20. La situation énergétique mondiale

20.3 – BP Statistical review of world energy

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Statistical Review
of World Energy
2020 | 69th edition

Plan de la présentation

- Introduction et objectifs
- Key features
- Énergie primaire, pétrole, gaz, charbon, nucléaire, hydroélectricité, énergie renouvelable, électricité, minéraux clés dans la transition énergétique
- Conclusion

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Introduction et objectifs

- BP propose chaque mois de juin une revue de l'année qui précède en termes d'énergie;
- Cette présentation est donc mise à jour chaque année au **début de septembre** pour le cours de l'automne et des sessions suivantes;
- Cette présentation doit être considérée comme complémentaire au document produit par BP : une version PDF ou une version XLS

Introduction et objectifs

- Dans le rapport, pages 1 à 7, seulement.
- Puis, cette présentation.

Introduction et objectifs

- Un verbatim de la présentation de Spencer Dale existe et peut être téléchargé pour aider la compréhension de la discussion complète (il est facultatif)
  - Energy in 2020: the year of the COVID
  - Une année exceptionnelle, vous vous en doutez bien!

Introduction et objectifs

- Objectifs de cette présentation
  - Comprendre où en est l'humanité en termes de production et de consommation énergétique;
  - Permettre une réflexion sur notre avenir;
  - Permettre une comparaison avec les statistiques de l'Agence internationale de l'énergie.

Plan de la présentation

- Introduction et objectifs de la capsule
- ***Key features***
- Énergie primaire, pétrole, gaz, charbon, nucléaire, hydroélectricité, énergie renouvelable, électricité, minéraux clés dans la transition énergétique
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Key features

- - 9,3% decline in oil consumption in 2020, the largest in history
- 358 TWh increase in renewable power generation, the largest ever

Key features

- Energy developments

- Primary energy consumption fell by 4.5% in 2020 – the largest decline since 1945.

- The drop in energy consumption was driven mainly by oil, which contributed almost three-quarters of the net decline, although natural gas and coal also saw significant declines.

- Wind, solar and hydroelectricity all grew despite the fall in overall energy demand.

Key features

- Carbon emissions

- Carbon emissions from energy use fell by 6.3%, to their lowest level since 2011. As with primary energy, this was the largest decline since the end of World War II.

Energy in 20208: the year of the COVID

- Spencer Dale

Key features

- Oil
  - The oil price (Dated Brent) averaged $41.84/bbl in 2020 – the lowest since 2004.
  - Oil consumption fell by a record 9.1 million barrels per day (b/d), or 9.3%, to its lowest level since 2011.
  - Oil demand fell most in the US (-2.3 million b/d), the EU (-1.5 million b/d) and India (-480,000 b/d). China was virtually the only country where consumption increased (220,000 b/d).

Key features

- Gaz
  - Natural gas prices declined to multi-year lows: US Henry Hub averaged $1.99/mmBtu in 2020 – the lowest since 1995, while Asian LNG prices (Japan Korea Marker) registered their lowest level on record ($4.39/mmBtu).
  - Natural gas consumption fell by 81 billion cubic metres (bcm), or 2.3%. Nevertheless, the share of gas in primary energy continued to rise, reaching a record high of 24.7%.
  - Declines in gas demand were led by Russia (-33 bcm) and the US (-17 bcm), with China (22 bcm) and Iran (10 bcm) contributing the largest increases.

Key features

- Coal
  - Coal consumption fell by 6.2 exajoules (EJ), or 4.2%, led by declines in the US (-2.1 EJ) and India (-1.1 EJ), with OECD coal consumption falling to its lowest level in our data series back to 1965.
  - China and Malaysia were notable exceptions, increasing their consumption by 0.5 EJ and 0.2 EJ respectively.
  - Global coal production was down 8.3 EJ (5.2%). As with consumption, production growth in China (1.1 EJ) was outweighed by sharp declines in several countries, including the US (-3.6 EJ), Indonesia (-1.3 EJ) and Colombia (-1.0 EJ).

Key features

- Renewables

- Renewable energy (including biofuels but excluding hydro) rose by 9.7%, slower than the 10-year average (13.4% p.a.) but the increment in energy terms (2.9 EJ) was similar to increases seen in 2017, 2018 and 2019.
- Solar capacity expanded by 127 GW, while wind capacity grew 111 GW – almost double its previous highest annual increase.
- China was the largest individual contributor to renewables growth (1.0 EJ), followed by the US (0.4 EJ). Europe, as a region, contributed 0.7 EJ.

Key features

- Hydro and nuclear

- Hydroelectricity grew by 1.0%, again led by China (0.4 EJ), while nuclear energy fell 4.1%, driven mainly by declines in France (-0.4 EJ), the US (-0.2 EJ) and Japan (-0.2 EJ).

Key features

- Electricity

- Electricity generation fell by 0.9% – more than the decline in 2009 (-0.5%), the only other year in our data series (which starts in 1985) when electricity demand fell.
- The share of renewables in power generation increased from 10.3% to 11.7%, while coal's share fell 1.3 percentage points to 35.1% – a new low in our data series.

Key features

- Key minerals

- Lithium production fell 4.6% on a drop in Australian output, while Cobalt output rose 2.9% as production in the Democratic Republic of Congo partially recovered from its dip in 2019.
- Rare earth metals production expanded by 23.2%, driven by strong growth in Australia and the US.

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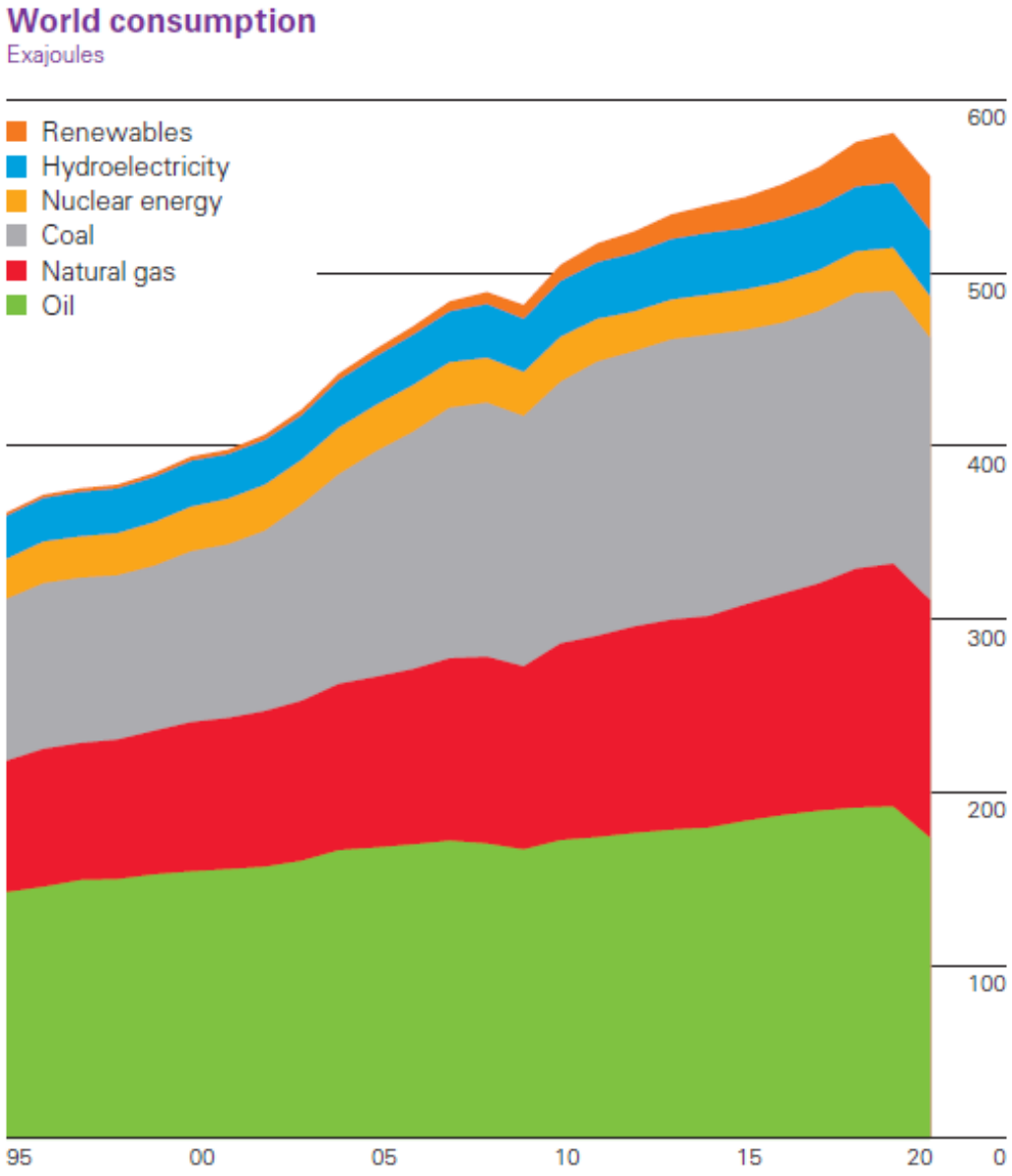
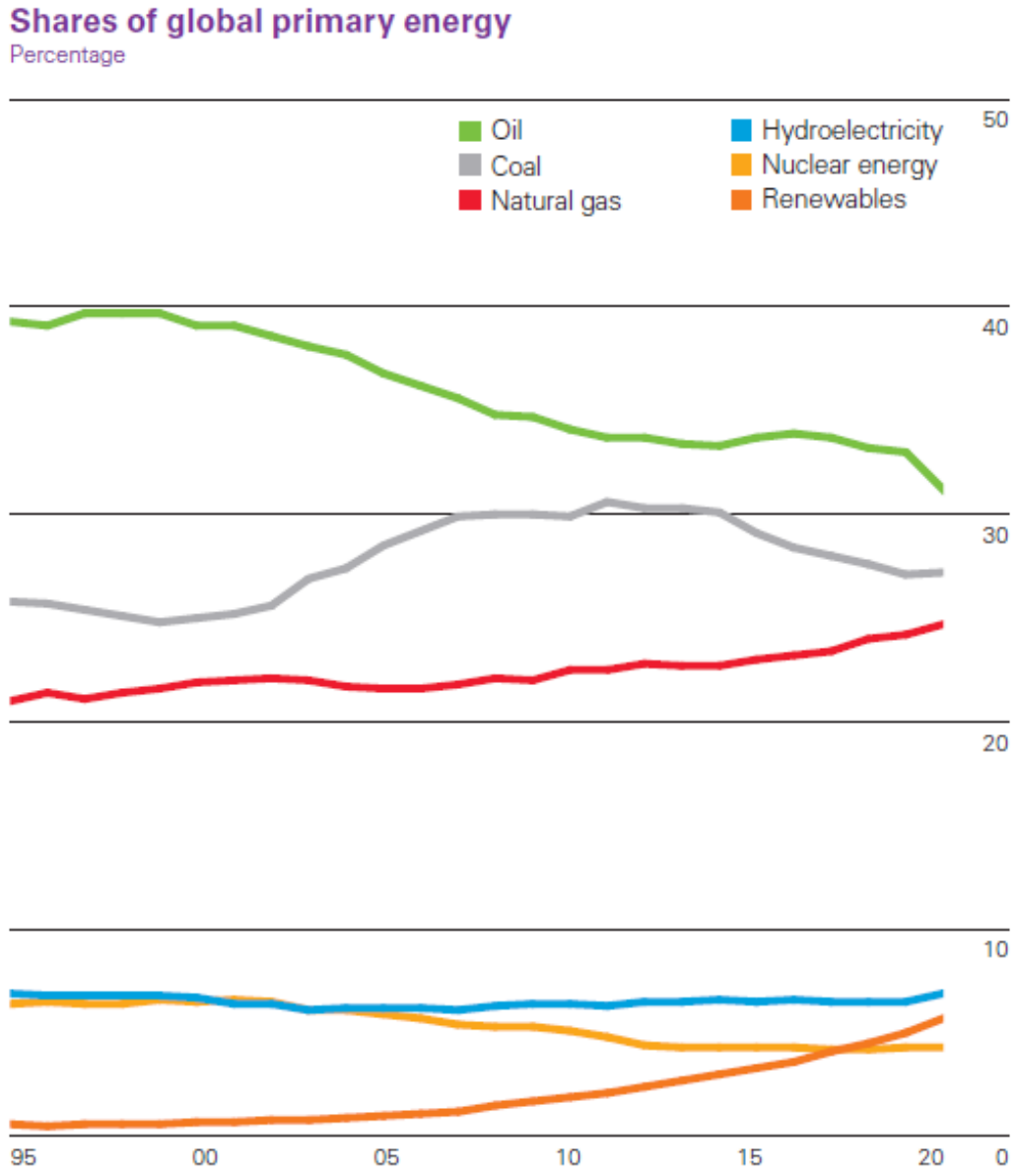
Primary energy

