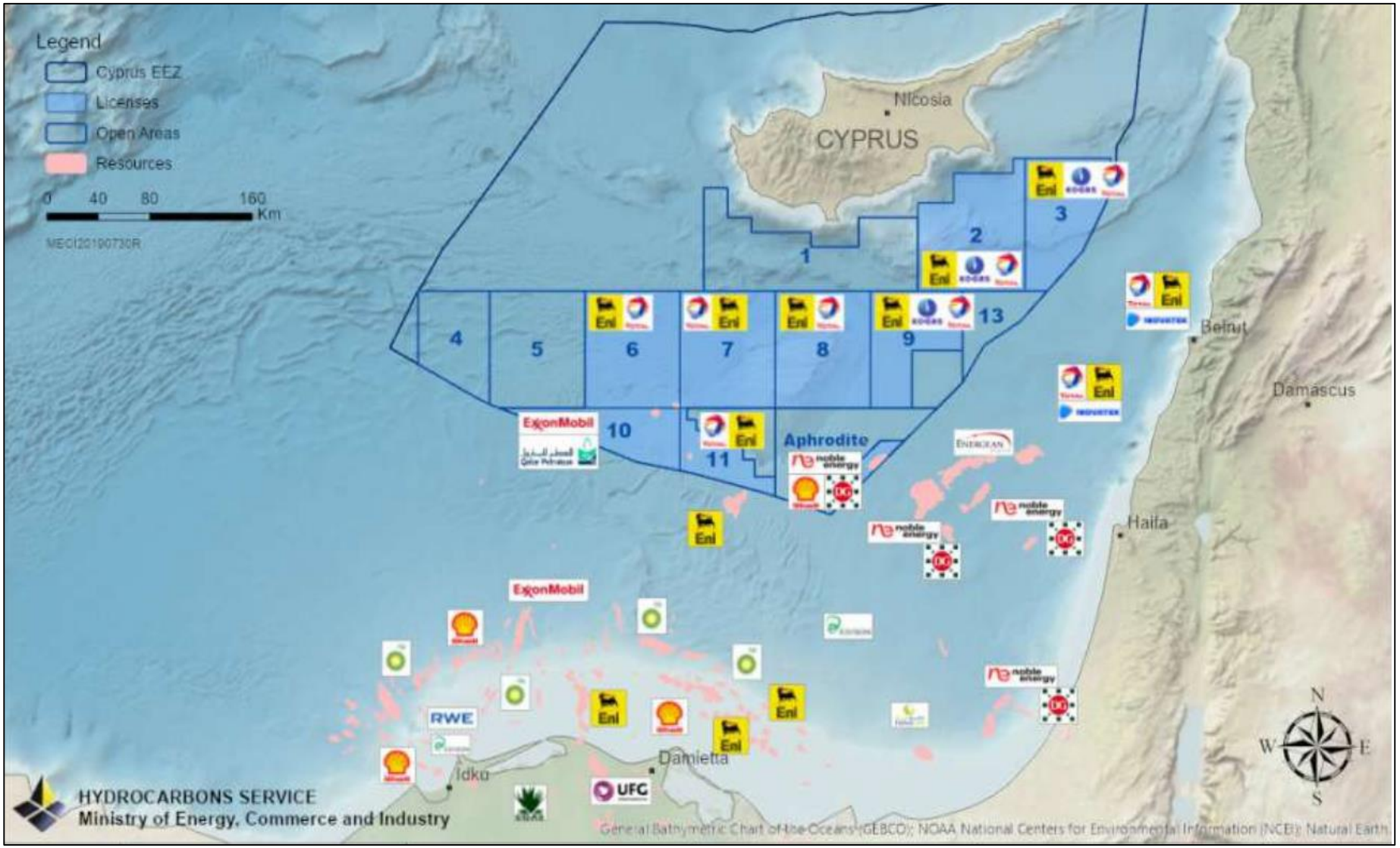
Geological Structures in the Mediterranean Region



