The Impact of Oil Prices on the Economies of Selected Countries in the MENA Region.

By
George M. Jabbour, PhD
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Abstract

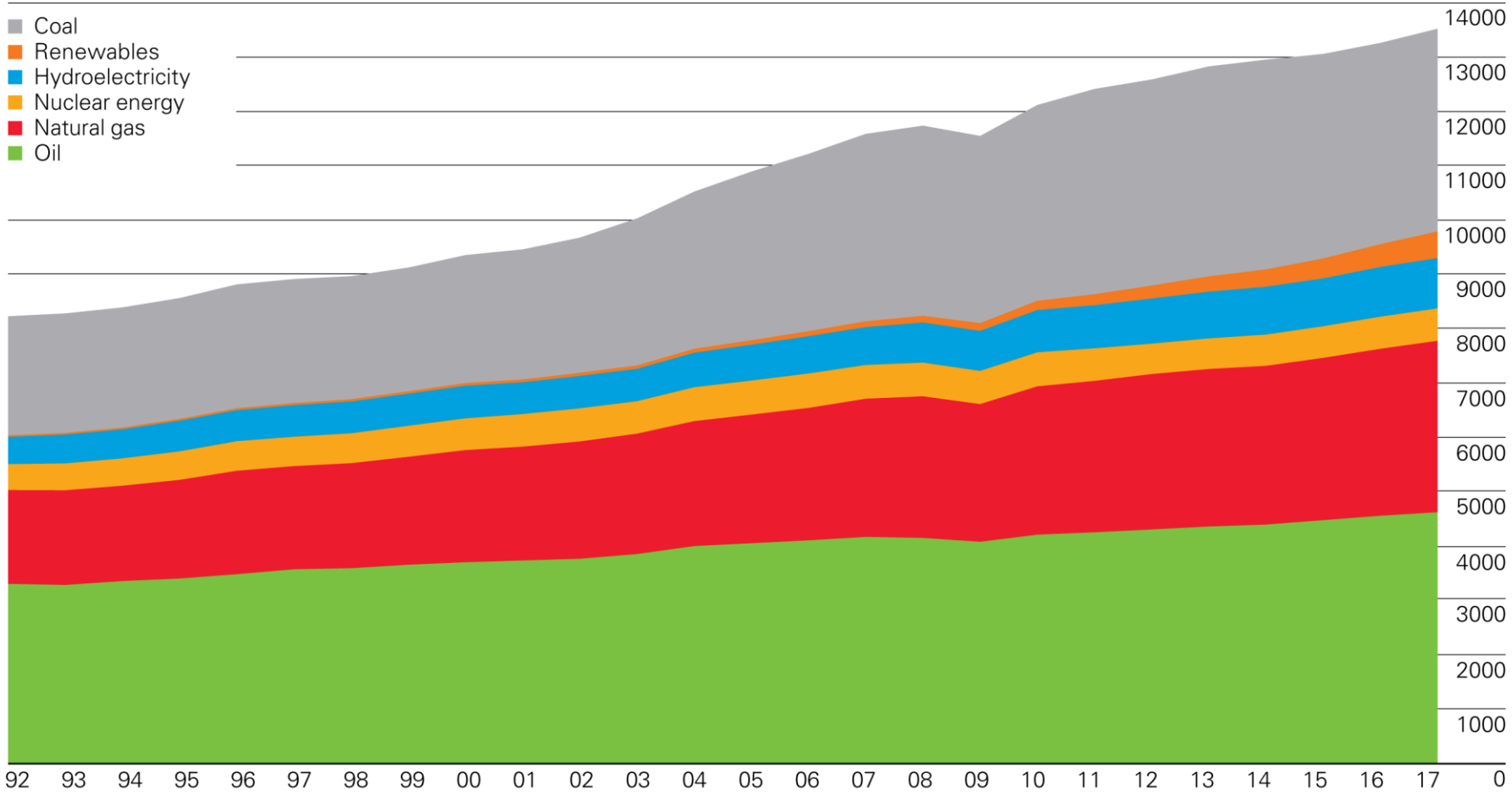
This paper aims to analyze how would the change in oil price impact macroeconomic variables of selected countries in the Middle East and North Africa (MENA) region. As expected, the macroeconomic effect of oil prices is not the same for exporting and importing countries in the region. The effect is not even uniform for importing/exporting countries depending on the mix of their economies. The “oil curse” and the “Dutch Disease theory” are explored and checked for some exporting countries. Whether oil prices may lead to institutional and economic structural reform is examined. Statistically speaking, the oil price has significant impacts on some selected countries and the impact can last 2 to 3 years.

Outline

- Oil: observations
  - Prices, reserves, consumption
- Other energy sources: observations
- What causes oil prices to change?
  - Projections
- Macroeconomic impact of oil price
  - The Oil “curse”
- Statistical results

Primary energy world consumption

Million tonnes oil equivalent



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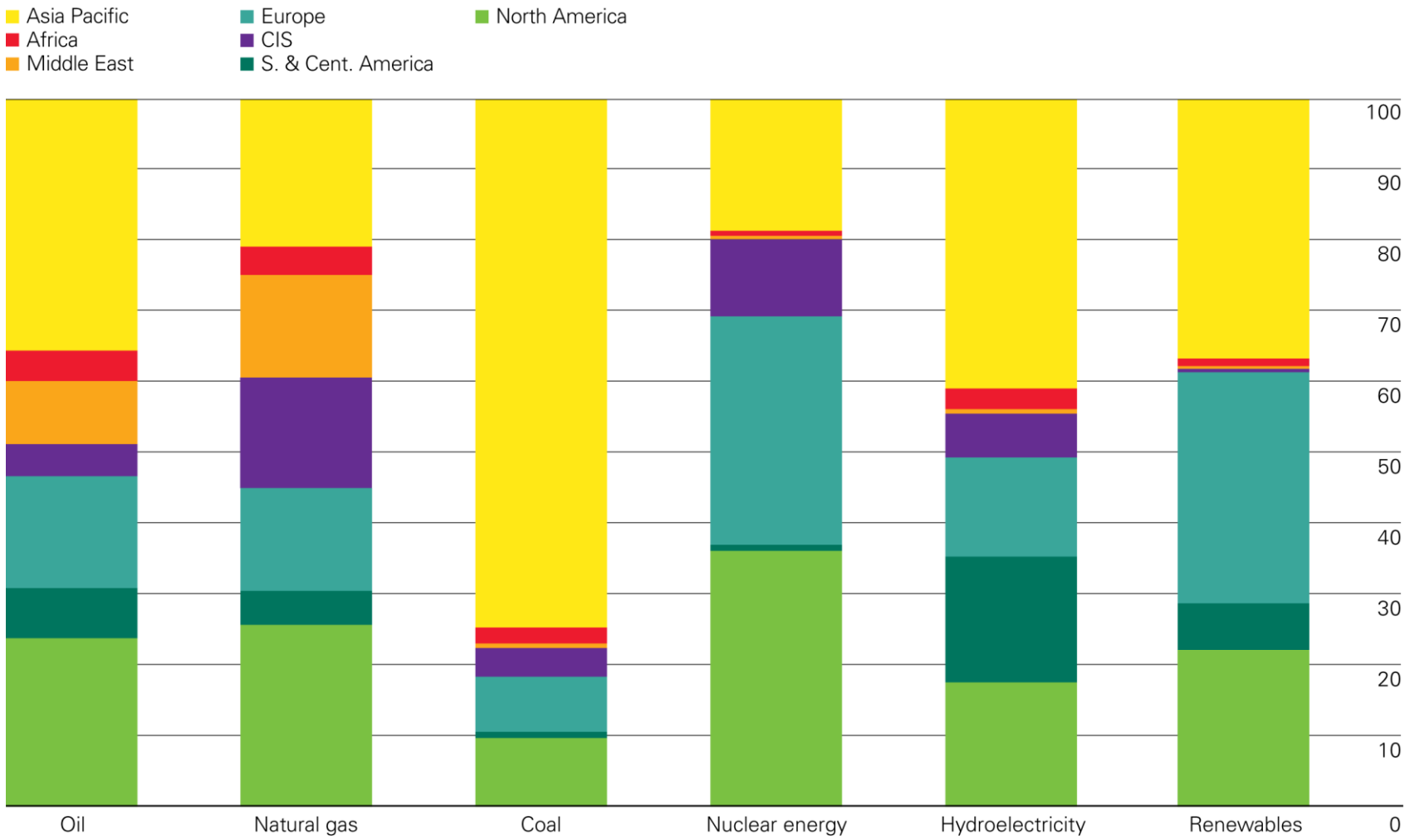
Fuel consumption by region 2017

Percentage



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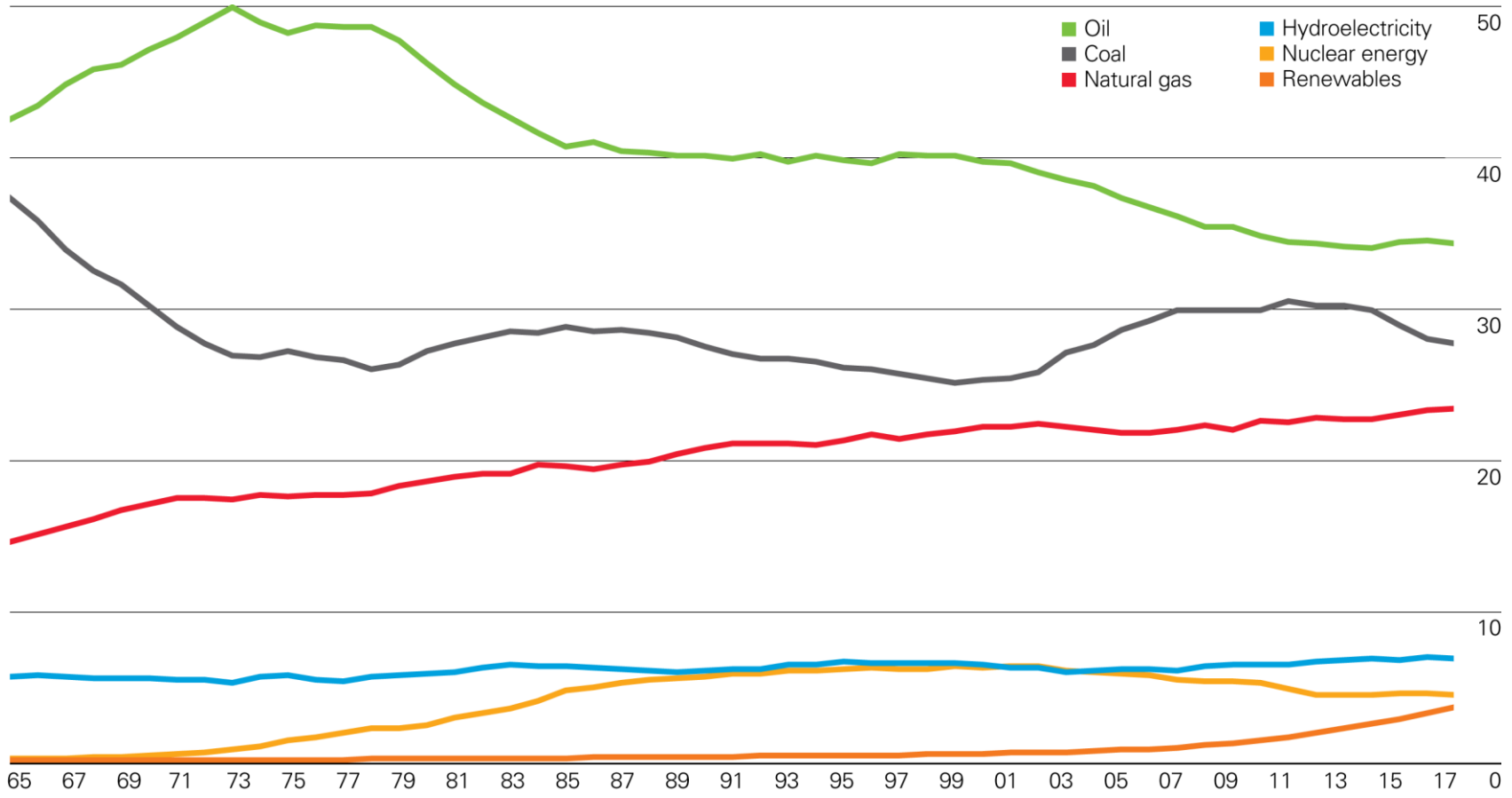
Shares of global primary energy consumption