Primary energy world consumption





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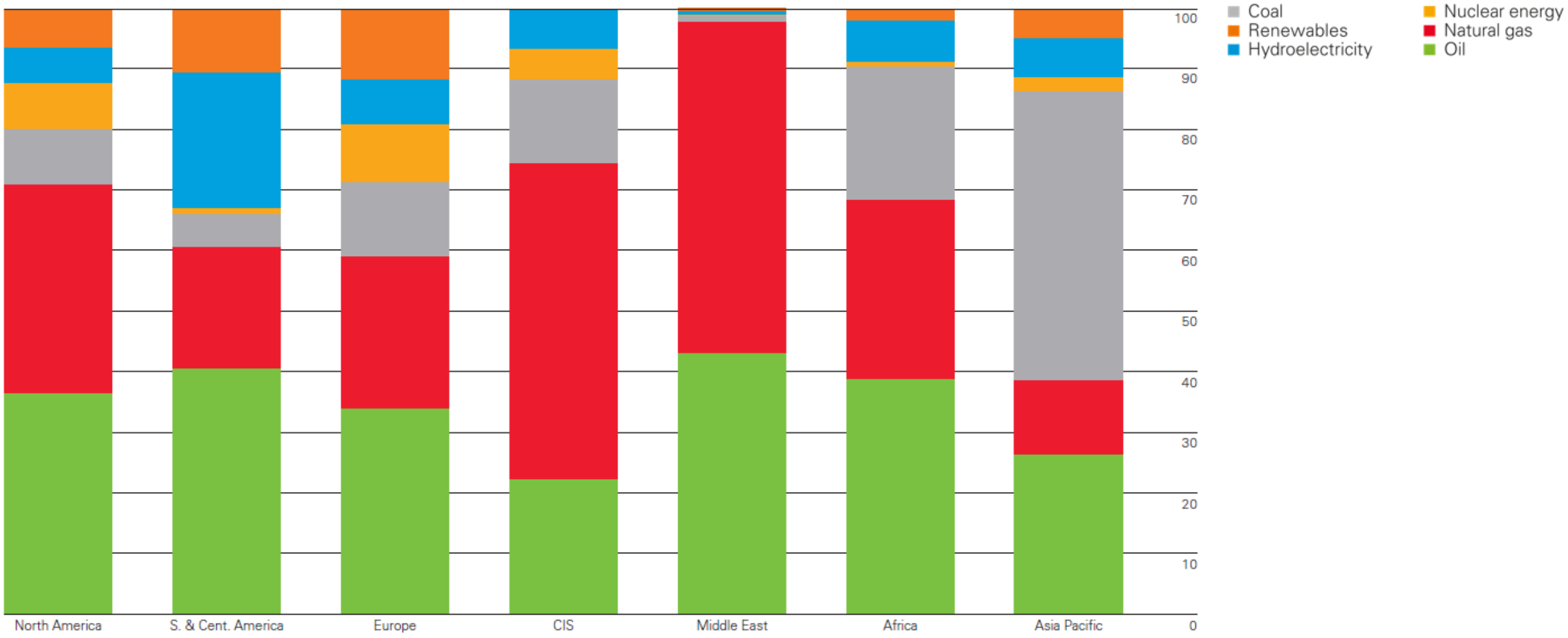
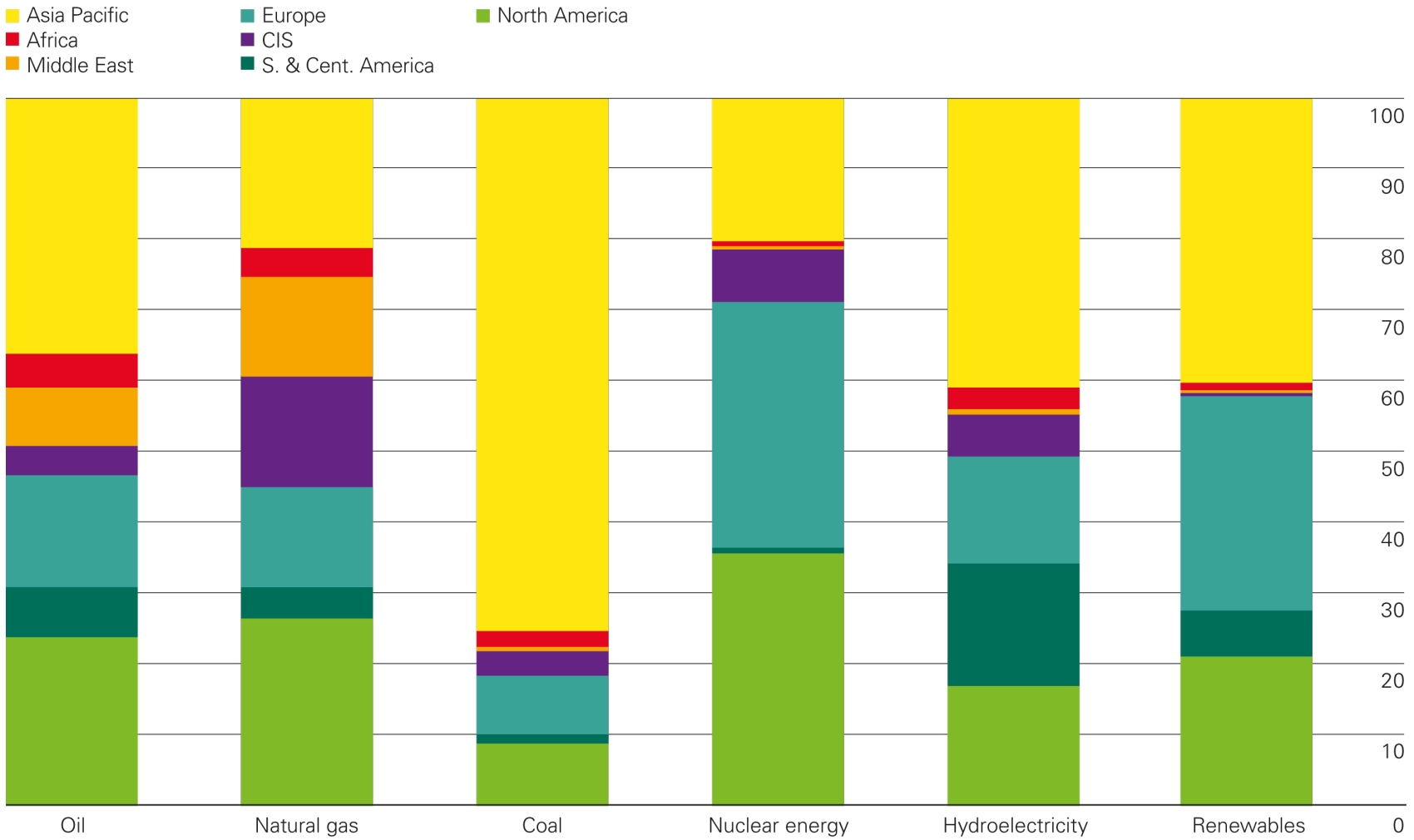
Regional consumption pattern 2020

Percentage



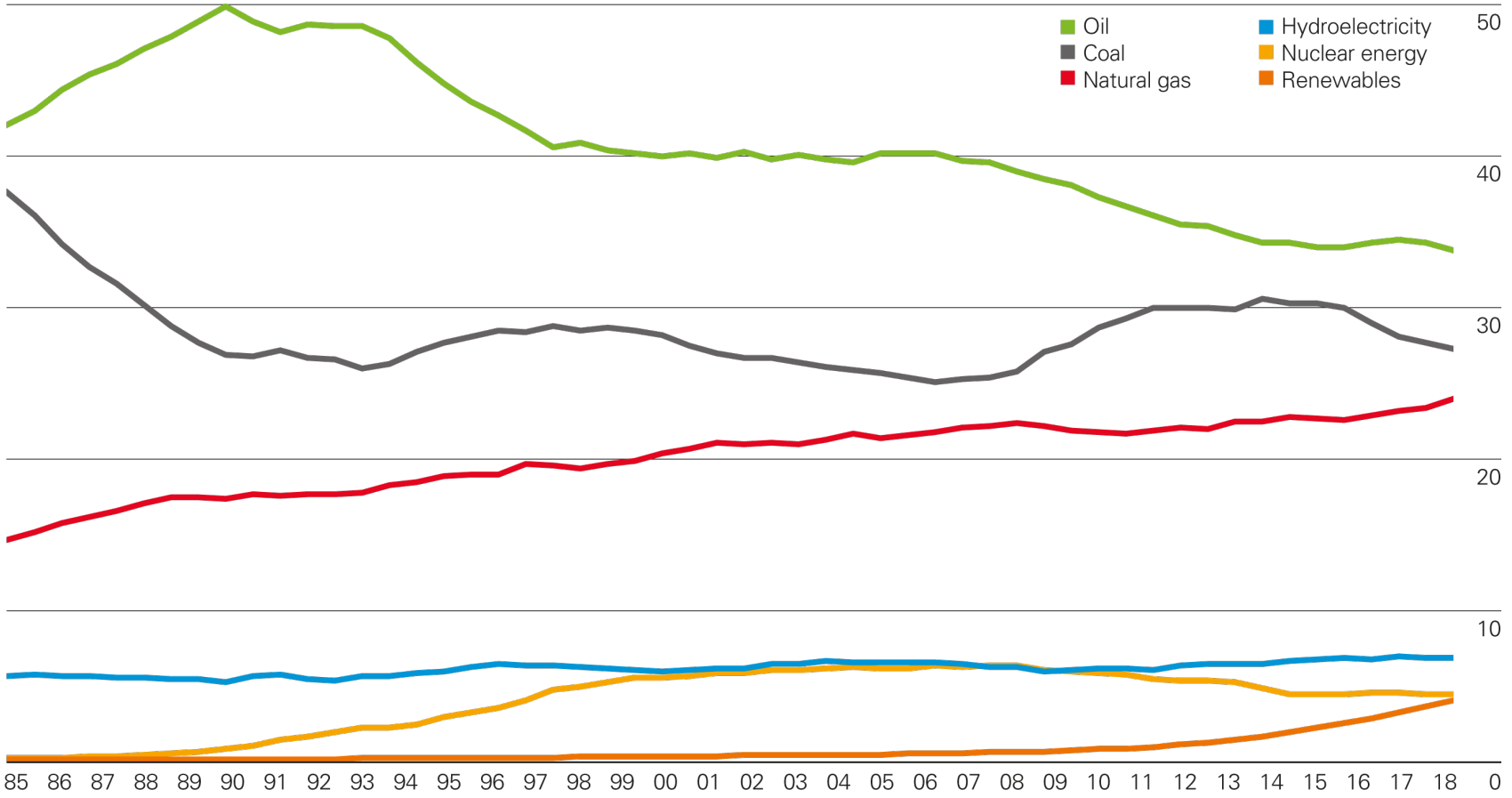
Fuel consumption by region 2018

Percentage



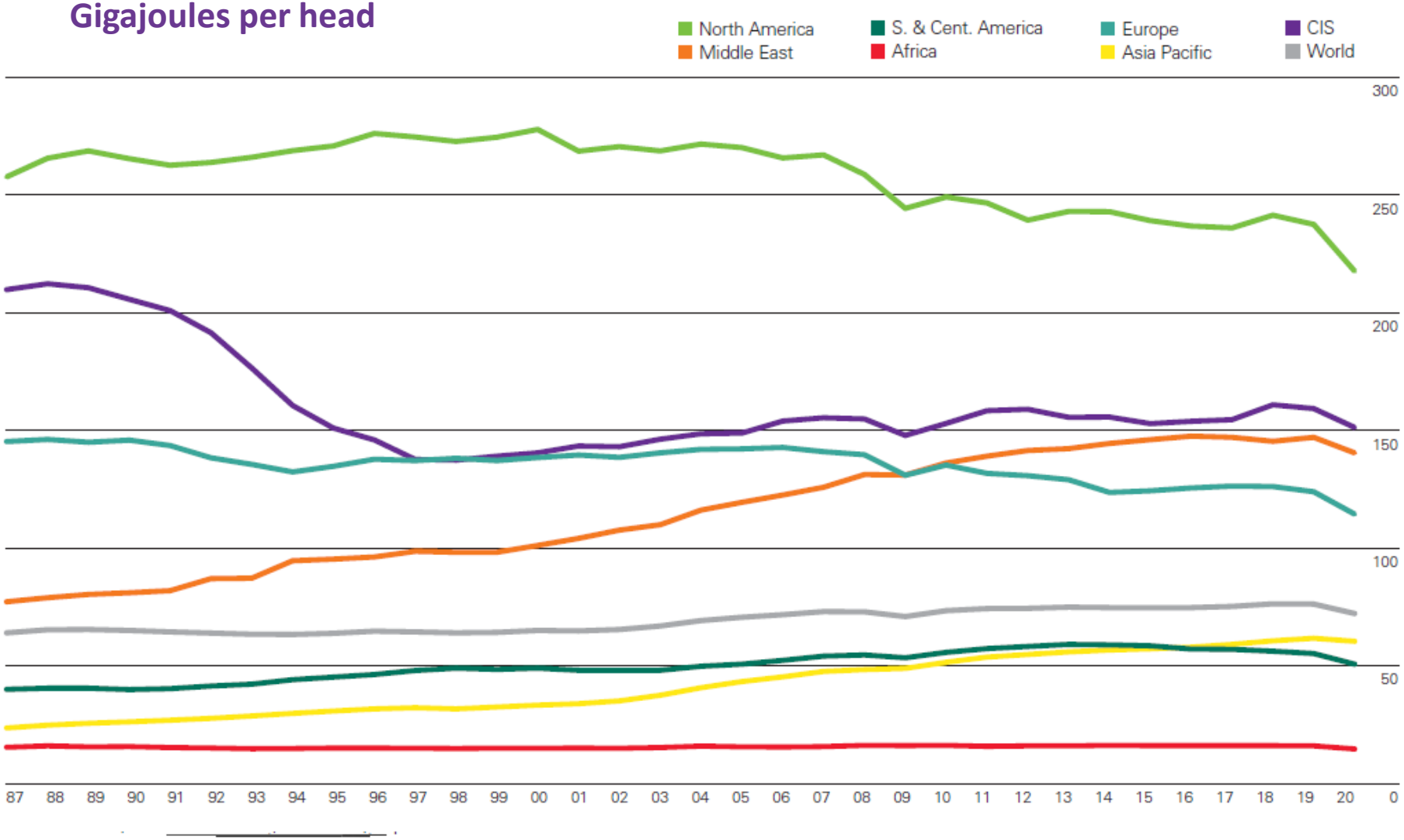
Shares of global primary energy consumption