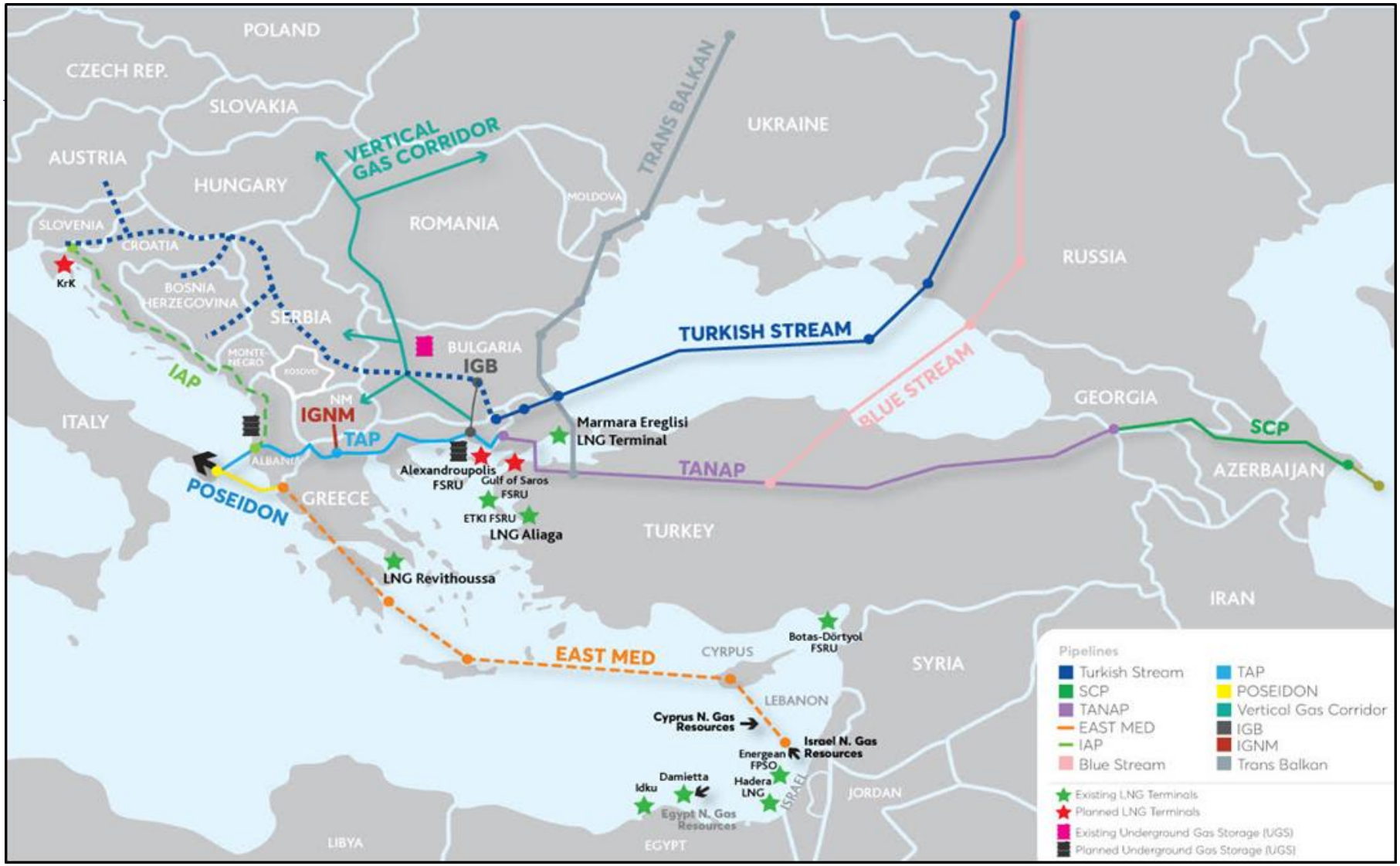


Source: HHRM

Oil and Gas Companies in the East Mediterranean Region



An Expanded South Corridor



NB.: The TANAP has been completed, while TAP, Turkish Stream and IGB are under construction. The IAP, the IGI Poseidon in connection with East Med pipeline and the Vertical Corridor and the IGF are still in the study phase. Blue Stream and Trans Balkan are existing pipelines.

Source: IENE

INSTITUTE OF ENERGY
FOR SOUTH-EAST EUROPE

Thank you for your attention

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