Percentage



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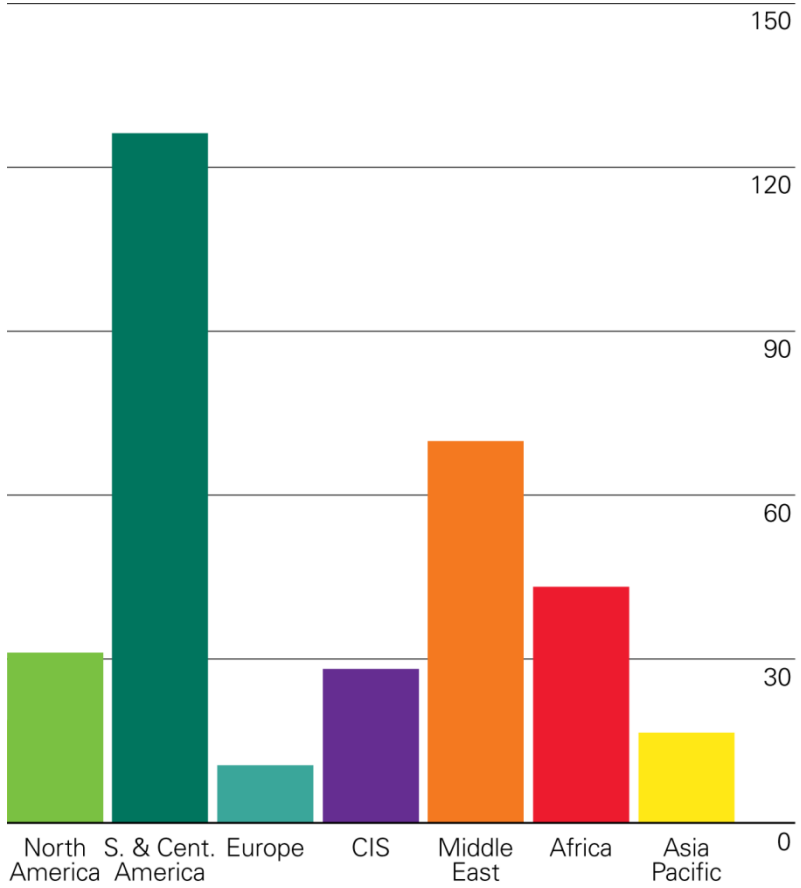
Oil reserves-to-production (R/P) ratios

2017 by region



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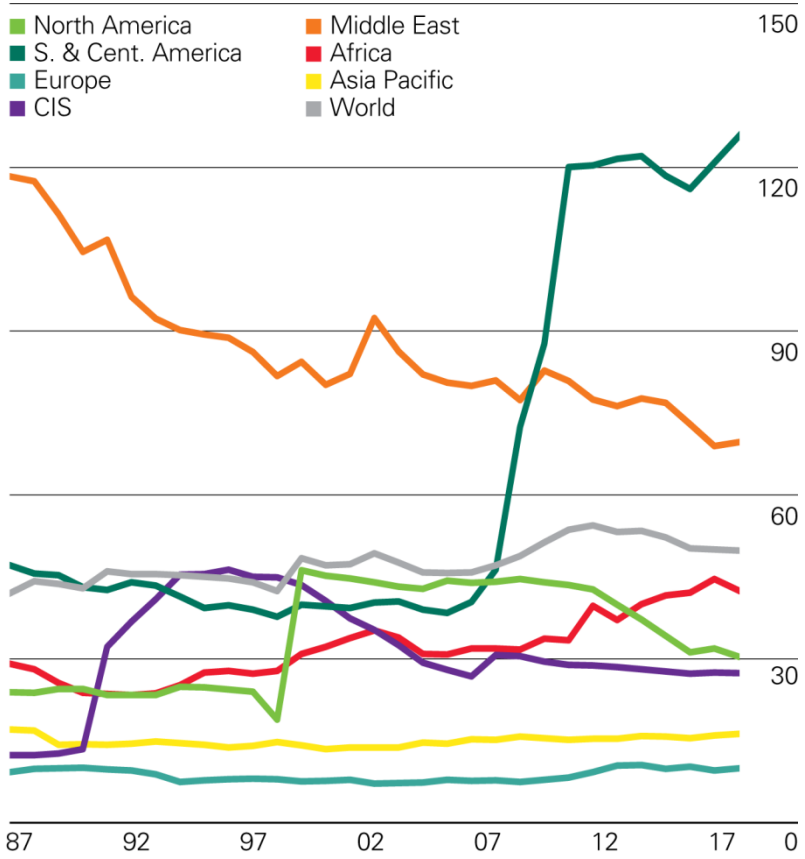

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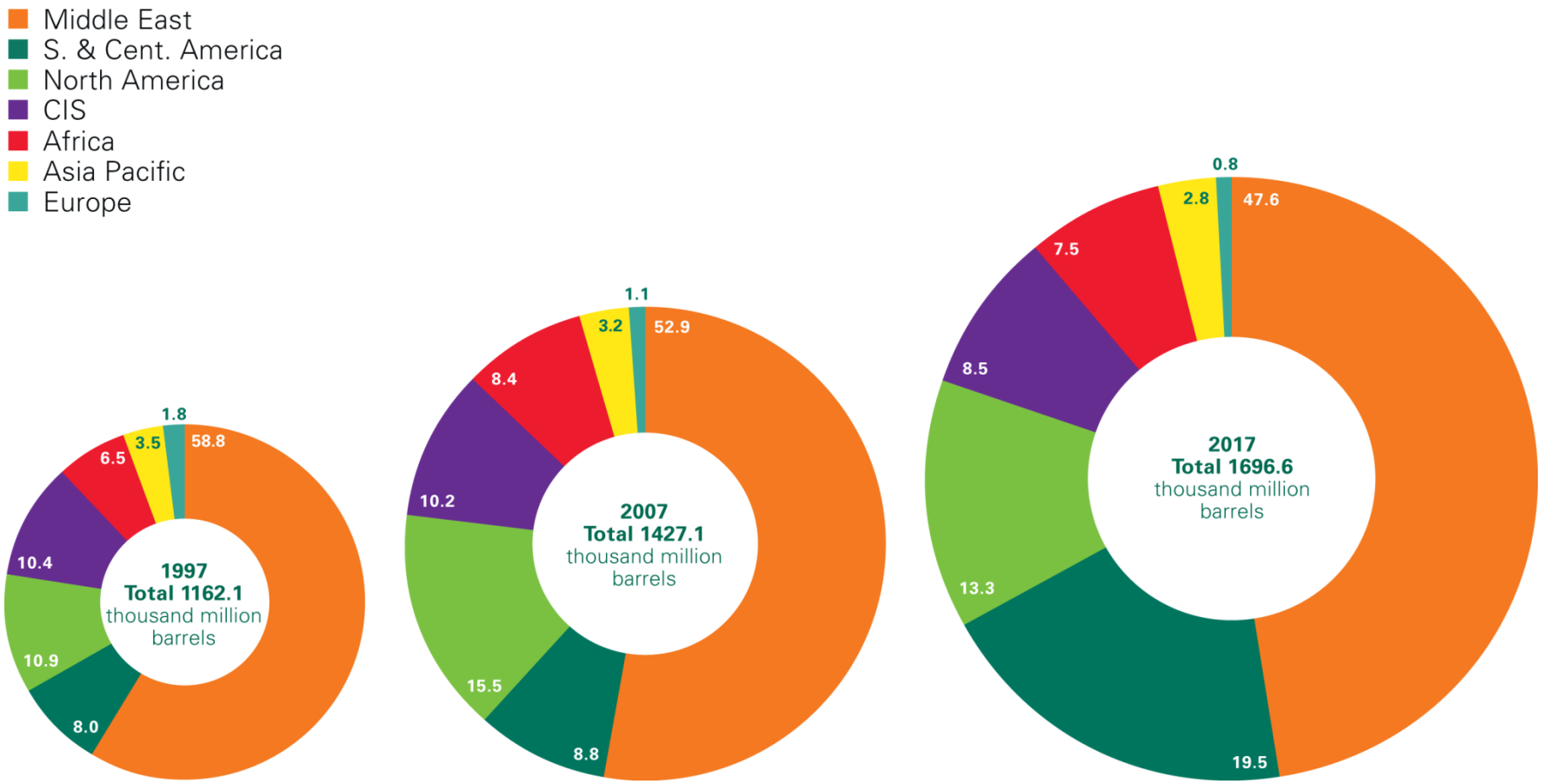
Distribution of proved oil reserves: 1997, 2007 and 2017

Percentage



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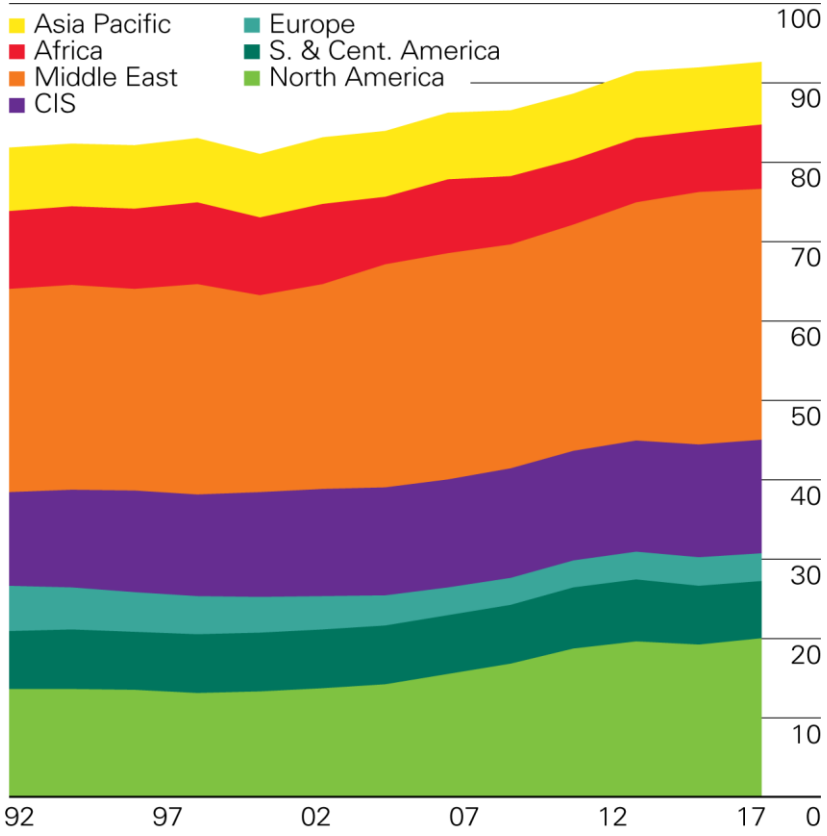
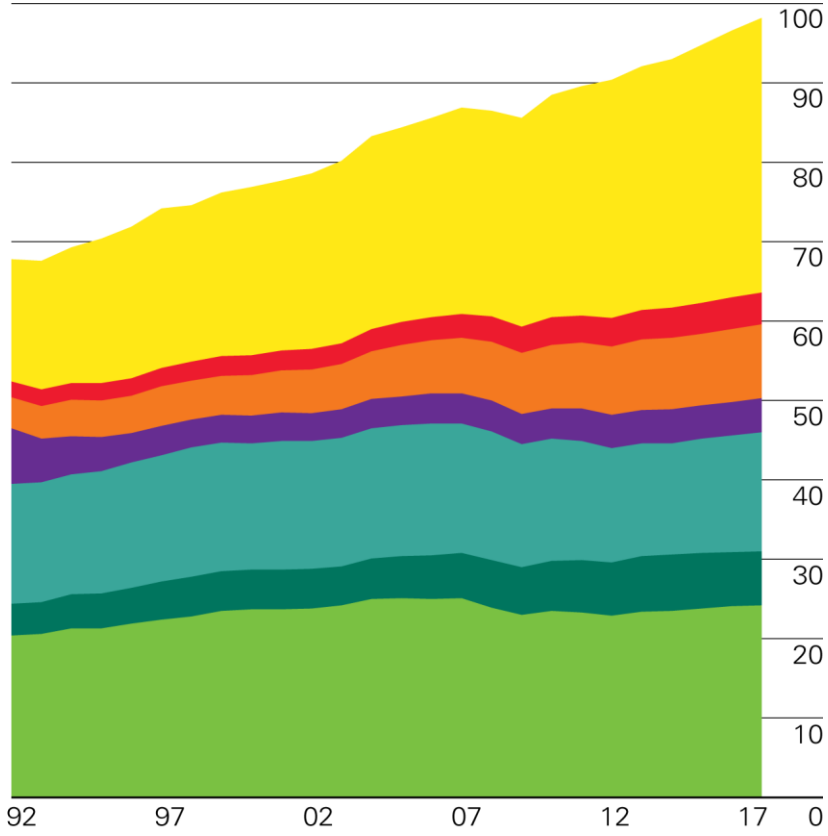
Oil production/consumption by region