Percentage

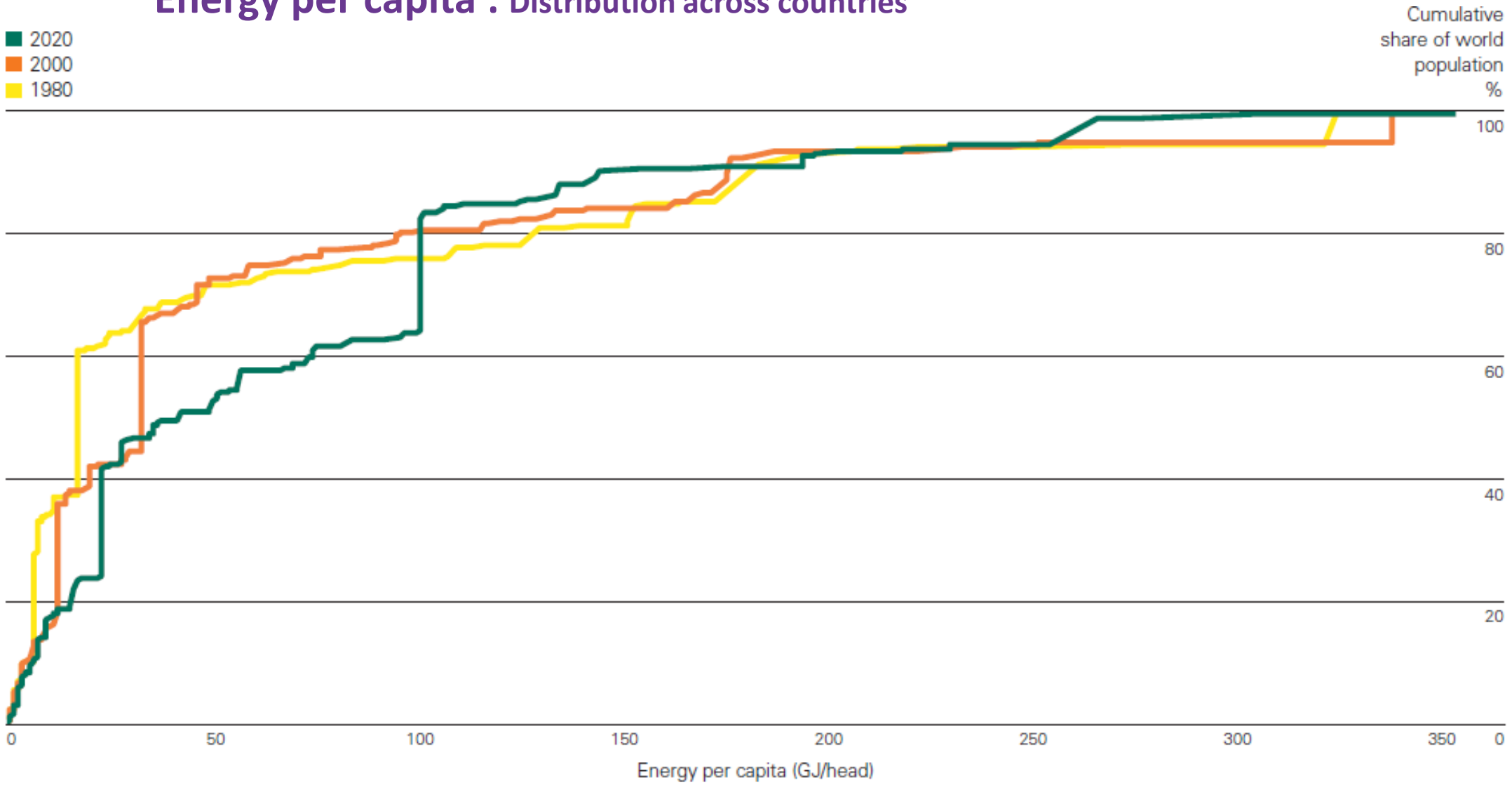


Energy per capita by region

Gigajoules per head



Energy per capita : Distribution across countries



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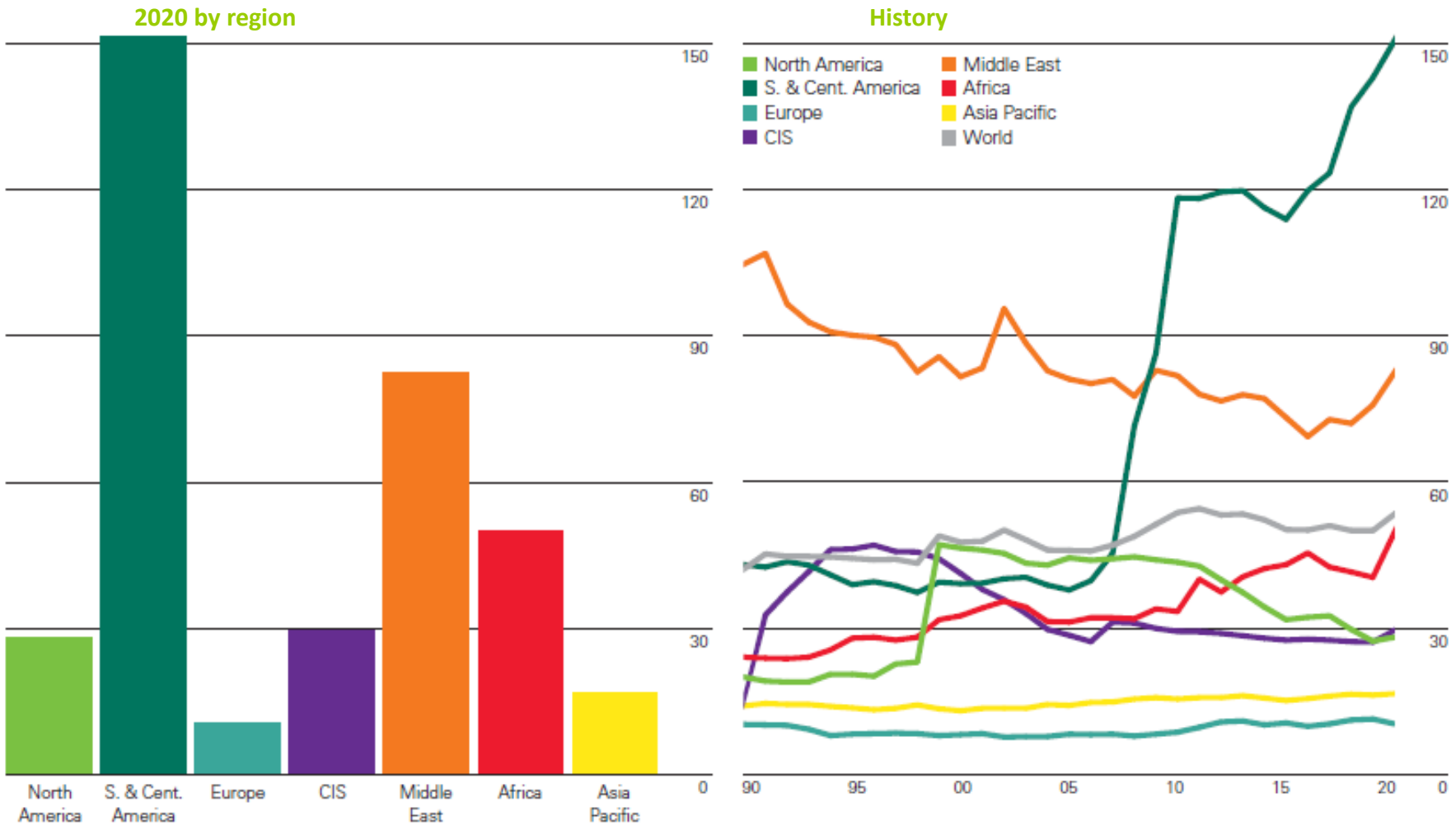
Oil

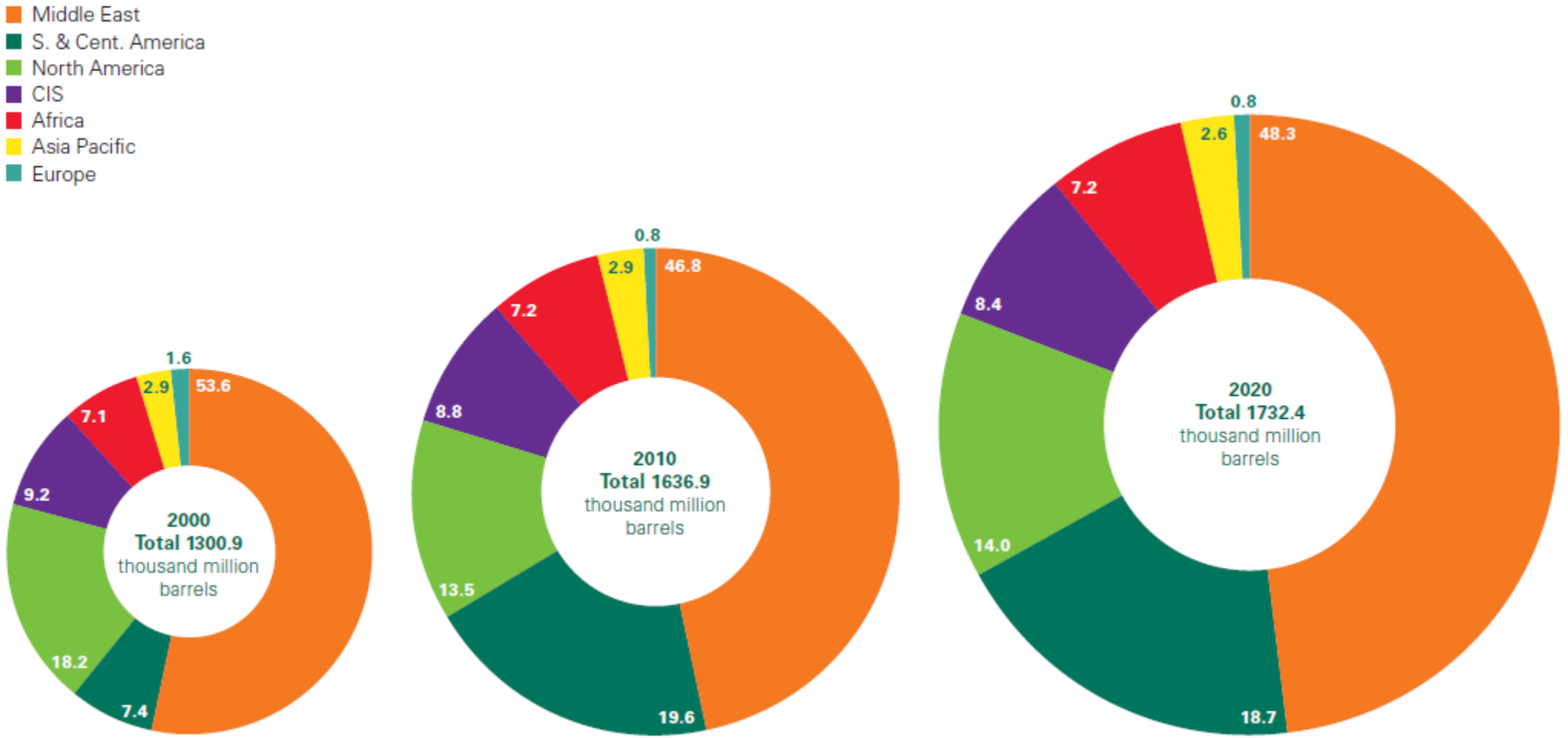
Oil reserves-to-production (R/P) ratios

Years



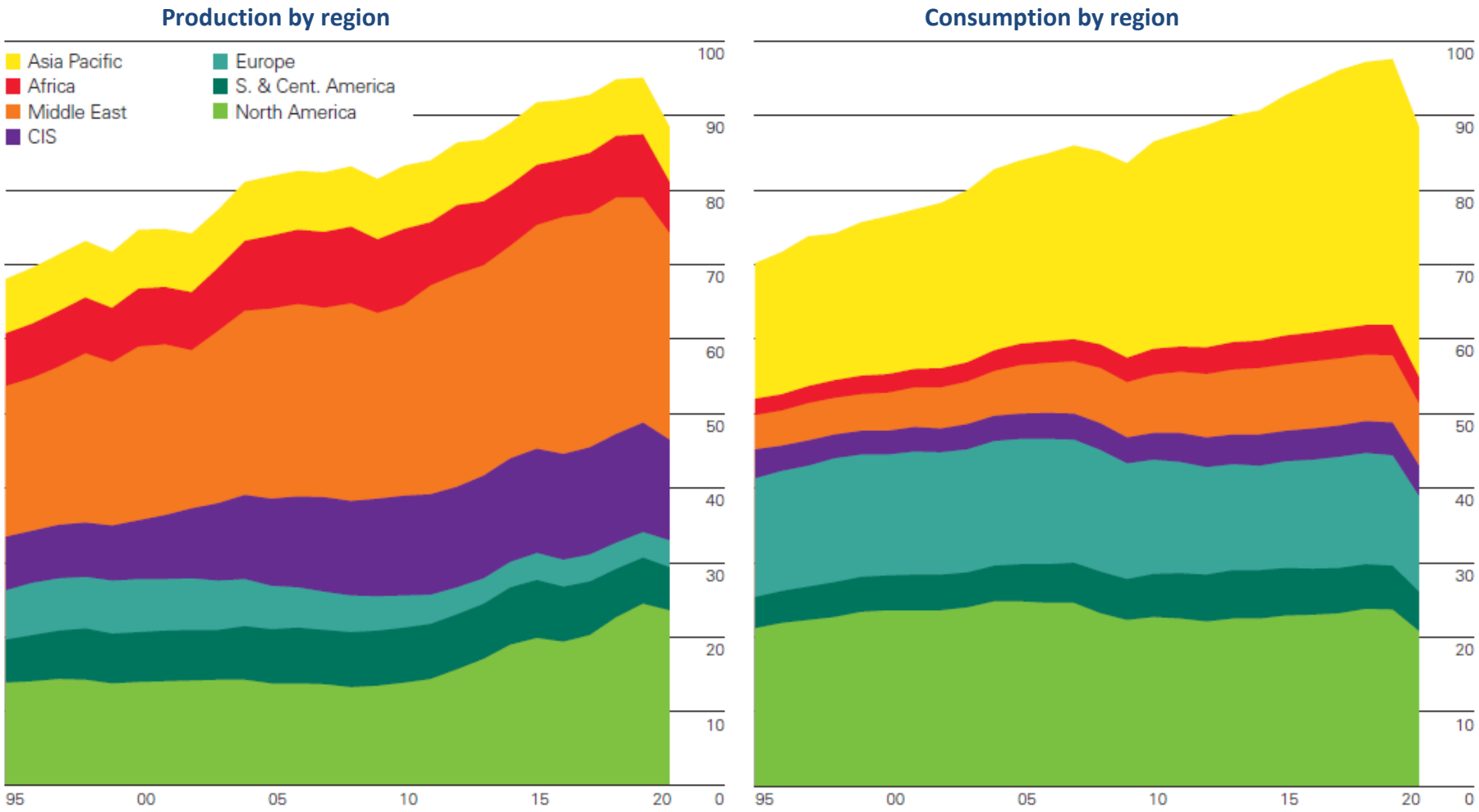
Distribution of proved oil reserves: 2000, 2010 and 2020