Million barrels daily

Production by region



Consumption by region



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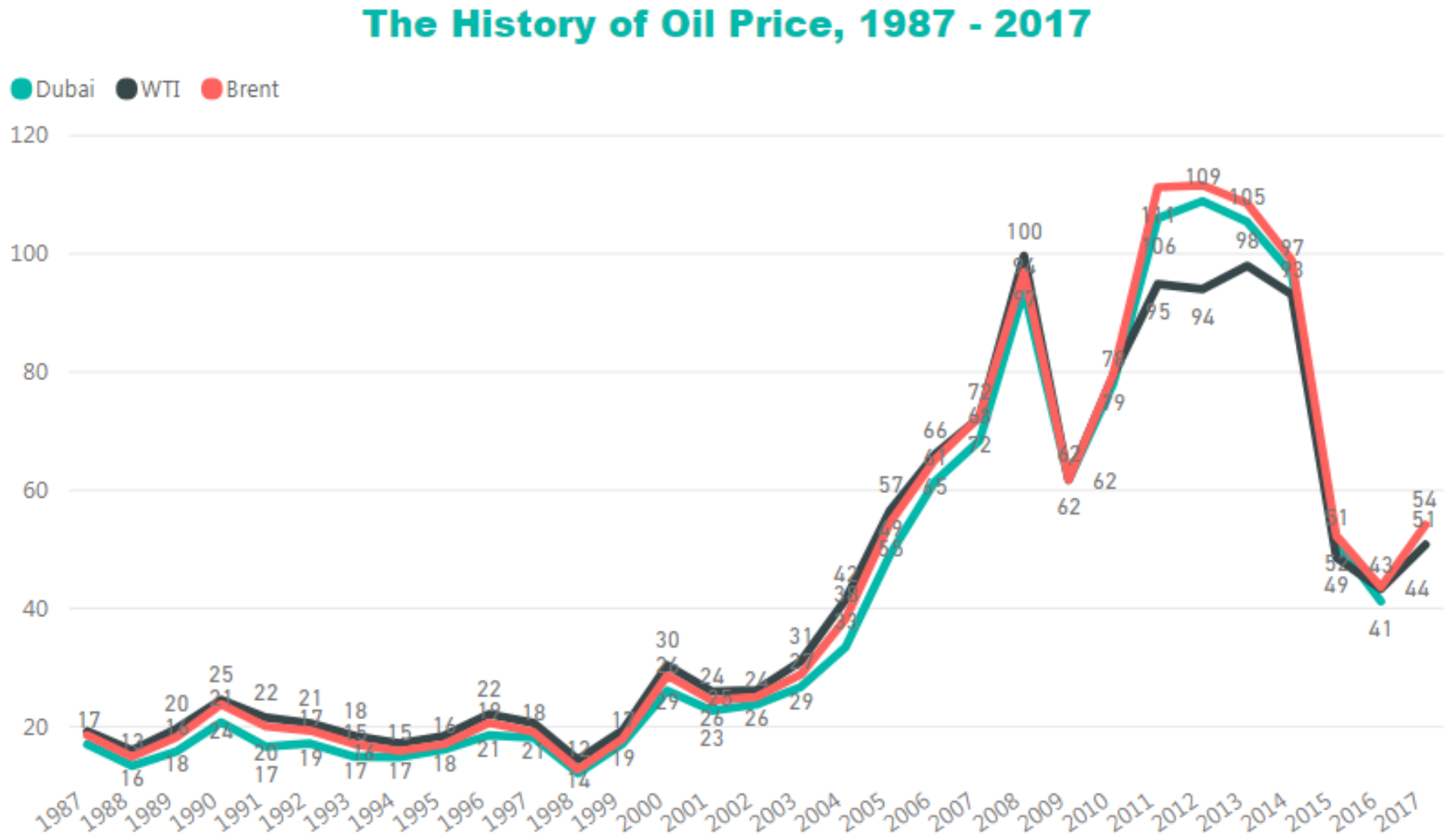
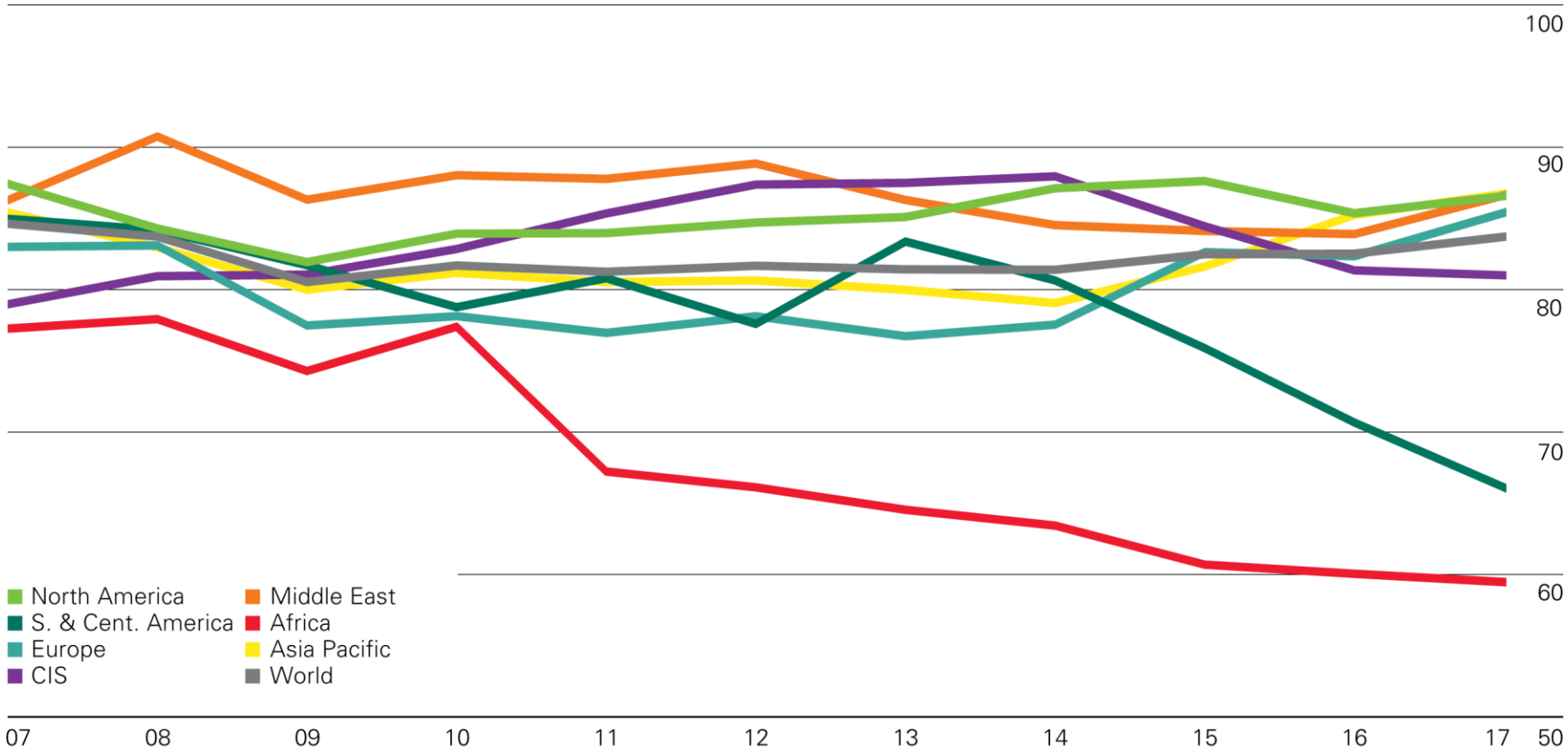


Data Source: Federal Reserve Economic Data

Crude oil prices (WTI) movements since 1987 mapped to global events

Refinery utilization

Percentage (based on average annual capacity)



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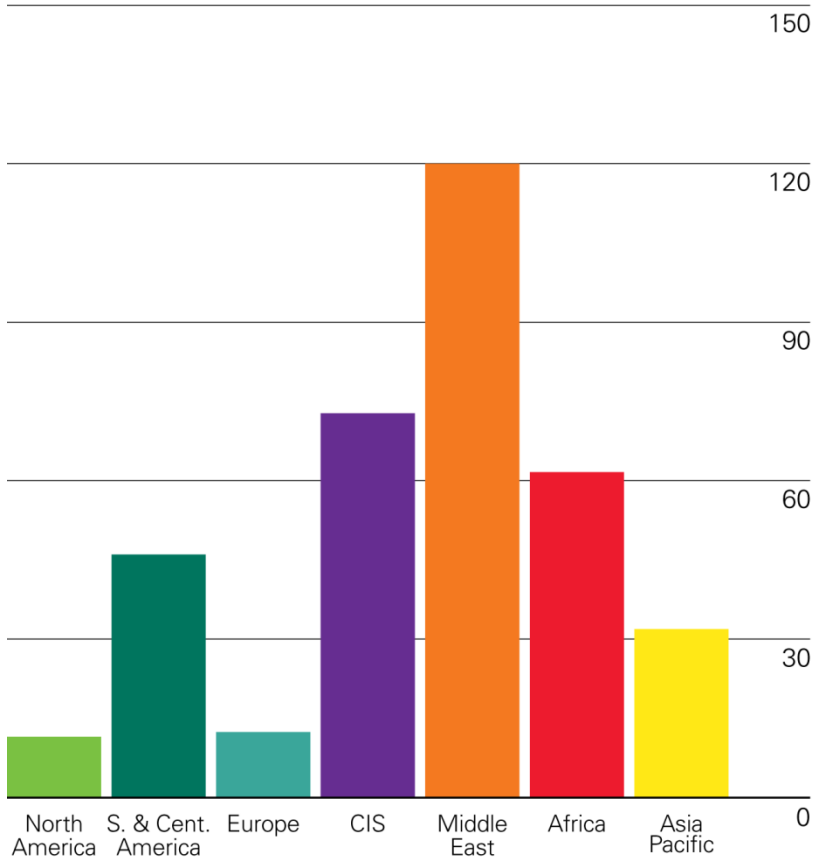
Gas reserves-to-production (R/P) ratios

2017 by region



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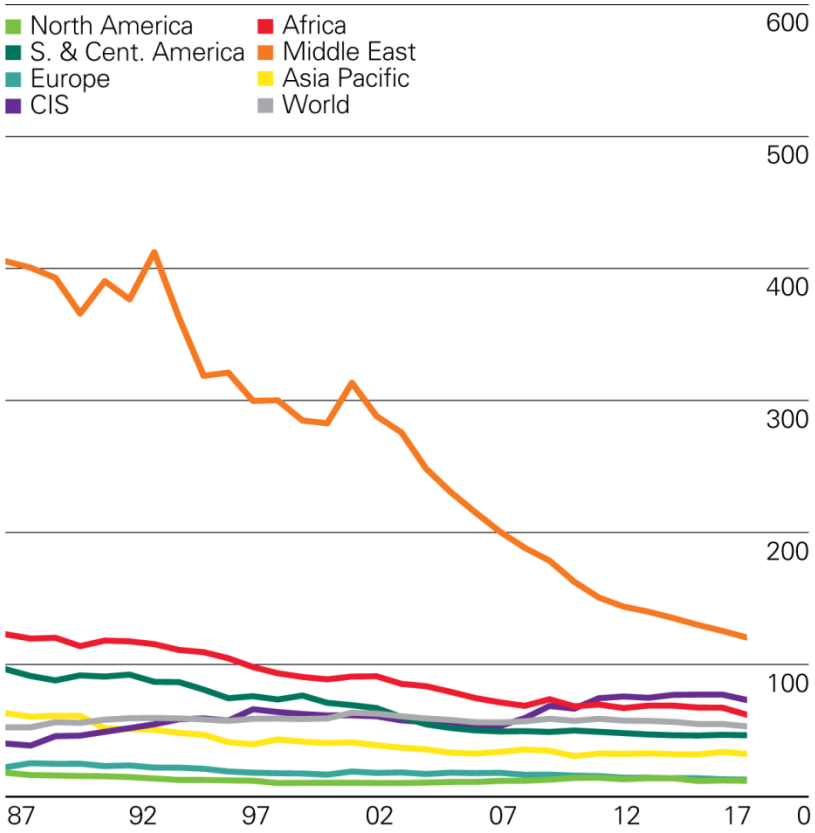