Percentage



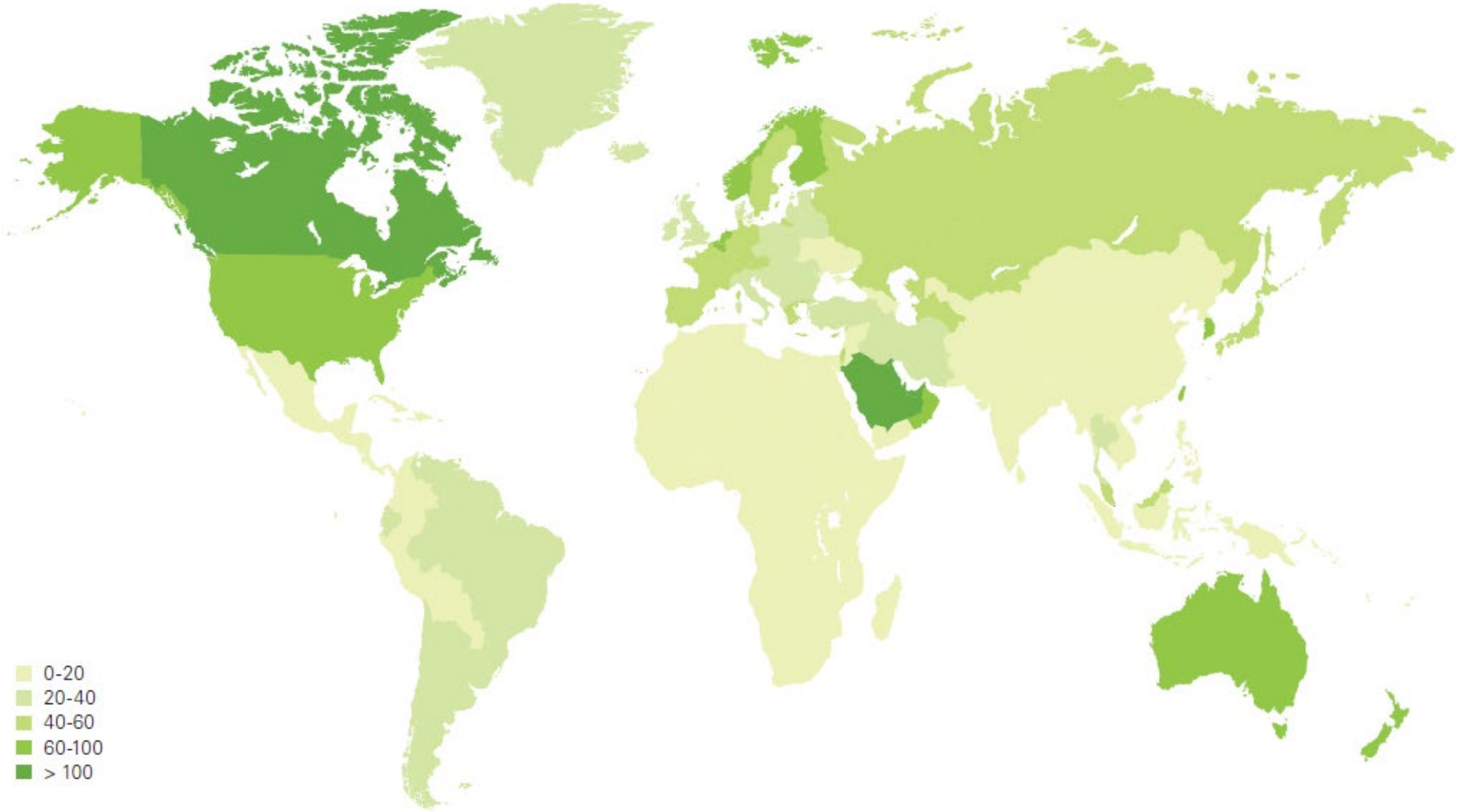
Oil production/consumption by region

Million barrels daily



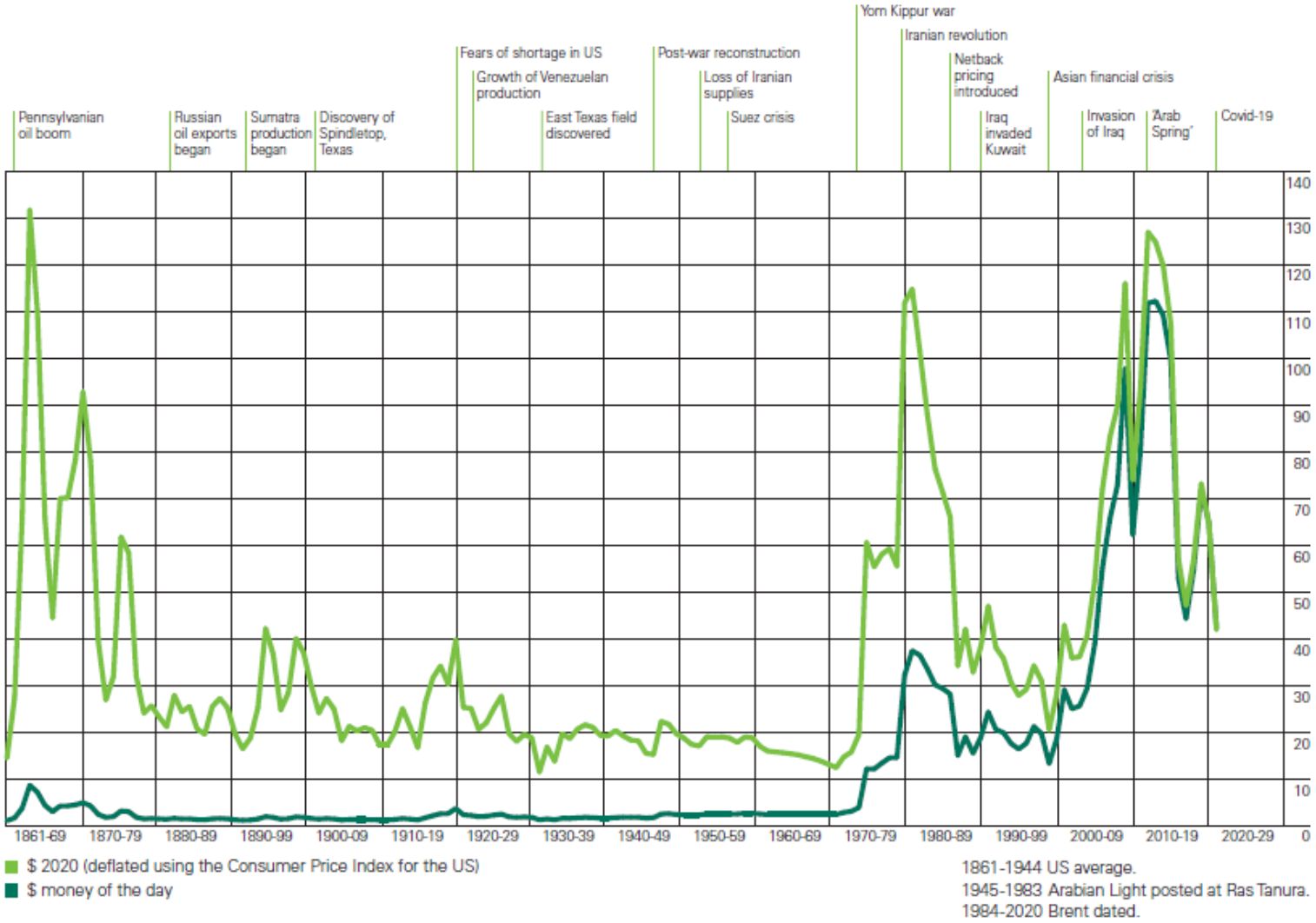
Oil consumption per capita 2020

GJ per capita



Crude oil prices 1861-2018

US dollars per barrel, world events

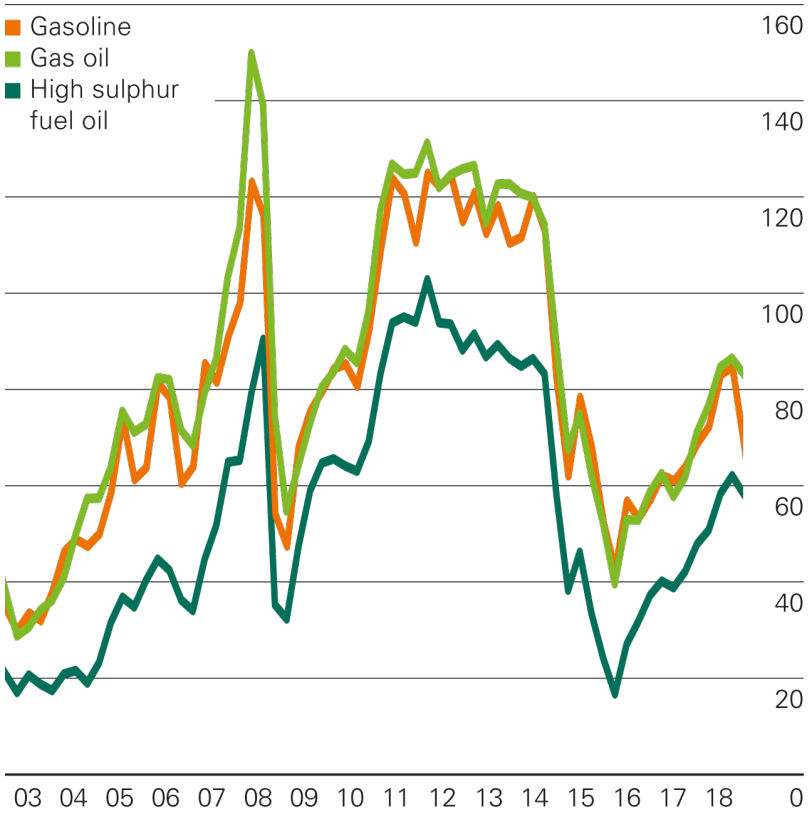


1861-1944 US average.
1945-1983 Arabian Light posted at Ras Tanura.
1984-2020 Brent dated.

Rotterdam product prices and differentials to crude

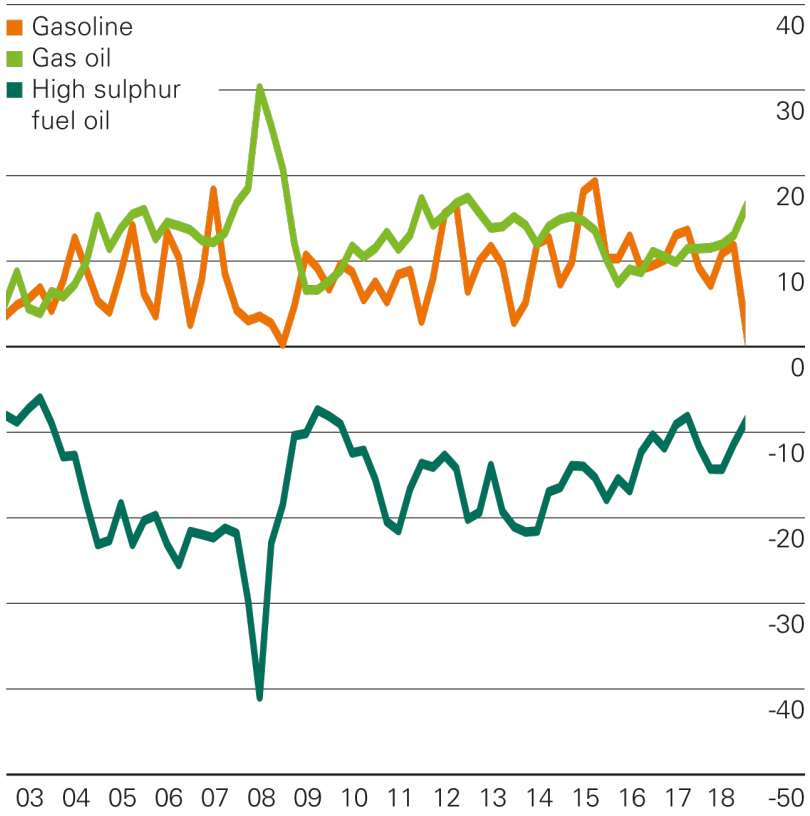
US dollars per barrel

Oil product prices (Rotterdam)



Source: S&P Global Platts, © 2019, S&P Global Inc.