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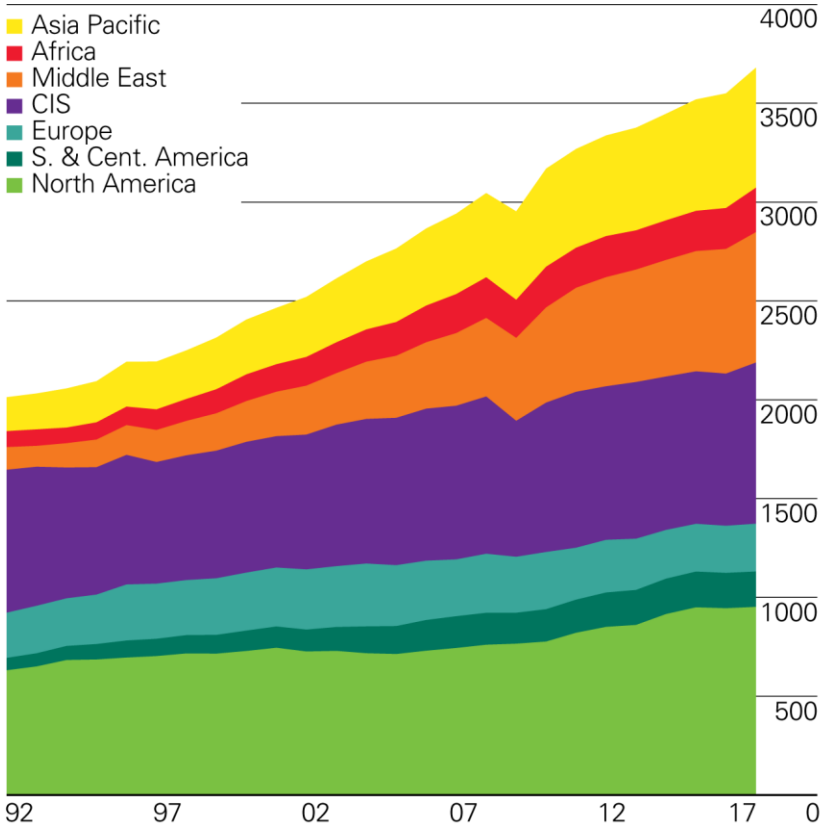
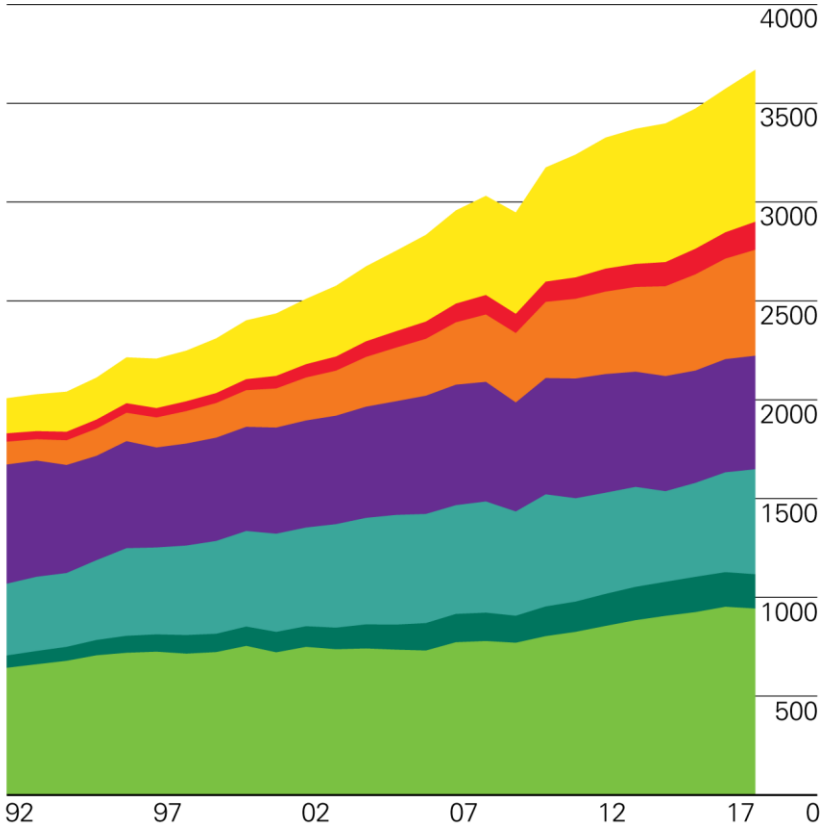
Gas production/consumption by region

Billion cubic metres

Production by region



Consumption by region



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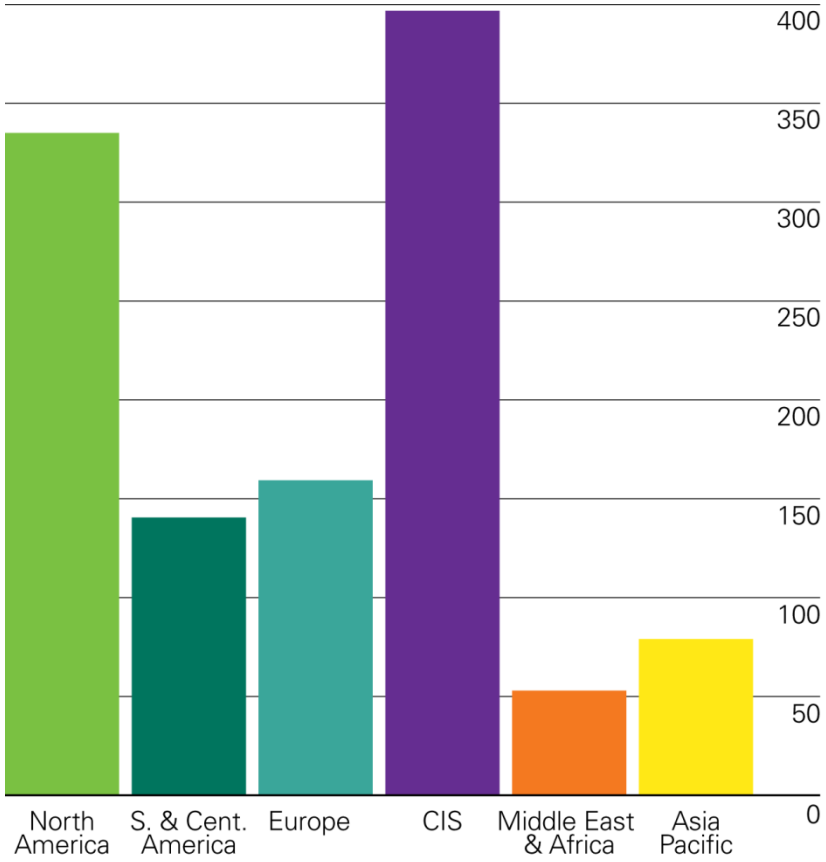
Coal reserves-to-production (R/P) ratios

Years

2017 by region



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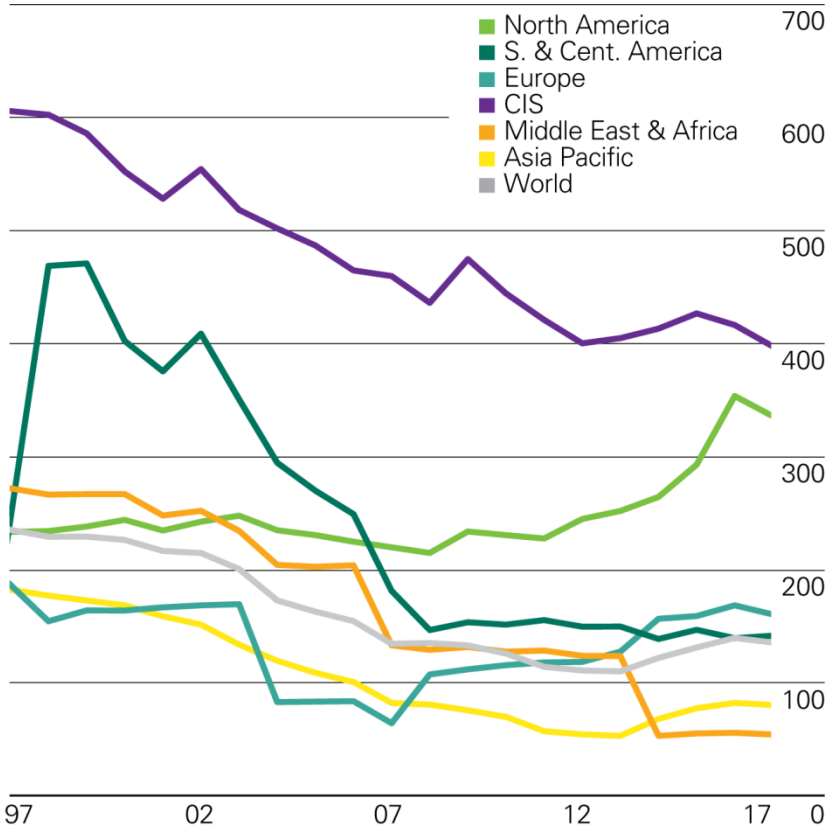

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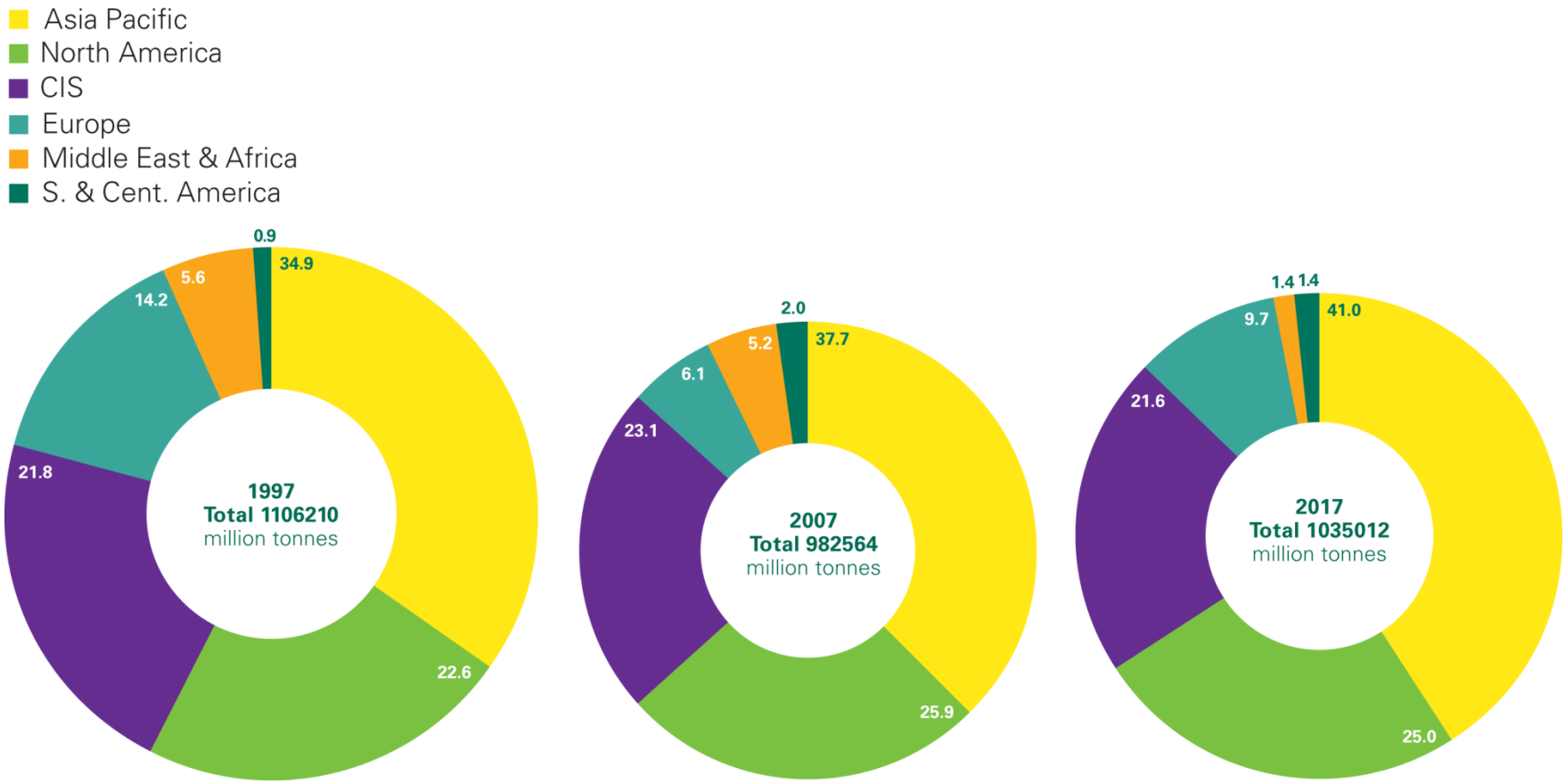
Distribution of proved coal reserves: 1997, 2007 and 2017

Percentage



Source: World Energy Resources 2013 Survey, World Energy Council.

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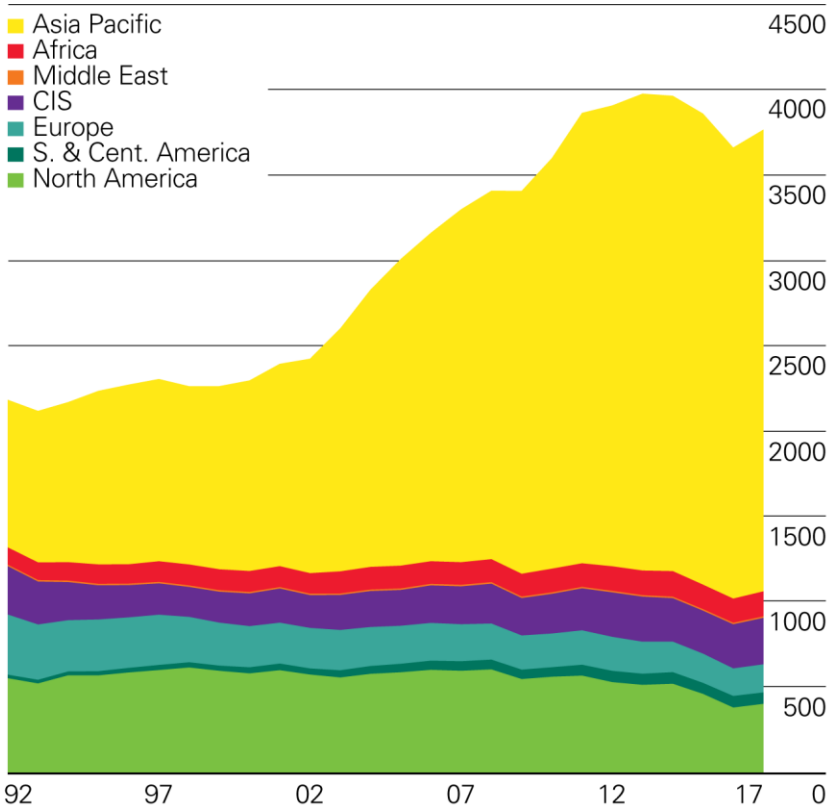
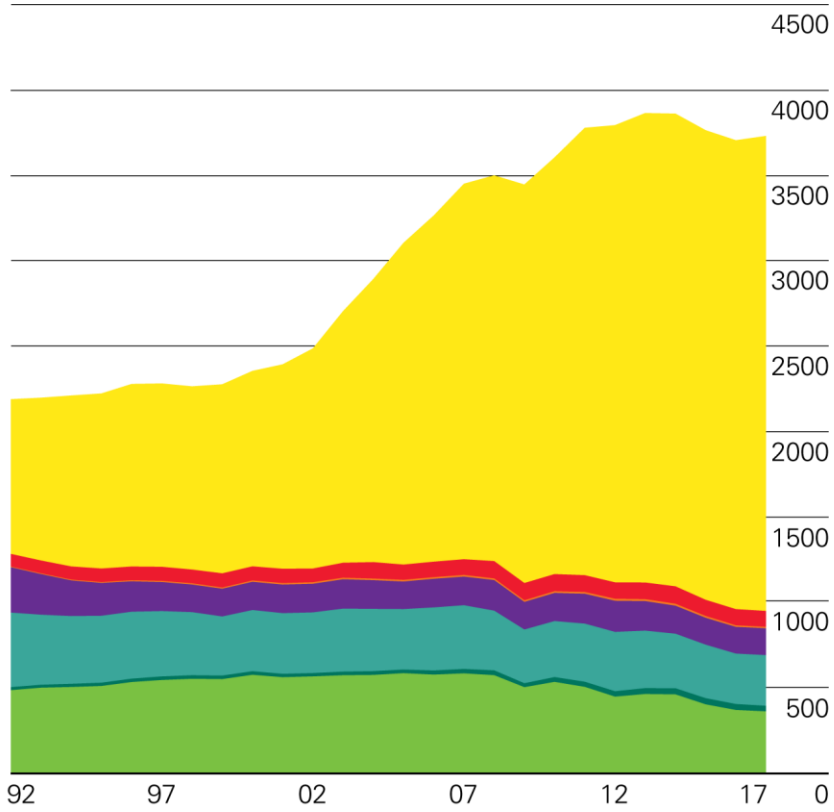
Coal production/consumption by region

Million tonnes oil equivalent

Production by region



Consumption by region



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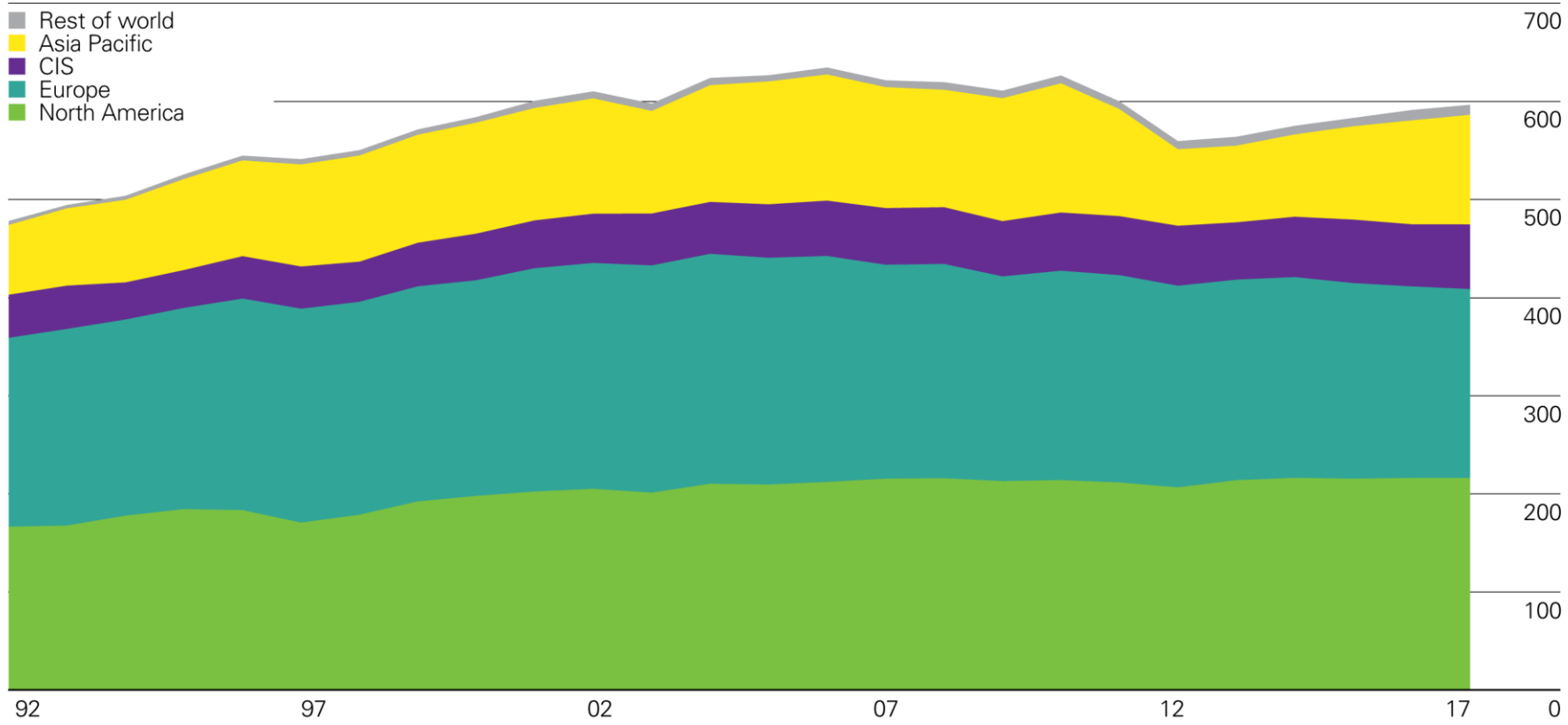
Nuclear energy consumption by region

Million tonnes oil equivalent



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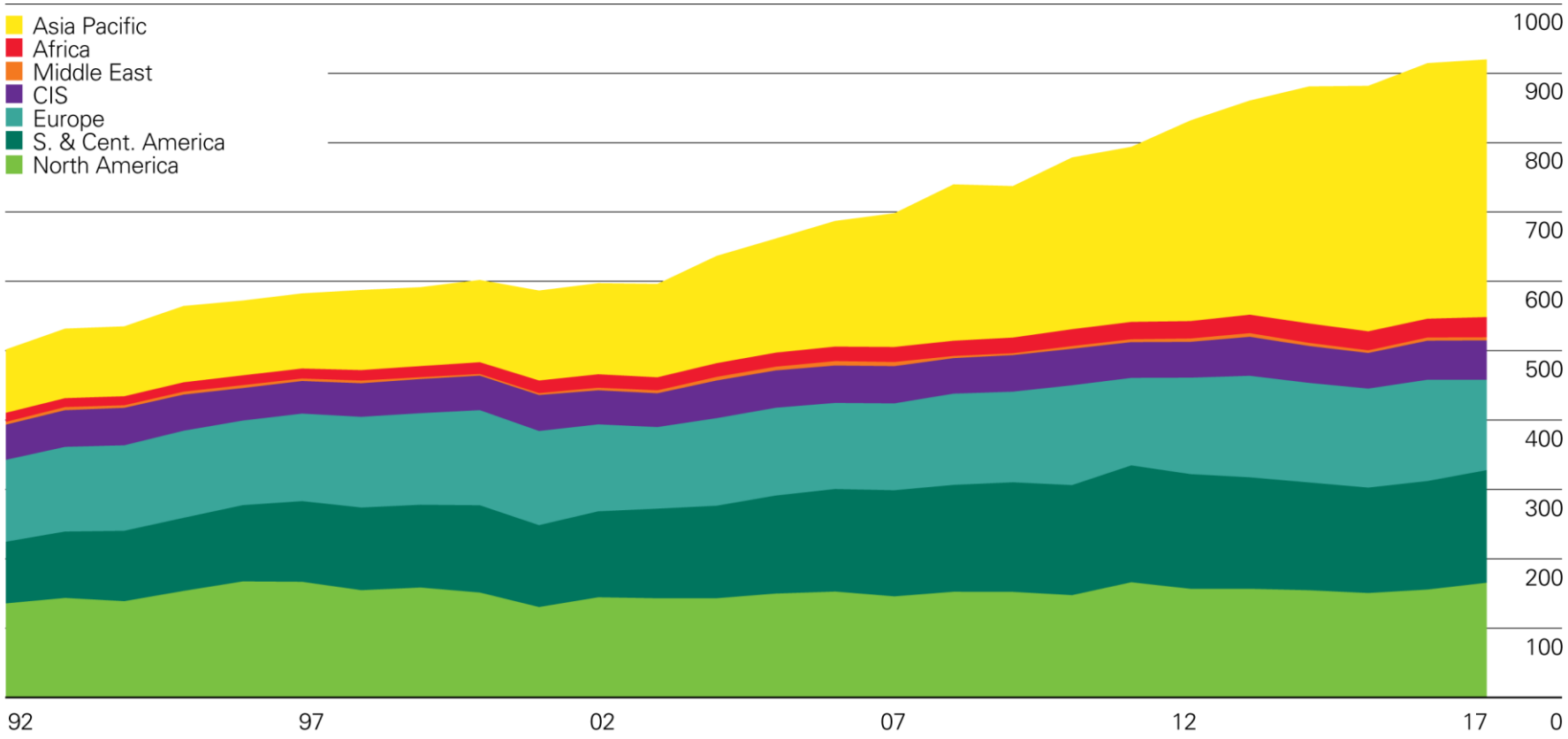
Hydroelectricity consumption by region

Million tonnes oil equivalent



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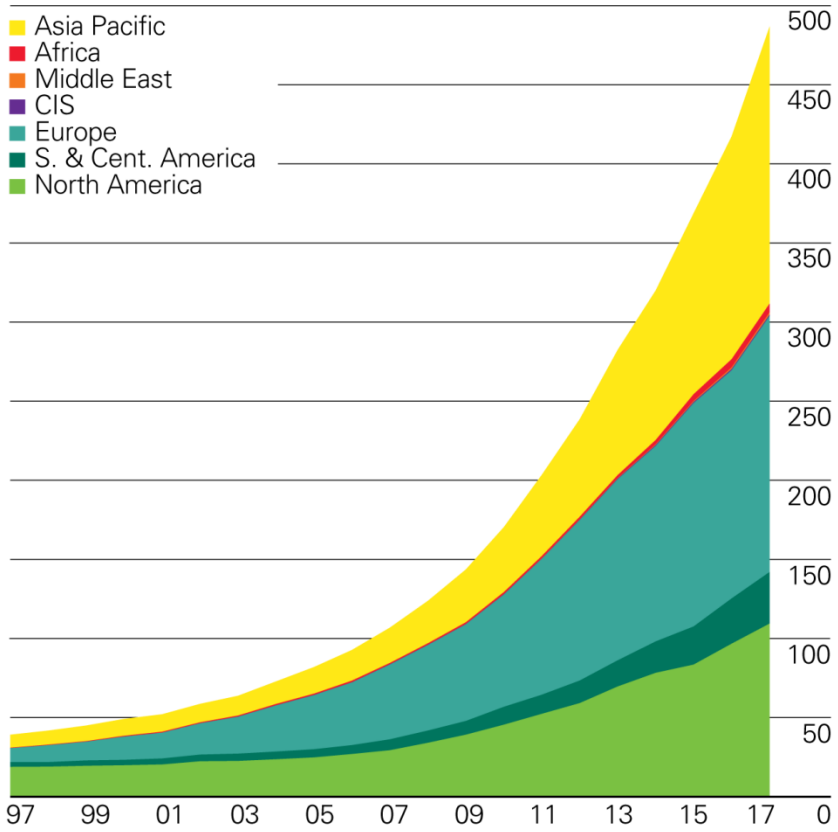
Renewable energy consumption/share of power by region