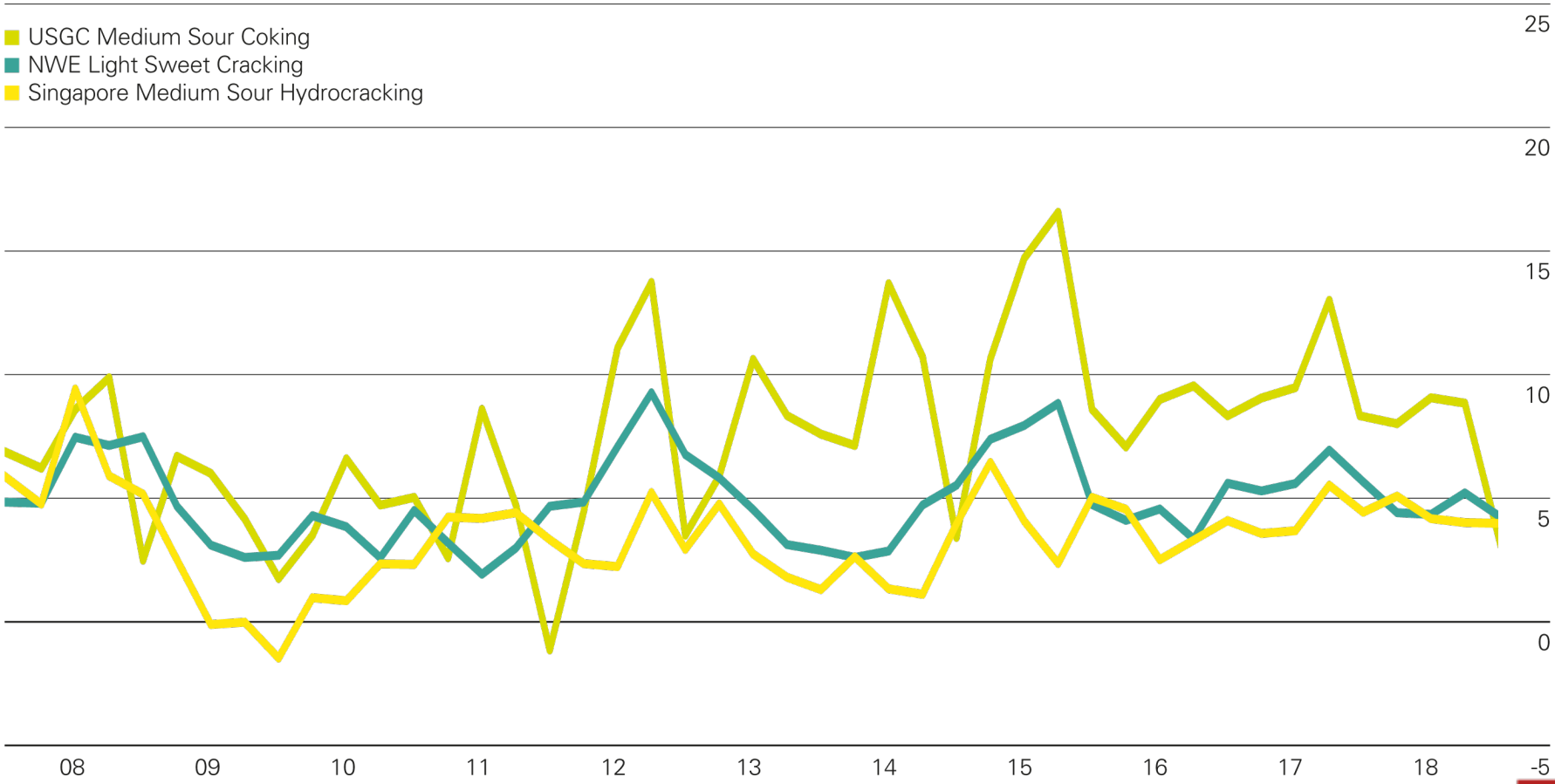
Product differentials to crude (Rotterdam products minus Dated Brent)



Source: S&P Global Platts, © 2019, S&P Global Inc.

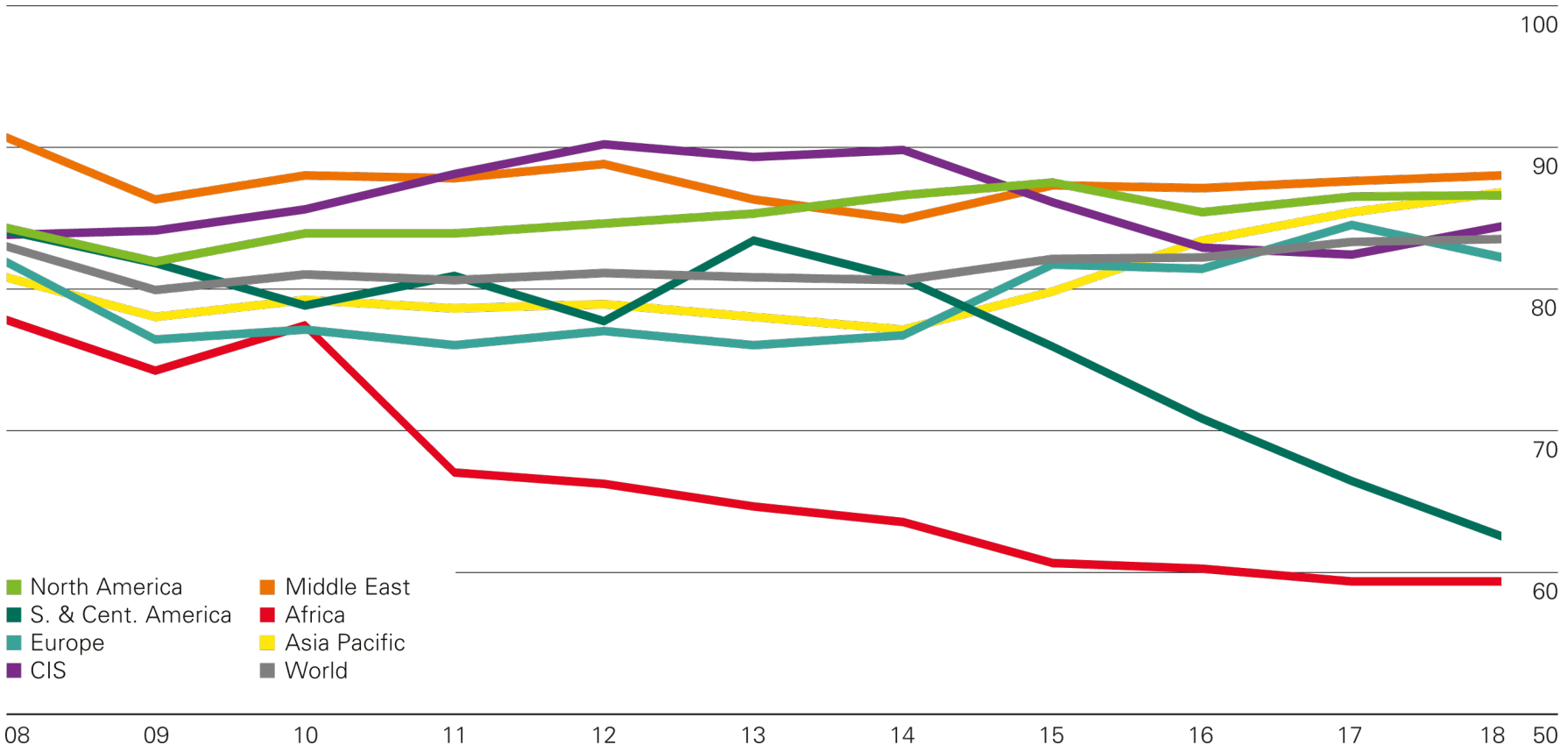
Regional refining margins

US dollars per barrel



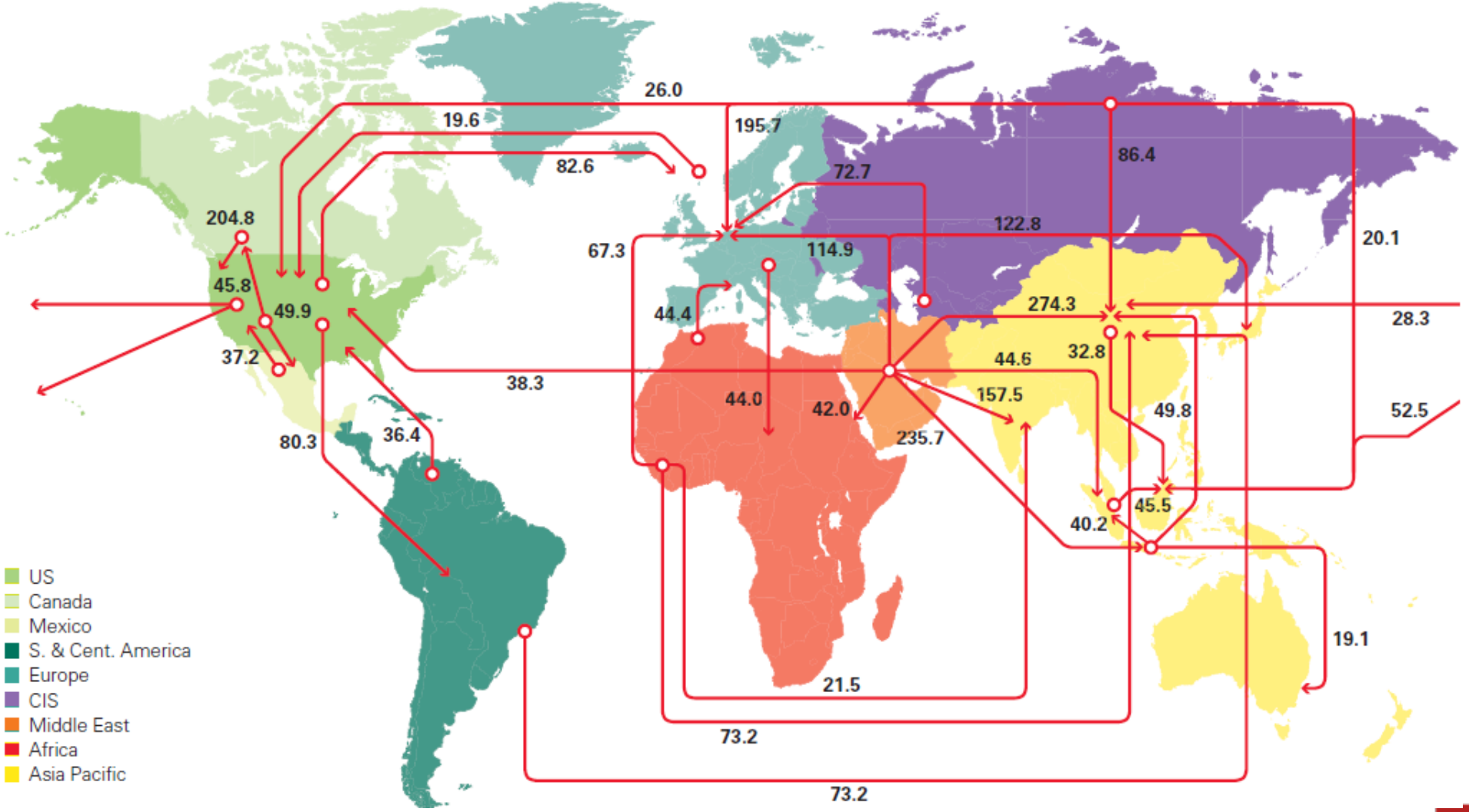
Refinery utilization

Percentage (based on average annual capacity)



Major oil trade movements 2020

Trade flows worldwide (million tonnes)