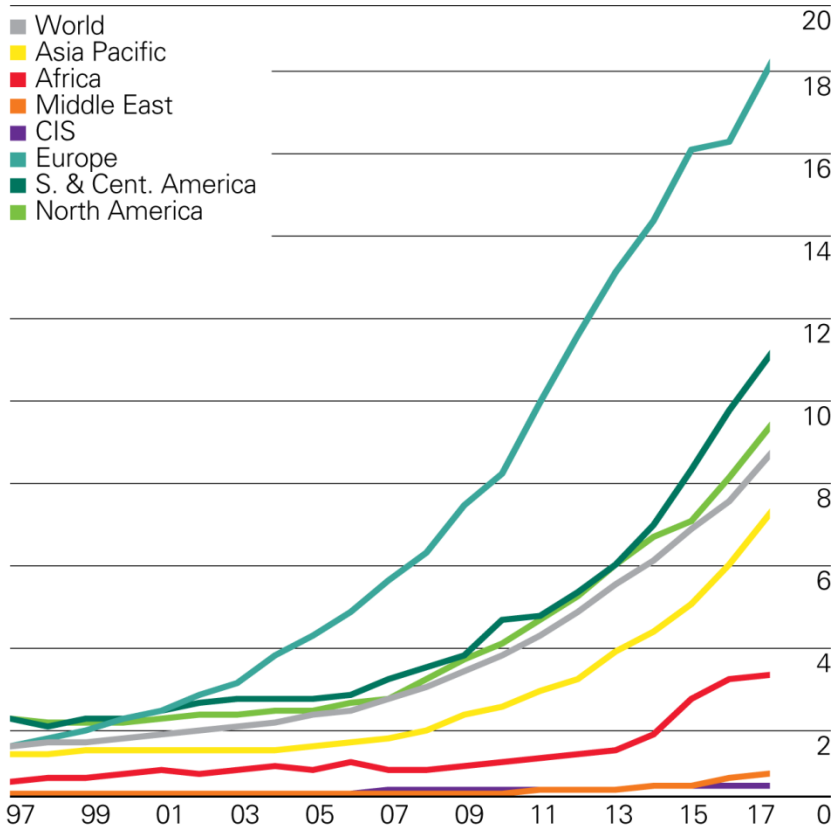
Other renewables consumption by region

Million tonnes oil equivalent



Other renewables share of power generation by region

Percentage



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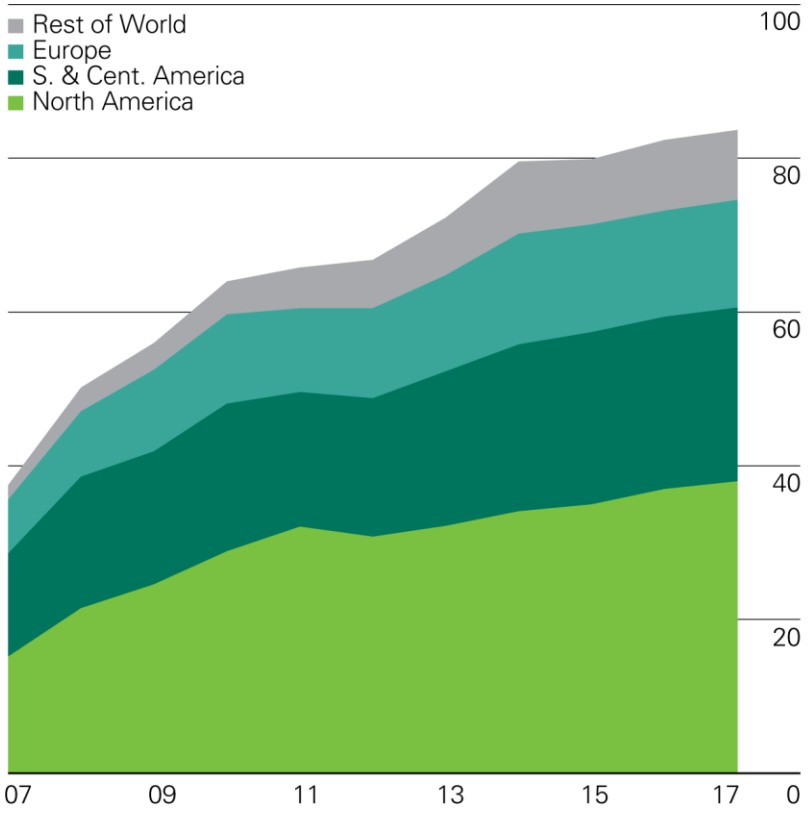
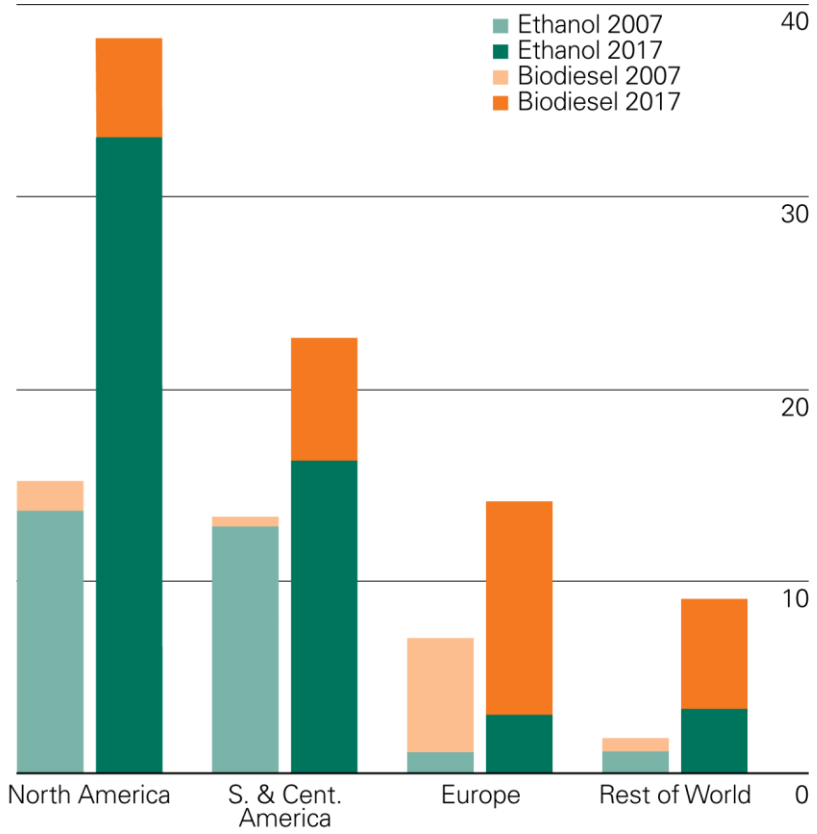
Biofuels production by region

Million tonnes oil equivalent

World biofuels production





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OBSERVATION and EIA Prediction

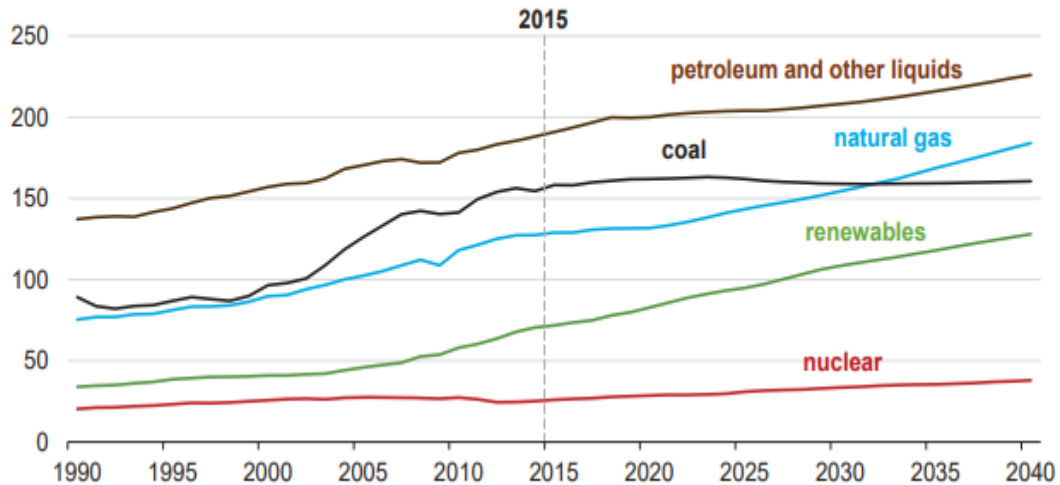
- Growing competition between different energy sources, driven by abundant energy supplies, and continued improvements in energy efficiency. As the world learns to do more with less, demand for energy will be met by the most diverse fuels mix we have ever seen.

- According to EIA (*Energy Information Administration*):
  fossil fuels will **remain Dominant Through 2040.**

- Renewable energy is the world's fastest growing forms of energy:
  2.8% forecasted annual increase in renewable energy through 2040,
  but the total accounting is limited.

World energy consumption by energy source

quadrillion Btu



Demand Side

According to EIA projection(2017):

- World energy consumption expected to increase about 28% (for the period 2015-2040)

- Most of the increase occurring in non-OECD countries:
  - CHINA, INDIA, AFRICA

Population by region

	Levels				Growth
	2015	2020	2030	2040	2015–2040
OECD	1,280	1,313	1,363	1,397	116
Non-OECD	6,068	6,444	7,137	7,759	1,692
World	**7,348**	**7,757**	**8,500**	**9,156**	**1,808**

Long-term real GDP growth rates

	2016–2022	2022–2030	2030–2040	2016–2040
OECD	2.1	2.1	2.0	2.0
Non-OECD	4.7	4.6	4.0	4.4
World	**3.5**	**3.6**	**3.3**	**3.5**

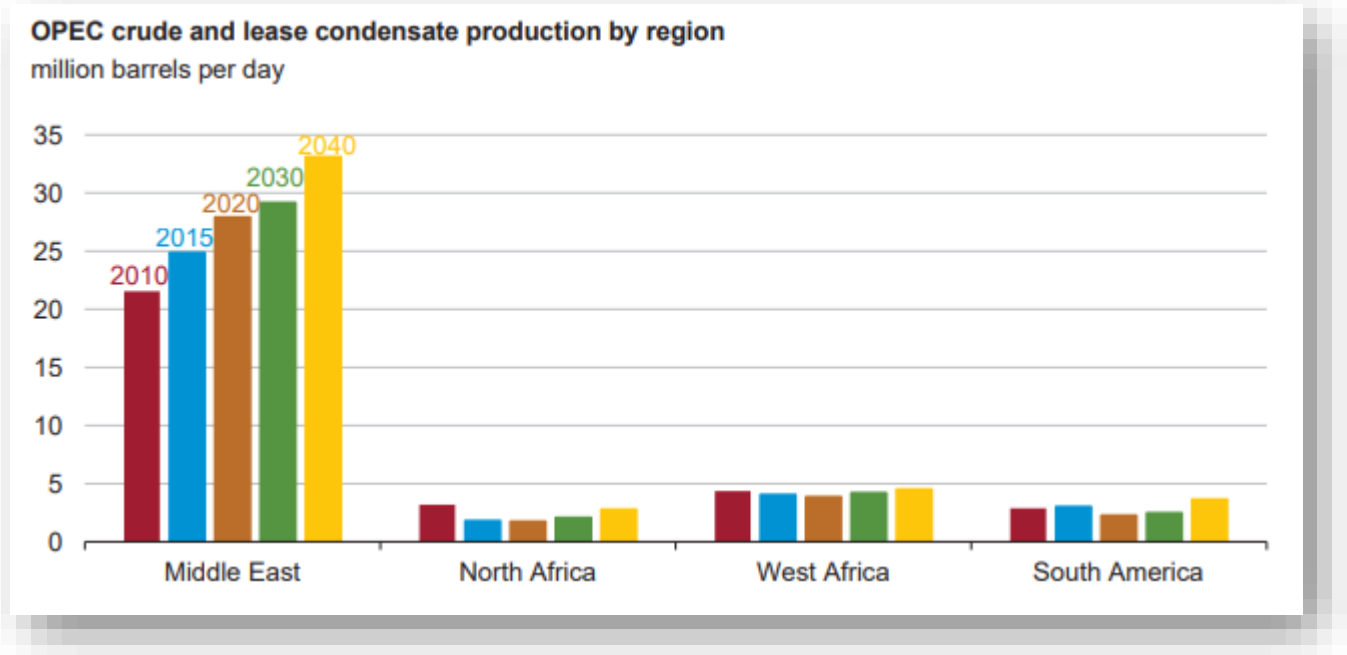
Total Primary Energy demand

	2015	2020	2030	2040
OECD	110.0	113.5	113.6	112.0
Non-OECD	166.0	184.7	225.8	259.6
Total world	**276.0**	**298.2**	**339.4**	**371.6**

Source: Organization of the Petroleum Exporting Countries

Supply Side

- Non-OPEC crude oil production would increase **less than 2%** between 2015 and 2040



Source: U.S. Energy Information Administration

So, Are Oil Prices Rising in the Future?

- *Business cycles,*
- *Geopolitical factors*
- *Discovery of new fields*
- *Technological changes*

❖Political instability- **Trump era**

❖OPEC: defend price level or market share?

❖Global spare production capacity in 2022 falling to a 14-year low

❖Expectation of solid oil demand growth at least toward the year 2022

❖The chance that sharp increase in oil production in a short time may not be possible (unless).

❖**Renewable energy may not replace the fossil fuel energy in the next two decades**

❖**Probably up but not significant**

Macroeconomic Impact of Higher Oil Prices: MENA Region

- Exporting Economies
  - Income up (assuming production not down)
  - Fiscal condition improvement (budget surplus/less deficit, social spending, BOP enhancement, balance of trade improvement, higher foreign reserves)
- Importing Economies
  - Heavier energy bill; Production costs up (less competitive, exports decrease)
  - Budget conditions worsen; Downward pressure on current account

But Not the same?

  - Tourism, foreign investments, and labor remittances (e.g., Lebanon, Jordan, Egypt)
    - partially or totally offsetting the negative effect of a higher energy bill on their fiscal condition, their terms of trade, and their balance of payment

Remittances as % of GDP

Remittances (2016)	**% GDP**
Yemen	20.70%
Lebanon	15.33%
Jordan	11.32%
Morocco	6.84%
Egypt	5.62%
Tunisia	4.33%
Turkey	0.12%

Source: the World Development Indicator (WDI), a World Bank Database

Effect on Government Revenues

Government Revenue (% GDP)

	2013	*2016*
Algeria	35.79%	28.79%
Bahrain	24.22%	15.57%
Iraq	42.17%	27.39%
Kuwait	72.26%	53.40%
Libya	82.98%	31.74%
Oman	49.42%	28.47%
Qatar	51.03%	35.23%
Saudi Arabia	41.17%	21.48%
UAE	38.69%	29.83%

Government Revenue (% GDP)

	2013	*2016*
Egypt	21.42%	21.38%
Jordan	21.46%	22.50%
Lebanon	20.47%	20.00%
Morocco	27.16%	25.12%
Tunisia	24.98%	22.67%

Source: IMF Regional Economic Outlook: Middle East & North Africa (October 2018).

Effect on International Reserves

Gross International Reserves (Billions USD)

	2013	*2016*
Algeria	192.36	112.93
Bahrain	5.35	2.45
Iraq	77.82	45.45
Kuwait	32.25	31.17
Libya	118.83	64.57
Oman	15.95	20.26
Qatar	42.15	31.72
Saudi Arabia	718.44	533.56
UAE	68.22	85.39

Gross International Reserves (Billions USD)

	2013	*2016*
Egypt	14.48	17.10
Jordan	13.82	15.54
Lebanon	33.89	40.22
Morocco	18.80	25.11
Tunisia	7.69	5.94

Source: IMF Regional Economic Outlook: Middle East & North Africa (October 2018)

Government Lending/Borrowing

Net Government Lending / Borrowing (%GDP)

	2013	*2016*
Algeria	-0.40	-13.04
Bahrain	-9.72	-17.56
Iraq	-6.06	-14.26
Kuwait	34.06	0.62
Libya	..	..
Oman	4.68	-21.16
Qatar	19.27	-9.31
Saudi Arabia	5.64	-17.20
UAE	0.23	-0.44

Net Government Lending / Borrowing (%GDP)

	2013	*2016*
Egypt	-12.89	-12.52
Jordan	-11.12	-3.22
Lebanon	-8.90	-8.83
Morocco	-5.09	-4.48
Tunisia	-7.34	-5.81

Source: IMF Regional Economic Outlook: Middle East & North Africa (October 2018)

Effect on Current Accounts

Current Account Balance (Billions USD)

	2013	*2016*
Algeria	0.83	-26.47
Bahrain	2.41	-1.49
Iraq	2.68	-14.72
Kuwait	70.21	-5.00
Libya	0.01	-4.58
Oman	5.20	-12.32
Qatar	60.46	-8.32
Saudi Arabia	135.44	-23.87
UAE	74.13	4.88

Current Account Balance (Billions USD)

	2013	*2016*
Egypt	-6.39	-19.83
Jordan	-3.51	-3.61
Lebanon	-13.58	-11.58
Morocco	-8.13	-4.51
Tunisia	-3.88	-3.69

Source: IMF Regional Economic Outlook: Middle East & North Africa (October 2018)

The Resource Curse

- **Paradox of plenty:**

  Refers to the paradox that countries with an abundance of natural resources tend to have less economic growth, less democracy, and worse development

- *High-risk of natural resource abundance depressing economic growth in the longer run*

- *Sachs and Warner*: examined 97 economies between 1971 and 1989, found:
  - Countries with high natural resource exports to GDP ratio tend to grow at slower rate. even after the control for initial income level, trade policy, investment rates, bureaucratic efficiency, terms-of-trade volatility.

Is Oil Abundance a curse?

- Researchers from the World Bank studied data over the period 1980–2006 for 53 countries, covering 85% of world GDP and 81% of world proven oil reserves. They found that oil abundance positively affected both short-term growth and long-term income levels

- In a companion paper, using data on 118 countries over the period 1970–2007, they show that it is the volatility in commodity prices, rather than abundance per se, that drives the resource curse paradox

Is the relationship between oil prices and the economy always the same?

- The oil shocks of the 1970s were characterized by low growth, high unemployment, and high inflation
  - *oil prices have been viewed as an important source of economic fluctuations*
- However, in the past decade research has challenged this conventional wisdom
  - Blanchard and Gali (2007): the late 1990s and early 2000s were periods of large oil price fluctuations, comparable in magnitude to the oil shocks of the 1970s, did not cause considerable fluctuations in inflation, real GDP growth, or the unemployment rate.

  Evidence: link between oil prices & macro-economy has deteriorated over time
    - Increase in energy efficiency; monetary policy

Withering the Oil Curse:
Low Oil Prices as an Opportunity for Reform

- *Structural Economic Reforms:*
  Diversification Towards Productive Sectors

- Shifting from a consumption-driven economy to export orientation

- Energy Reform: Renewables in the Energy Mix

- Institutional Reform: Entrepreneurs

Statistically speaking, How Does Oil Price Affect:

- ❖Stock Market
- ❖Gross Domestic Product (GDP)
- ❖GDP per Capita
- ❖ National Income per Capita
- ❖Unemployment Rate
- ❖The Consumer Price Index (CPI)

Dependant Variables: Monthly Return of Equity Index
Independent Variables: Monthly Growth Rate of the Average Oil Price *

Equity Index	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Kuwait (BKP)	0.1401 0.741	0.1105 0.0577	0.0981 0.1021	-0.0261 0.6587	0.0388 0.4943
Saudi Arabia (TASI)	0.4898 0.4098	0.2241 0.0003	0.1113 0.0747	0.0508 0.4121	-0.0488 0.4126
Oman MSM 30 (MSI)	-0.1949 0.7646	0.1024 0.2038	0.3279 <.0001	-0.0337 0.6804	0.0664 0.3984
Qatar QE General (QSI)	0.8913 0.0968	0.3107 <.0001	-0.021 0.7609	0.0504 0.4658	0.1117 0.0921
Iraq ISX Main60	-0.856 0.3573	-0.0243 0.7931	0.2102 0.0348	0.008437 0.9301	0.1079 0.2509
Abu Dhabi Securities Exchange	0.6782 0.1176	0.1411 0.0115	0.0629 0.2485	0.0857 0.117	-0.042 0.4402
Bahrain All Share Index	-0.1122 0.7817	0.0382 0.2712	0.0153 0.6531	-0.0124 0.7134	0.017 0.6183
Egyptian EGX30	1.3567 0.4356	0.3159 0.0948	0.1955 0.2514	-0.1474 0.3675	0.1825 0.2613
Moroccan All Shares (MASI)	0.6284 0.0575	0.0201 0.6212	0.0455 0.2849	-0.0319 0.4527	-0.008853 0.8273
Beirut BLOM Stock (BLSI)	0.2174 0.6651	0.2117 <.0001	0.1159 0.0301	-0.0497 0.3481	0.0628 0.2174

Data Resource: The International Monetary Fund (IMF) , www.investing.com, Dec, 2000- Jun,2017
**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Monthly Return of Equity Index
Independent Variables: Monthly Growth Rate of the WTI Crude Oil Price *

Equity Index	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Kuwait (BKP)	0.1553 *0.7113*	0.1067 *0.0545*	0.115 *0.0405*	-0.0391 *0.4797*	0.0572 *0.2904*
Saudi Arabia (TASI)	0.5146 *0.3909*	0.2217 *0.0002*	0.1404 *0.0211*	0.008574 *0.8869*	-0.0298 *0.6098*
Oman MSM 30 (MSI)	-0.1652 *0.8013*	0.1088 *0.1714*	0.2886 *0.0005*	-0.0525 *0.5169*	0.0826 *0.2925*
Qatar QE General (QSI)	0.9168 *0.0867*	0.3029 *<.0001*	0.000364 *0.9957*	0.0393 *0.5572*	0.1184 *0.0673*
Iraq ISX Main60	-0.8785 *0.3533*	0.002161 *0.9822*	0.1894 *0.0634*	0.0101 *0.9182*	0.0964 *0.3231*
Abu Dhabi Securities Exchange	0.6876 *0.1141*	0.1364 *0.0127*	0.0589 *0.2657*	0.0647 *0.2212*	-0.0177 *0.7396*
Bahrain All Share Index	-0.1031 *0.7976*	0.0343 *0.3071*	0.0276 *0.3949*	0.000152 *0.9962*	0.00763 *0.8161*
Egyptian EGX30	1.4213 *0.41*	0.3466 *0.0707*	0.1762 *0.3056*	-0.1805 *0.2745*	0.2296 *0.1704*
Moroccan All Shares (MASI)	0.6299 *0.0572*	-0.005161 *0.8957*	0.0455 *0.2655*	-0.0241 *0.5553*	0.005896 *0.8806*
Beirut BLOM Stock (BLSI)	0.2405 *0.6301*	0.21 *<.0001*	0.1008 *0.0535*	-0.0509 *0.3262*	0.0839 *0.0956*

Data Resource: The International Monetary Fund (IMF) , www.investing.com, Dec, 2000- Jun,2017
**the WTI Crude Oil Price, simple average of Crude Oil (petroleum), West Texas Intermediate 40 API, Midland Texas, US$ per barrel*

Dependant Variables: Monthly Return of Equity Index

Independent Variables: Monthly Growth Rate of the Dubai Crude Oil Prices *

Equity Index	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Kuwait (BKP)	0.1288 0.7614	0.1083 0.0506	0.086 0.1342	-0.0211 0.7096	0.0298 0.5838
Saudi Arabia (TASI)	0.4466 0.4596	0.249 <.0001	0.0804 0.201	0.0529 0.3992	-0.074 0.2234
Oman MSM 30 (MSI)	-0.2162 0.7373	0.0863 0.28	0.3586 <.0001	-0.003742 0.9631	0.0258 0.7385
Qatar QE General (QSI)	0.8788 0.1043	0.2936 <.0001	-0.033 0.64	0.06 0.3939	0.1051 0.1173
Iraq ISX Main60	-0.8773 0.3392	-0.0261 0.7576	0.198 0.0295	0.0127 0.885	0.1059 0.2178
Abu Dhabi Securities Exchange	0.6751 0.1227	0.1401 0.0121	0.0543 0.3218	0.0874 0.1116	-0.0445 0.4143
Bahrain All Share Index	-0.1157 0.7745	0.0372 0.256	0.007581 0.8148	-0.017 0.5967	0.0252 0.4375
Egyptian EGX30	1.26 0.4761	0.2507 0.1482	0.1817 0.2509	-0.1113 0.4651	0.1263 0.3996
Moroccan All Shares (MASI)	0.6216 0.0587	0.0489 0.2305	0.0467 0.2763	-0.04 0.3515	-0.0167 0.6818
Beirut BLOM Stock (BLSI)	0.1965 0.6937	0.2036 0.0002	0.1198 0.0251	-0.0528 0.3197	0.0661 0.1916

Data Resource: The International Monetary Fund (IMF) , www.investing.com, Dec, 2000- Jun,2017

**the WTI Crude Oil Price, simple average of Crude Oil; Dubai, medium, Fateh 32 API, fob Dubai Crude Oil (petroleum), Dubai Fateh Fateh 32 API, US$*

Dependant Variables: Annual Growth Rate of GDP
Independent Variables: Annual Growth Rate of the Average Oil Price*

EXPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Kuwait	2.7785	0.5961	-0.1133	0.101	0.1099
	0.5164	0.0007	0.4635	0.5649	0.5371
Saudi Arabia	5.67	0.4046	0.0278	0.0109	-0.0124
	<.0001	<.0001	0.5076	0.8181	0.7973
Oman	5.1557	0.4587	0.0203	0.0739	0.0121
	0.0003	<.0001	0.6411	0.1443	0.8095
Qatar	8.1731	0.5879	0.1001	0.1055	0.0692
	<.0001	<.0001	0.0583	0.0779	0.2446
Iraq	18.1635	0.7674	0.161	-0.2704	0.0522
	0.0629	0.0101	0.4934	0.3844	0.8788
Iran, Islamic Rep.	7.2695	0.2271	0.007676	0.0235	-0.0782
	0.026	0.0454	0.9424	0.8501	0.5326
United Arab Emirates	6.5815	0.3706	0.0258	-0.000436	0.0109
	<.0001	<.0001	0.4293	0.9906	0.772
Algeria	0.8992	0.4205	0.0463	0.0578	0.1442
	0.6472	<.0001	0.5144	0.4753	0.0876
Bahrain	6.851	0.2742	0.0402	-0.0116	-0.000186
	<.0001	<.0001	0.3163	0.7972	0.9968

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1989-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of GDP

Independent Variables: Annual Growth Rate of the Average Oil Price*

IMPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Egypt, Arab Rep.	6.9732	0.0746	0.044	0.0257	0.0256
	0.0416	0.3141	0.5643	0.7642	0.7487
Tunisia	3.7591	0.1215	0.0195	0.0694	0.0832
	0.0236	0.0407	0.7298	0.2858	0.2095
Jordan	6.6009	0.0497	0.0263	0.128	0.0719
	<.0001	0.2245	0.5141	0.0096	0.1304
Morocco	3.3759	0.0985	0.0314	0.062	0.1159
	0.0484	0.1055	0.5944	0.36	0.0989
Lebanon	10.3237	-0.0933	0.0357	0.0425	-0.0393
	0.0226	0.2133	0.6566	0.633	0.6239

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1989-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of GDP per Capita