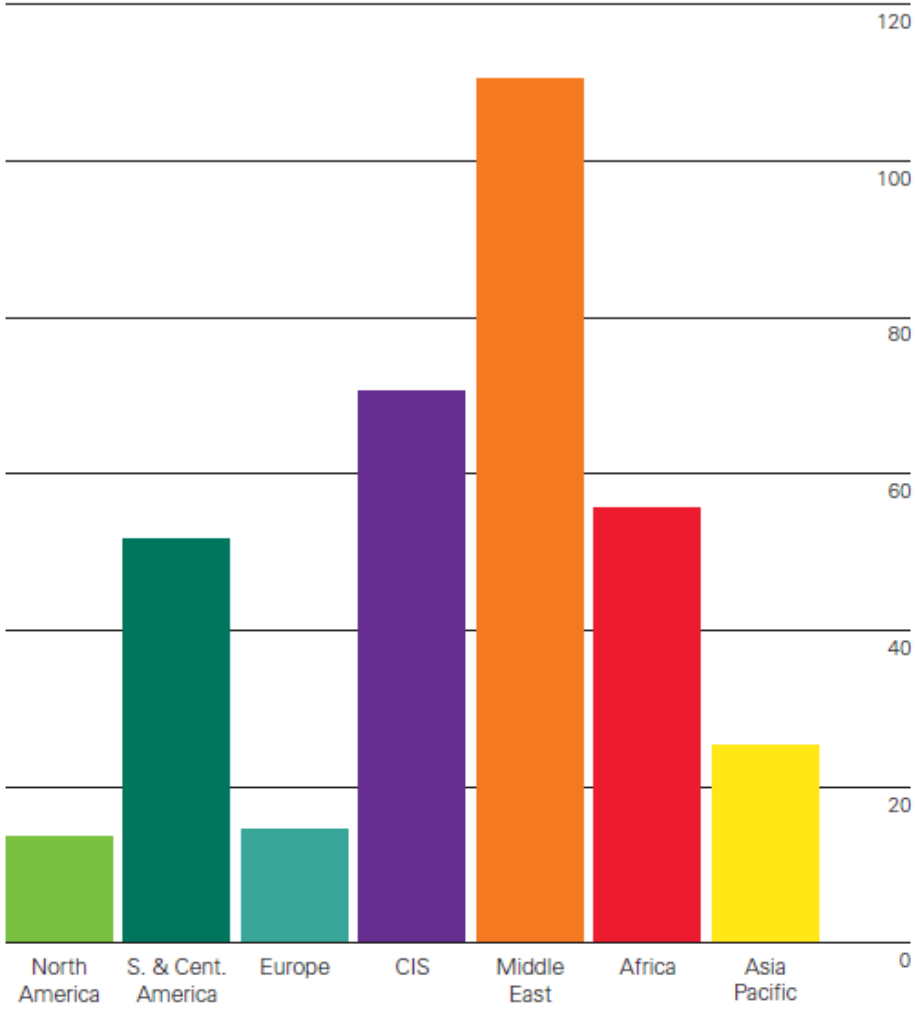


Natural gas

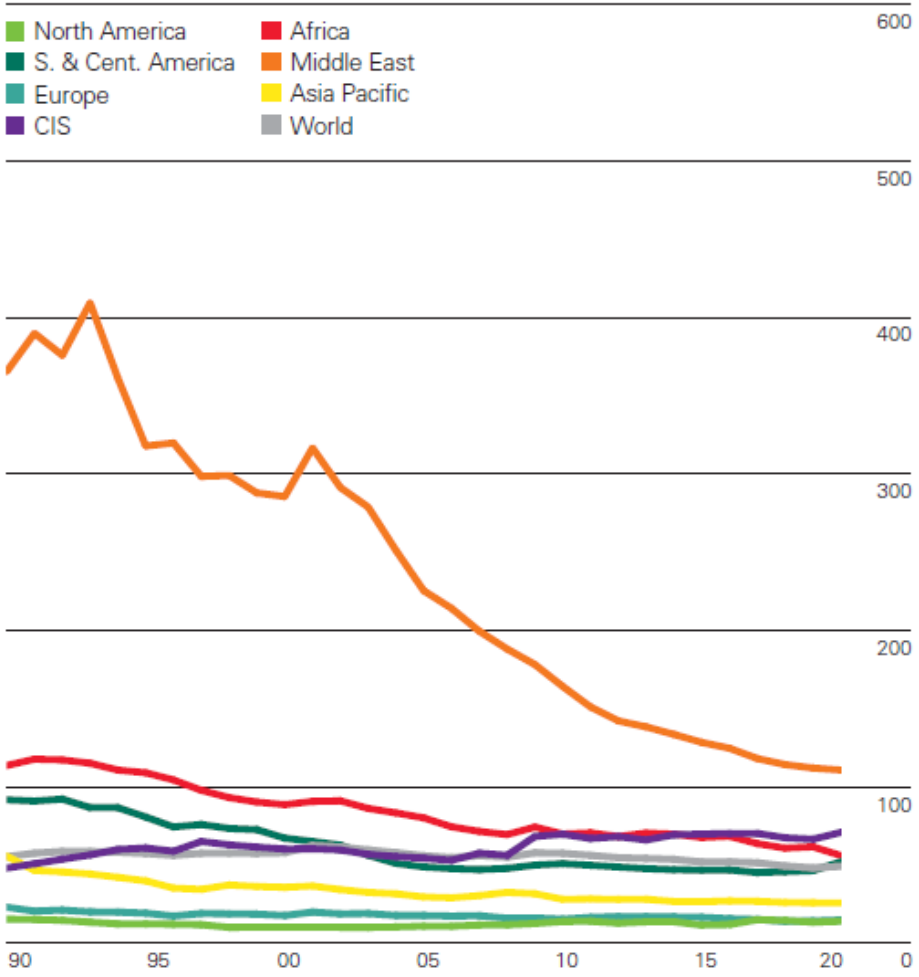
Gas reserves-to-production (R/P) ratios

Years

2020 by region

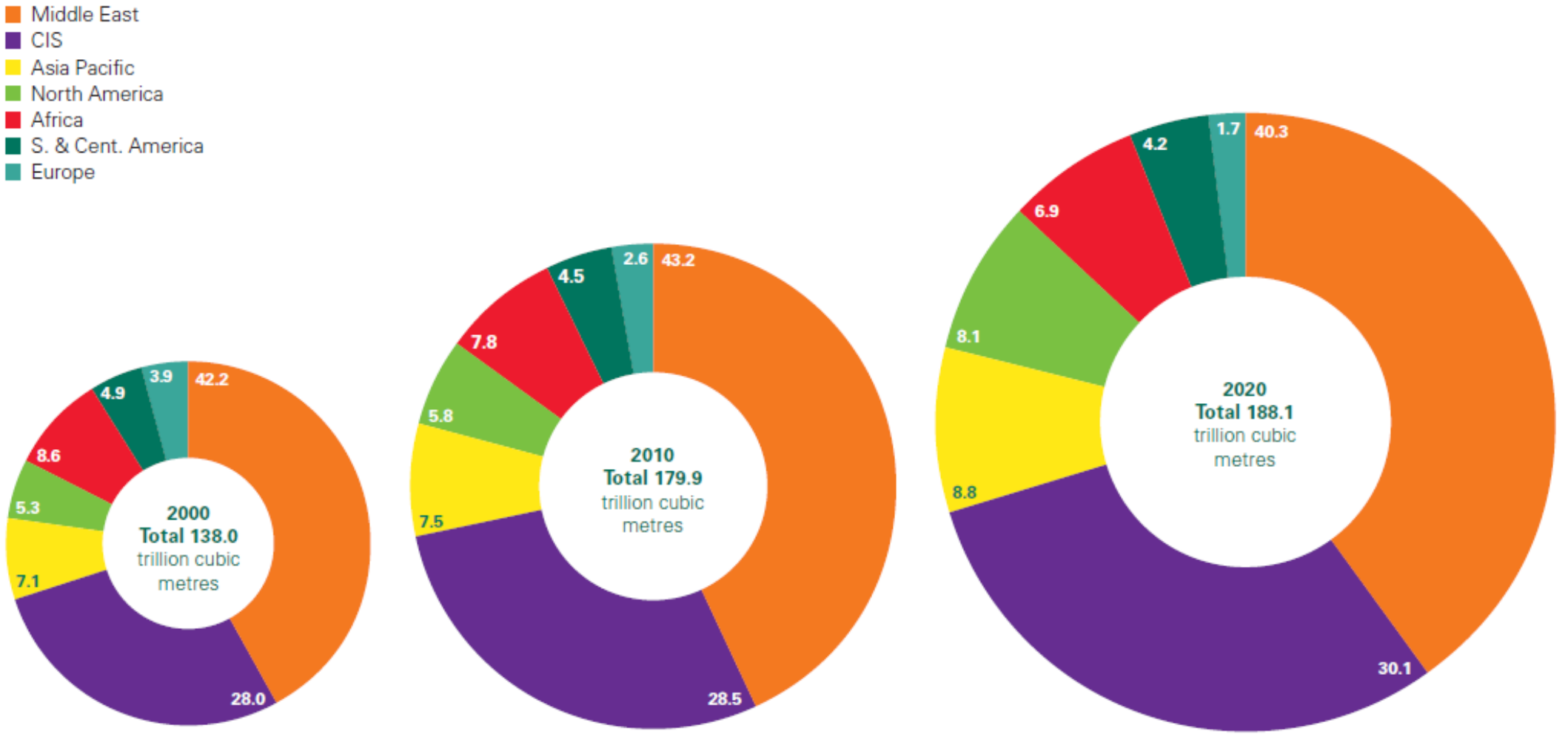


History



Distribution of proved gas reserves: 2000, 2010 and 2020

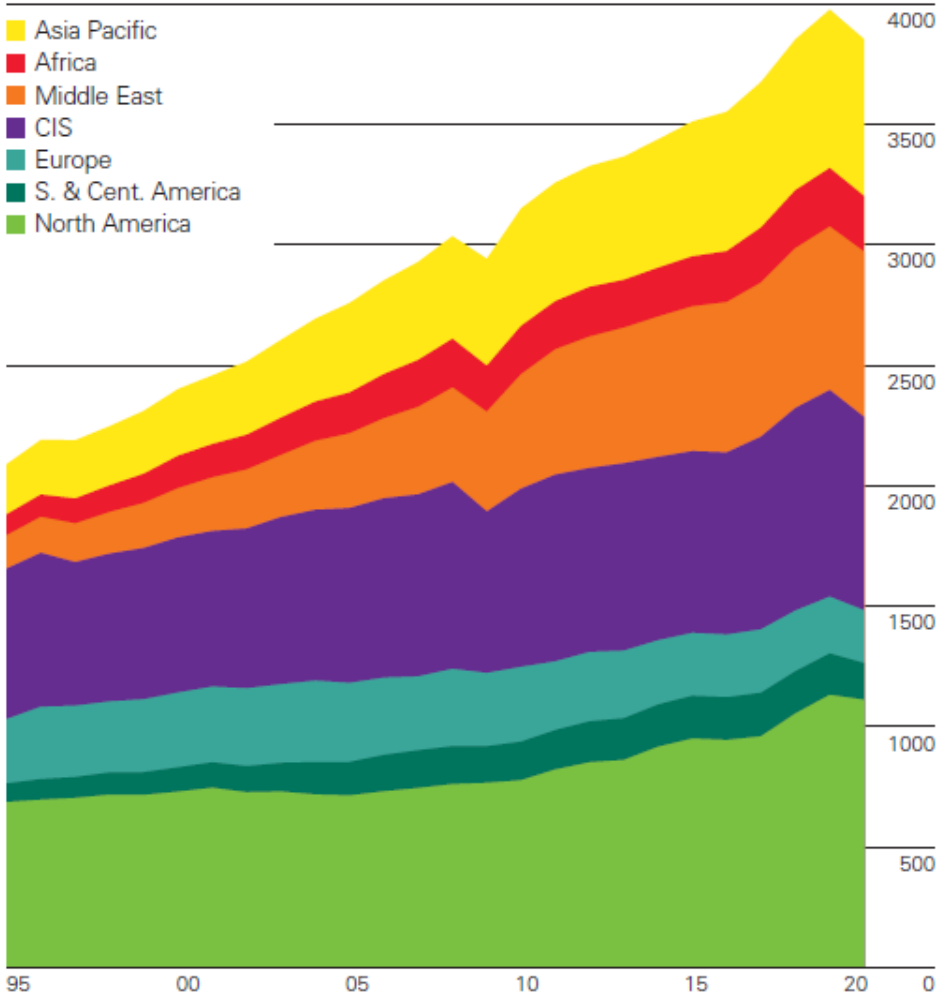
Percentage



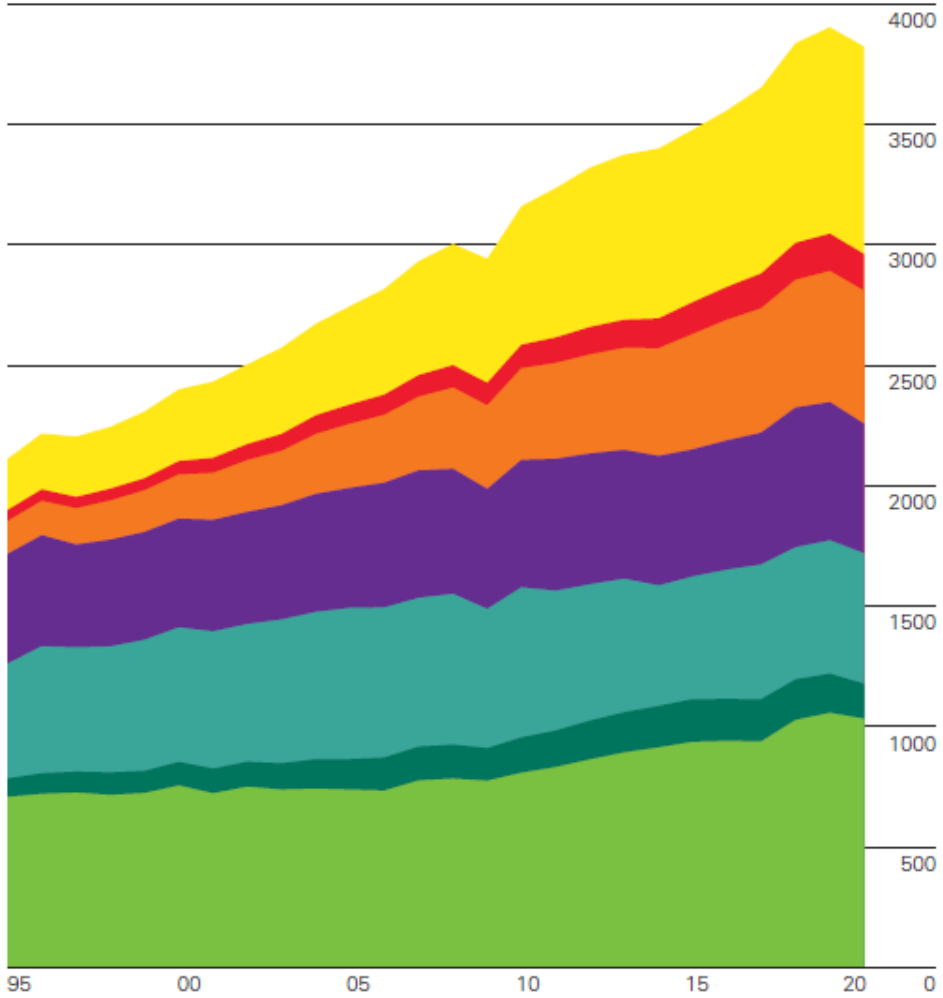
Gas production/consumption by region

Billion cubic metres

Production by region

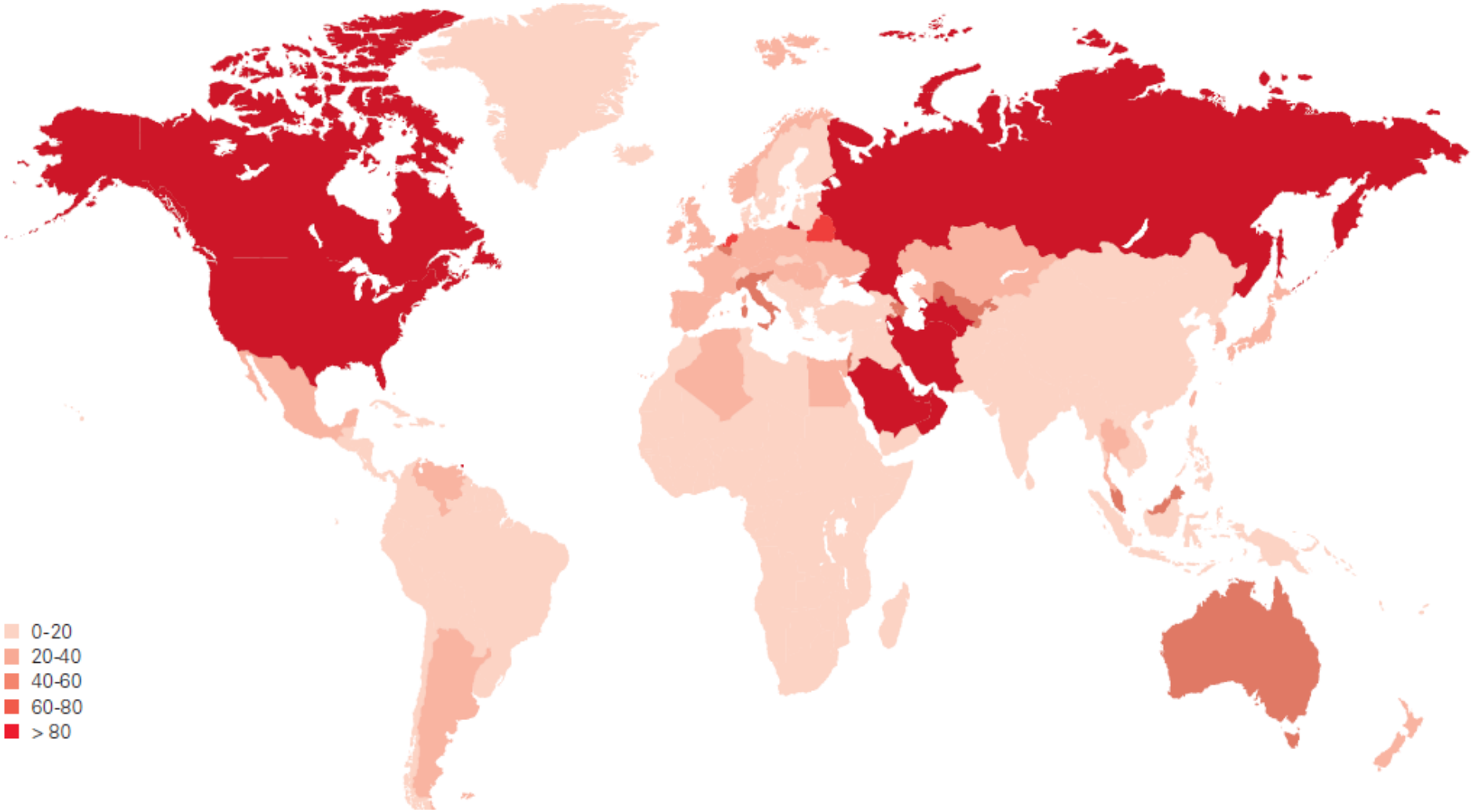


Consumption by region



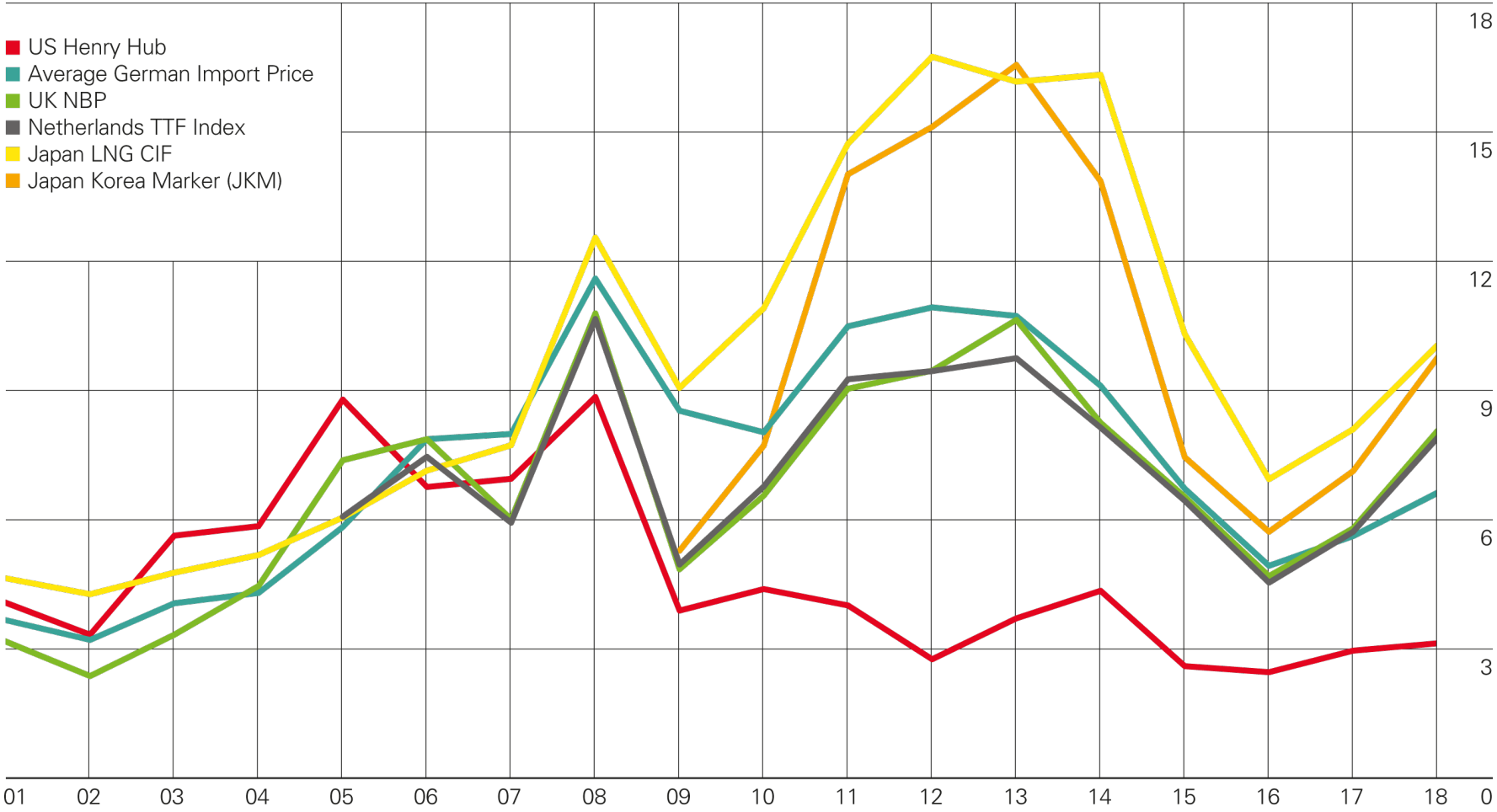
Gas consumption per capita 2020

GJ per capita



Gas prices

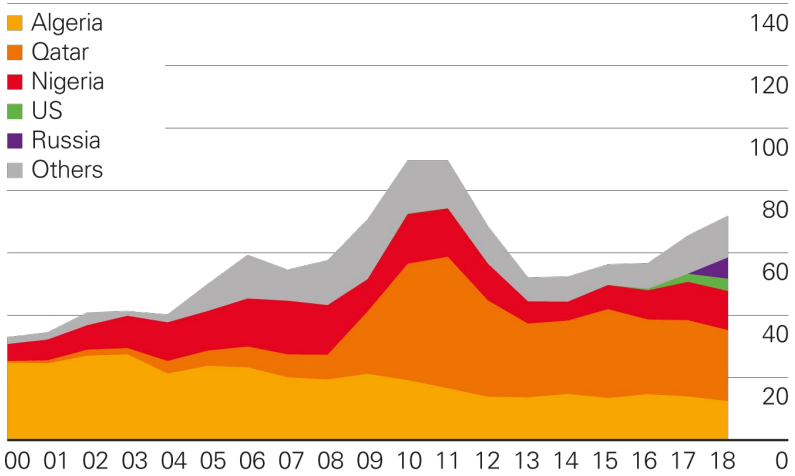
$/mmBtu



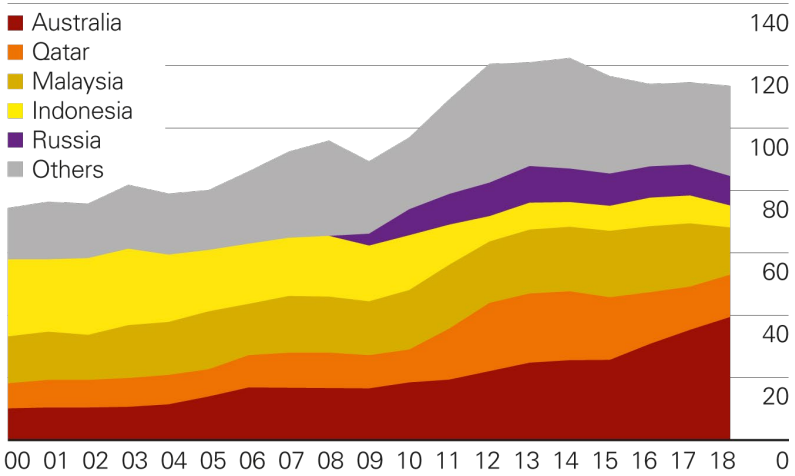
LNG imports by source

Billion cubic metres

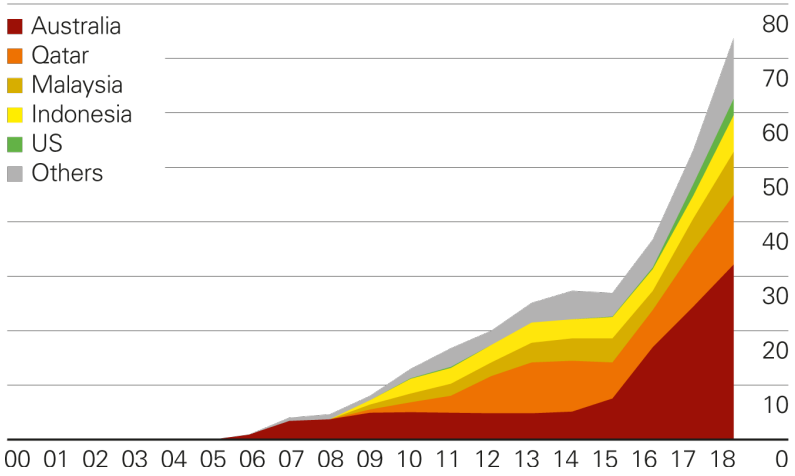
Europe



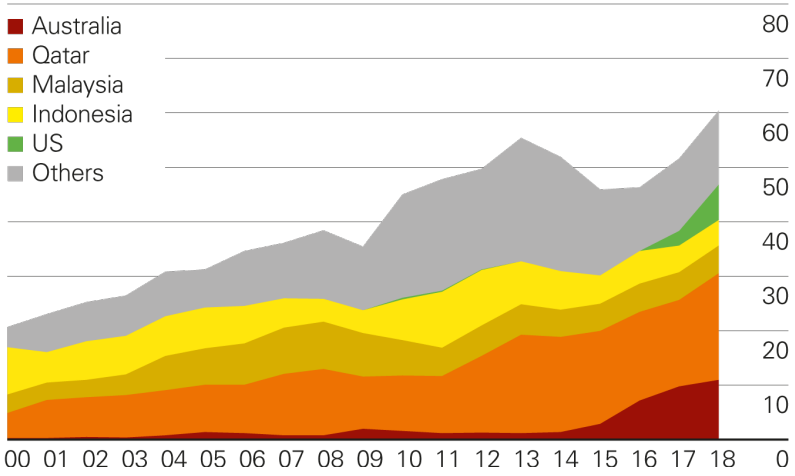
Japan



China



South Korea



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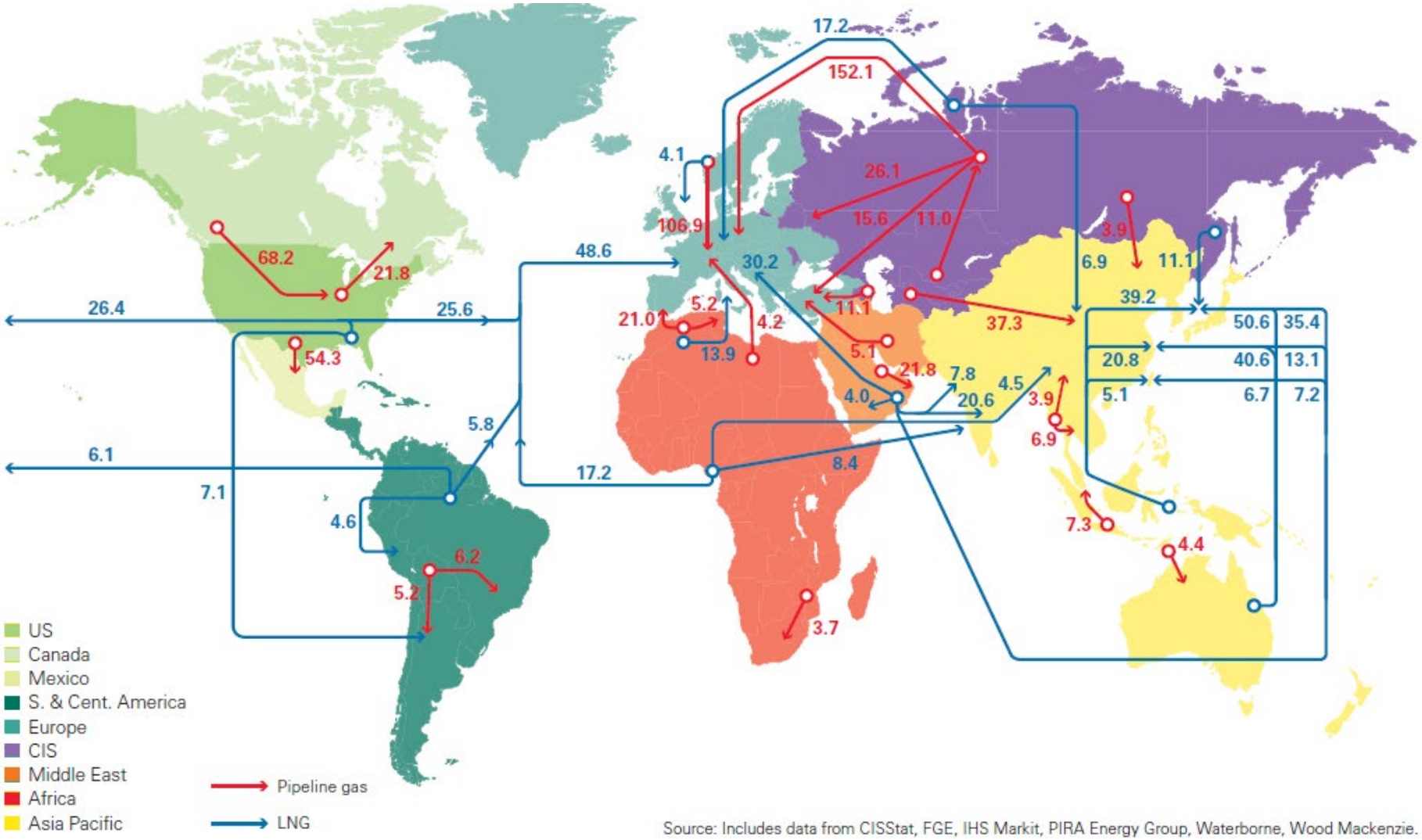
Major gas trade movements 2020

Trade flows worldwide (billion cubic metres)



Source: Includes data from CISStat, FGE, IHS Markit, PIRA Energy Group, Waterborne, Wood Mackenzie.