Independent Variables: Annual Growth Rate of the Average Oil Price *

EXPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Kuwait	-0.4714	0.0447	0.027	-0.0651	0.001003
	0.8634	*0.3005*	*0.5634*	*0.2247*	*0.983*
Saudi Arabia	-2.3098	0.0473	0.0838	-0.1207	0.0397
	0.1294	*0.3865*	*0.1375*	*0.0352*	*0.4567*
Oman	0.5175	0.0122	0.0161	0.0319	-0.051
	0.0221	*0.1991*	*0.4357*	*0.5869*	*0.8016*
Qatar	0.477	0.0532	-0.0202	0.0115	-0.00783
	0.7465	*0.2329*	*0.6244*	*0.8248*	*0.871*
Iraq	2.3309	0.1012	-0.1882	-0.036	-0.0356
	0.7126	*0.6555*	*0.4111*	*0.8907*	*0.8923*
Iran, Islamic Rep.	1.6494	0.0234	-0.0323	0.001675	0.0412
	0.1015	*0.5052*	*0.362*	*0.9669*	*0.3158*
United Arab Emirates	-1.2158	0.0552	-0.0126	-0.0666	-0.0331
	0.5537	*0.116*	*0.7338*	*0.1018*	*0.3431*
Algeria	0.9601	0.0245	-0.003121	0.011	0.0144
	0.0832	*0.2098*	*0.871*	*0.6191*	*0.5186*
Bahrain	0.9862	-0.014	-0.004153	-0.0144	0.000607
	0.1812	*0.59*	*0.8728*	*0.6313*	*0.9839*

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1990-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of GDP per Capita
Independent Variables: Annual Growth Rate of the Average Oil Price*

IMPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Egypt, Arab Rep.	**1.8971**	0.0144	-0.009492	0.007122	-0.002933
	0.0221	*0.1991*	*0.4357*	*0.5869*	*0.8016*
Tunisia	**2.202**	**0.031**	0.006151	**0.0377**	-0.0105
	<.0001	*0.0578*	*0.6952*	*0.0466*	*0.5624*
Jordan	0.4801	0.0361	0.0144	0.0464	0.0228
	0.5239	*0.1887*	*0.5935*	*0.145*	*0.4676*
Morocco	**2.187**	-0.000476	0.0358	0.0216	-0.0139
	0.0202	*0.988*	*0.2654*	*0.5557*	*0.7053*
Lebanon	1.7412	-0.0245	0.0294	0.0564	-0.0286
	0.305	*0.6834*	*0.6271*	*0.4201*	*0.6818*

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1990-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of Net National Income Per Capita

Independent Variables: Annual Growth Rate of the Average Oil Price *

EXPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Kuwait	-9.4467	0.5076	0.0357	-0.0598	-0.003563
	0.4121	*<.0001*	*0.6413*	*0.4646*	*0.9589*
Saudi Arabia	2.7112	0.3099	0.0352	0.0466	0.003592
	0.0073	*<.0001*	*0.2974*	*0.2283*	*0.9258*
Oman	2.3632	0.259	0.0125	0.2244	-0.0466
	0.3413	*0.0039*	*0.8974*	*0.0239*	*0.6252*
Qatar	4.0778	0.3906	0.0277	0.083	-0.057
	0.1585	*0.0007*	*0.8083*	*0.4584*	*0.6098*
Iraq	15.0333	0.7662	0.2425	-0.2203	0.0554
	0.1574	*0.0193*	*0.3731*	*0.5311*	*0.8876*
Iran, Islamic Rep.	5.8092	0.1635	0.021	0.0816	-0.0805
	0.1029	*0.1872*	*0.8609*	*0.5608*	*0.5682*
United Arab Emirates	1.783	0.3265	-0.0671	-0.0612	-0.0638
	0.468	*0.0007*	*0.3387*	*0.4678*	*0.4546*
Algeria	-1.4299	0.3668	0.0688	0.1053	0.1636
	0.4835	*<.0001*	*0.3517*	*0.2142*	*0.0628*
Bahrain	4.9735	0.1822	0.0176	-0.0316	-0.1223
	0.0459	*0.0432*	*0.8375*	*0.7462*	*0.2244*

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1989-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of Net National Income Per Capita
Independent Variables: Annual Growth Rate of the Average Oil Price *

IMPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Egypt, Arab Rep.	5.3903	-0.0026	0.0697	0.0349	-0.0105
	0.1548	*0.9703*	*0.3575*	*0.6749*	*0.889*
Tunisia	2.3933	0.0738	0.0527	0.0418	0.0779
	0.1459	*0.2116*	*0.3669*	*0.5282*	*0.2511*
Jordan	3.1089	0.0587	0.0323	0.1061	0.0695
	0.0236	*0.2172*	*0.4912*	*0.0556*	*0.2052*
Morocco	1.9974	0.0998	0.0334	0.0668	0.1136
	0.2416	*0.1103*	*0.582*	*0.3376*	*0.1142*
Lebanon	7.9194	-0.0596	0.008566	0.009081	-0.1237
	0.0687	*0.5026*	*0.9267*	*0.9309*	*0.214*

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1989-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of Unemployment
Independent Variables: Annual Growth Rate of the Average Oil Price*

EXPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Kuwait	2.6731	0.3278	-0.1239	-0.2085	0.3312
	0.6596	*0.2665*	*0.7042*	*0.5557*	*0.3368*
Saudi Arabia	-1.8147	0.1185	-0.0671	0.0204	0.0438
	0.4667	*0.1854*	*0.448*	*0.8391*	*0.6702*
Oman	-1.1789	-0.004405	-0.003195	-0.000325	0.0238
	0.3888	*0.8115*	*0.8783*	*0.9882*	*0.2219*
Qatar	-7.1835	-0.062	-0.1953	-0.4119	-0.294
	0.2438	*0.7723*	*0.368*	*0.1056*	*0.2497*
Iraq	-0.7632	0.0227	0.023	-0.007609	-0.0468
	0.5718	*0.6344*	*0.6301*	*0.8892*	*0.4049*
Iran, Islamic Rep.	2.1049	-0.0498	-0.0664	-0.0746	-0.1001
	0.3723	*0.548*	*0.4261*	*0.4355*	*0.3077*
United Arab Emirates	-2.8787	0.1102	0.1417	0.0895	0.0822
	0.4398	*0.072*	*0.0373*	*0.205*	*0.2074*
Algeria	-0.9148	-0.0722	-0.0706	-0.1379	-0.0661
	0.7387	*0.4586*	*0.4704*	*0.2241*	*0.5621*
Bahrain	-4.9981	-0.2077	0.2309	-0.3229	0.0767
	0.406	*0.3301*	*0.2818*	*0.1921*	*0.7565*

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1991-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of Unemployment

Independent Variables: Annual Growth Rate of the Average Oil Price*

IMPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Egypt, Arab Rep.	1.0522	0.0186	-0.0441	-0.0275	0.0307
	0.6845	*0.8385*	*0.6316*	*0.7938*	*0.7744*
Tunisia	0.2251	-0.038	0.0336	**-0.1734**	0.0807
	0.8943	*0.5275*	*0.5774*	***0.019***	*0.2581*
Jordan	-0.6442	-0.0725	-0.0352	-0.001081	-0.007441
	0.7023	*0.2315*	*0.5566*	*0.9874*	*0.915*
Morocco	-1.8674	-0.1218	0.0141	-0.0533	0.0164
	0.4769	*0.1961*	*0.8789*	*0.6158*	*0.8795*
Lebanon	-0.9717	0.0495	-0.0199	0.008476	-0.0884
	0.456	*0.2864*	*0.6656*	*0.872*	*0.1107*

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1991-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of Consumer price index (CPI)
Independent Variables: Annual Growth Rate of the Average Oil Price *

EXPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Kuwait	2.957	0.0181	0.021	0.003128	0.0156
	<.0001	0.4199	0.3478	0.9013	0.543
Saudi Arabia	2.0878	0.009677	0.003985	0.000232	0.0111
	0.0563	0.5932	0.8391	0.9913	0.5609
Oman	1.7145	0.0304	0.0178	0.0127	0.0359
	0.1194	0.3283	0.5429	0.7293	0.3035
Qatar	2.7377	0.0838	0.0424	0.056	0.007796
	<.0001	0.5644	0.7987	0.5789	0.5362
Iraq	37.0165	-0.17	-0.1134	-0.2636	-0.196
	0.0968	0.6252	0.7635	0.5227	0.5993
Iran, Islamic Rep.	16.0501	0.0335	0.016	0.0387	0.0391
	<.0001	0.5644	0.7987	0.5789	0.5362
United Arab Emirates	1.8896	0.008631	0.0119	0.0388	0.0586
	0.356	0.8681	0.8128	0.5997	0.4326
Algeria	9.7384	-0.0205	-0.0336	-0.0102	-0.057
	0.0849	0.549	0.4042	0.8086	0.1176
Bahrain	1.2333	-0.006422	0.003456	0.0121	0.0139
	0.0019	0.616	0.7862	0.4073	0.3502

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1989-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Dependant Variables: Annual Growth Rate of Consumer price index (CPI)
Independent Variables: Annual Growth Rate of the Average Oil Price *

IMPORTERS	Intercept	Coefficient (t0)	Coefficient (t-1)	Coefficient (t-2)	Coefficient (t-3)
Egypt, Arab Rep.	9.6623	0.008231	-0.0173	-0.0215	-0.009689
	0.0001	*0.7906*	*0.6169*	*0.5627*	*0.7644*
Tunisia	4.1879	0.00607	0.002679	0.009522	-0.003953
	<.0001	*0.5542*	*0.8137*	*0.4419*	*0.7097*
Jordan	3.1077	0.0537	0.0368	0.0296	0.0273
	0.0004	*0.0598*	*0.1857*	*0.3457*	*0.3901*
Morocco	2.8154	0.003325	0.004121	0.008962	0.006202
	0.0221	*0.7868*	*0.7694*	*0.5513*	*0.6322*
Lebanon	3.3563	0.0937	0.0477	0.039	-0.0135
	0.0032	*0.0034*	*0.0178*	*0.082*	*0.4395*

Data Resource: The International Monetary Fund (IMF) , The World Bank, 1989-2016

**Average Oil (petroleum) Prices, simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh*

Single Variable?

- More independent variables
- One run
- To be completed

Regression (1)

Dependent Variable: GDP per Capita (Nominal, USD, IMF Data)

Independent: Oil Price (Brent).

Years: 1980-2016

Dependent Variable: GDPPC_IMF
Method: Least Squares
Date: 11/29/18 Time: 13:47
Sample: 1980 2016
Included observations: 37

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL_BRENT	180.8587	13.79478	13.11066	0.0000
C	5382.032	712.2153	7.556749	0.0000

R-squared	0.830827	Mean dependent var	12943.34
Adjusted R-squared	0.825994	S.D. dependent var	6093.715
S.E. of regression	2541.934	Akaike info criterion	18.57178
Sum squared resid	2.26E+08	Schwarz criterion	18.65885
Log likelihood	-341.5779	Hannan-Quinn criter.	18.60247
F-statistic	171.8894	Durbin-Watson stat	0.285920
Prob(F-statistic)	0.000000		

Regression (2)
Dependent Variable: GDP per Capita (Nominal, USD, IMF Data)
Independent: Oil Price (Brent) and Government Effectiveness
Years: 1996, 1998, 2000, 2002-2016

Dependent Variable: GDPPC_IMF
Method: Least Squares
Date: 11/29/18 Time: 13:37
Sample: 1996 2016
Included observations: 18

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL_BRENT	141.2998	12.12836	11.65036	0.0000
GE	366.7027	64.54248	5.681572	0.0000
C	-11325.21	3155.349	-3.589210	0.0027

R-squared	0.946163	Mean dependent var	16494.59
Adjusted R-squared	0.938985	S.D. dependent var	6190.840
S.E. of regression	1529.216	Akaike info criterion	17.65391
Sum squared resid	35077541	Schwarz criterion	17.80231
Log likelihood	-155.8852	Hannan-Quinn criter.	17.67437
F-statistic	131.8093	Durbin-Watson stat	1.508472
Prob(F-statistic)	0.000000		

Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.
Worldwide Governance Indicators, a World Bank database

Regression (3)
Dependent Variable: GDP per Capita (Nominal, USD, IMF Data)
Independent: Oil Price (Brent) and average of Government Effectiveness (GE), Corruption Control (CC), and Rule of Law (RL).
Years: 1996, 1998, 2000, 2002-2016

Dependent Variable: GDPPC_IMF
Method: Least Squares
Date: 11/29/18 Time: 13:49
Sample (adjusted): 1996 2016
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL_BRENT	141.1285	12.78888	11.03525	0.0000
(GE+CC+RL)/3	514.8327	97.38356	5.286650	0.0001
C	-20411.40	5071.458	-4.024759	0.0011

R-squared	0.940733	Mean dependent var	16494.59
Adjusted R-squared	0.932831	S.D. dependent var	6190.840
S.E. of regression	1604.479	Akaike info criterion	17.75000
Sum squared resid	38615291	Schwarz criterion	17.89839
Log likelihood	-156.7500	Hannan-Quinn criter.	17.77046
F-statistic	119.0465	Durbin-Watson stat	1.609862
Prob(F-statistic)	0.000000		

Control of Corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
For each, Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.
Worldwide Governance Indicators, a World Bank database

THANK YOU!