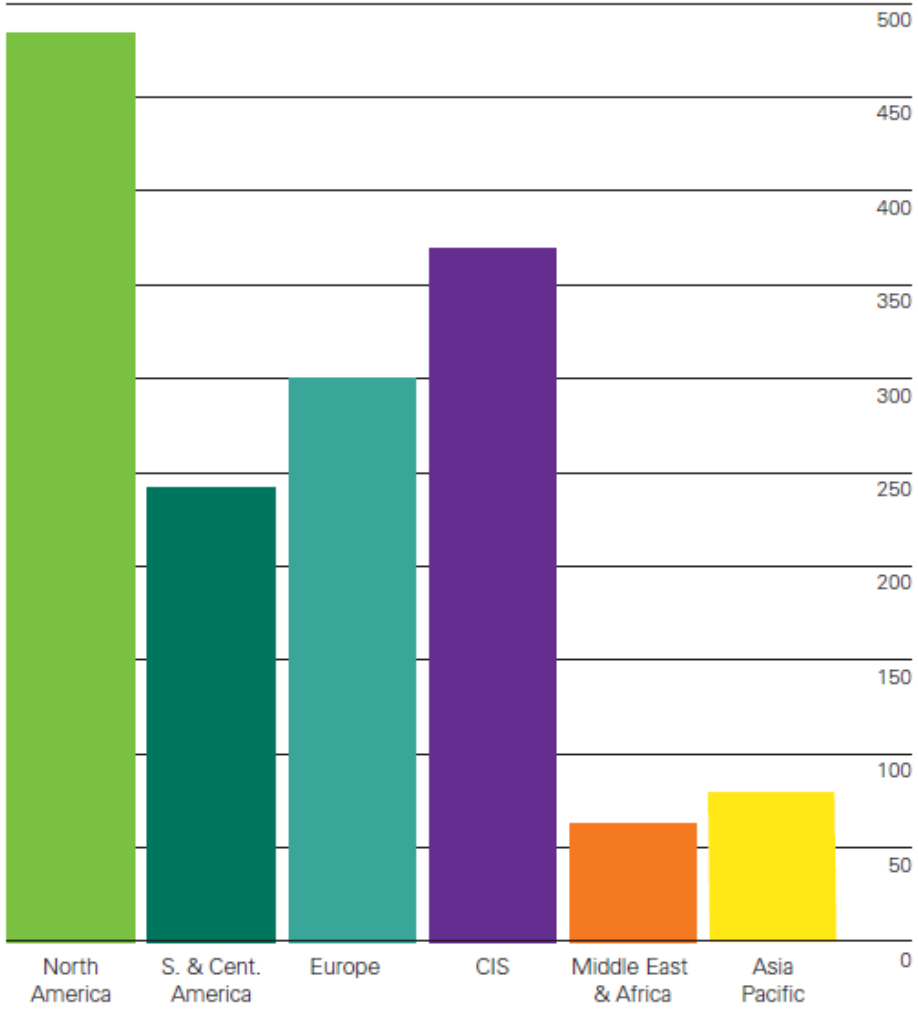
Source: Includes data from FGE MENAgas service, IHS.

Coal

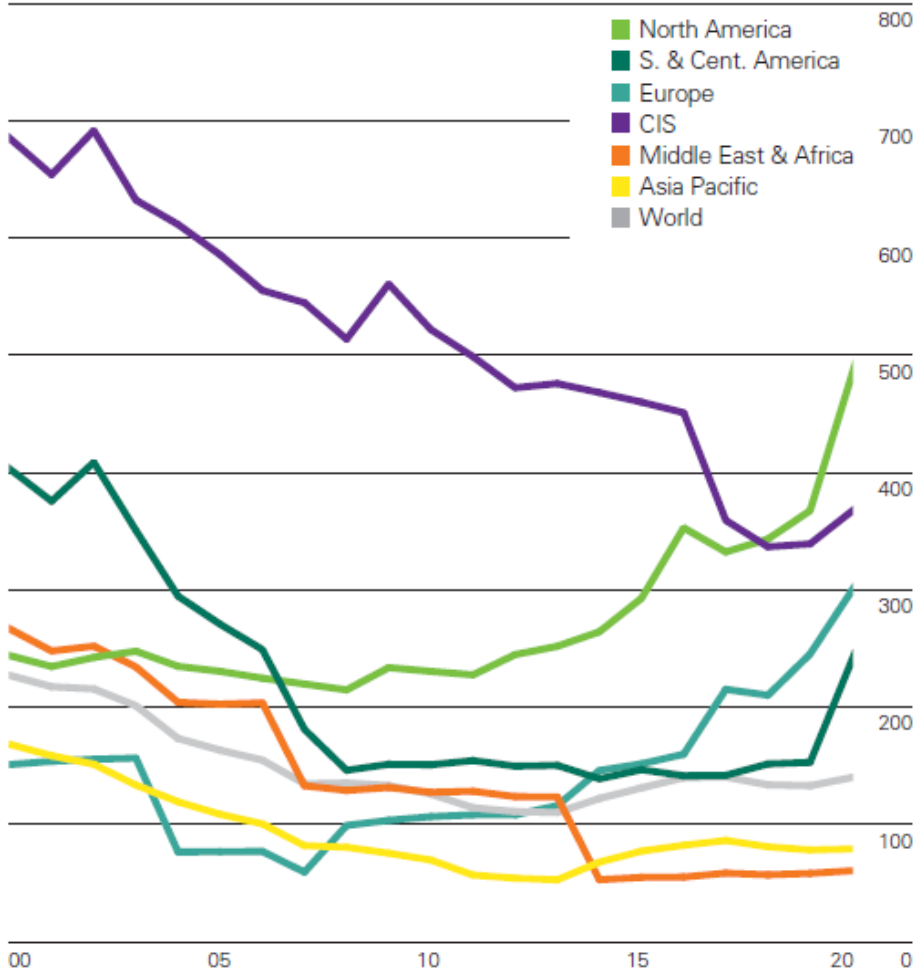
Coal reserves-to-production (R/P) ratios

Years

2020 by region

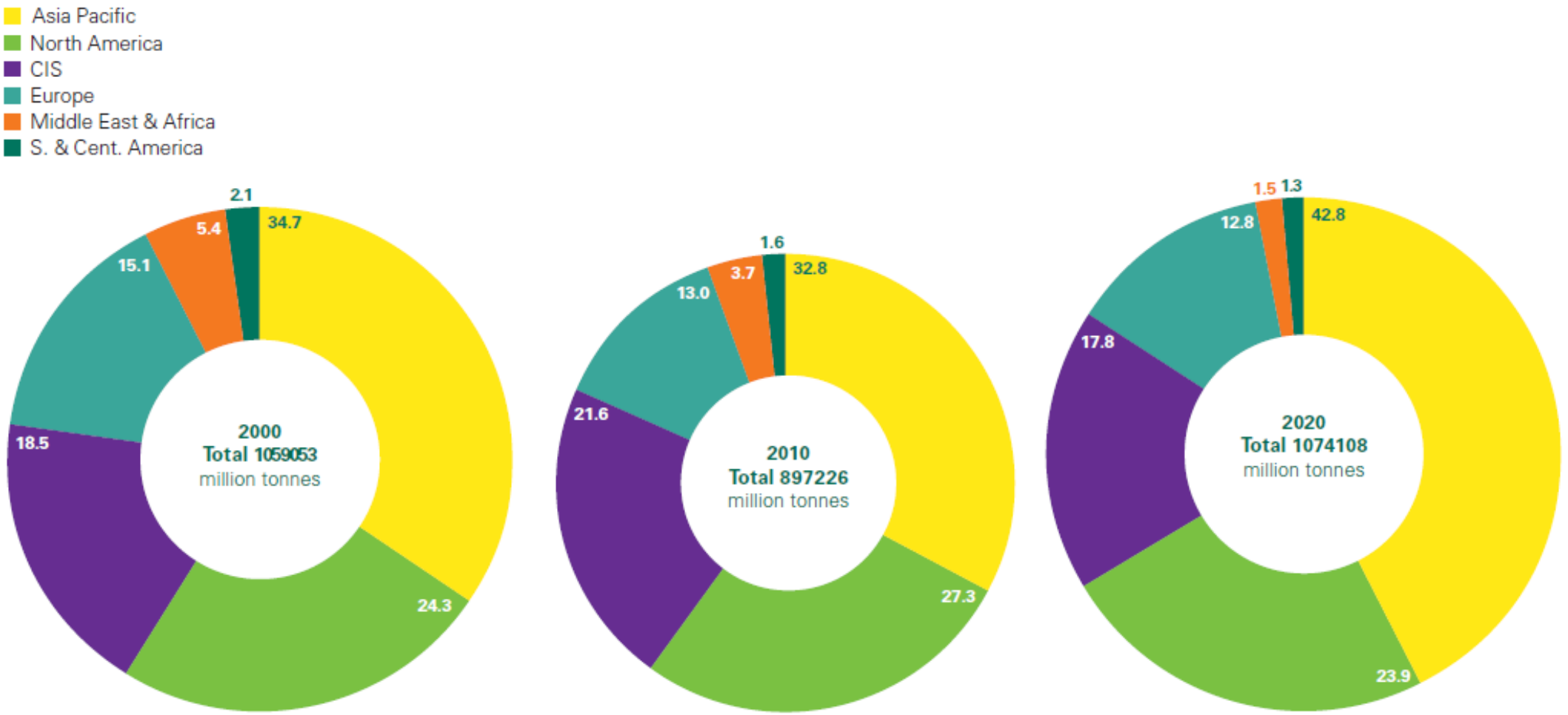


History



Distribution of proved coal reserves: 2000, 2010 and 2020

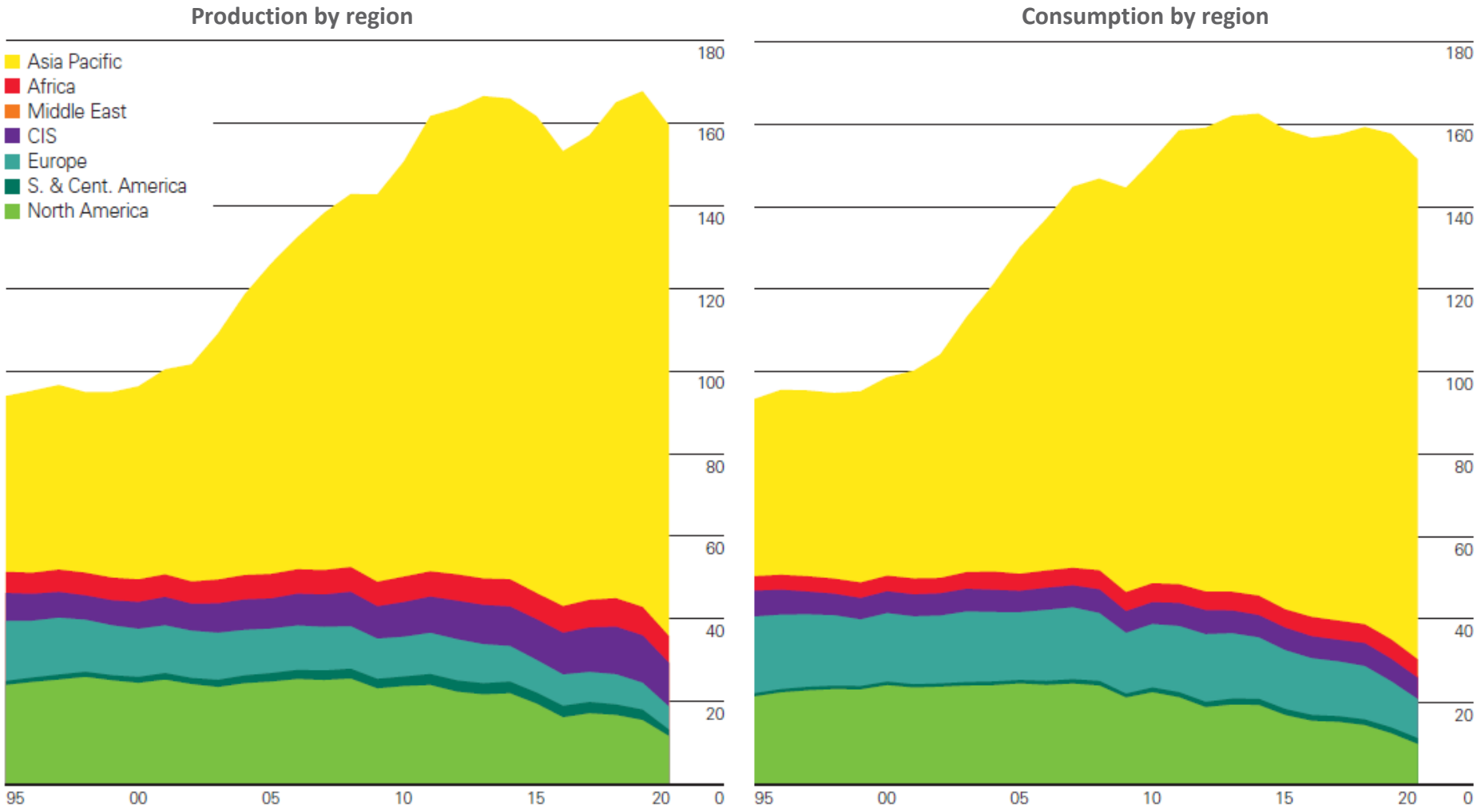
Percentage



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

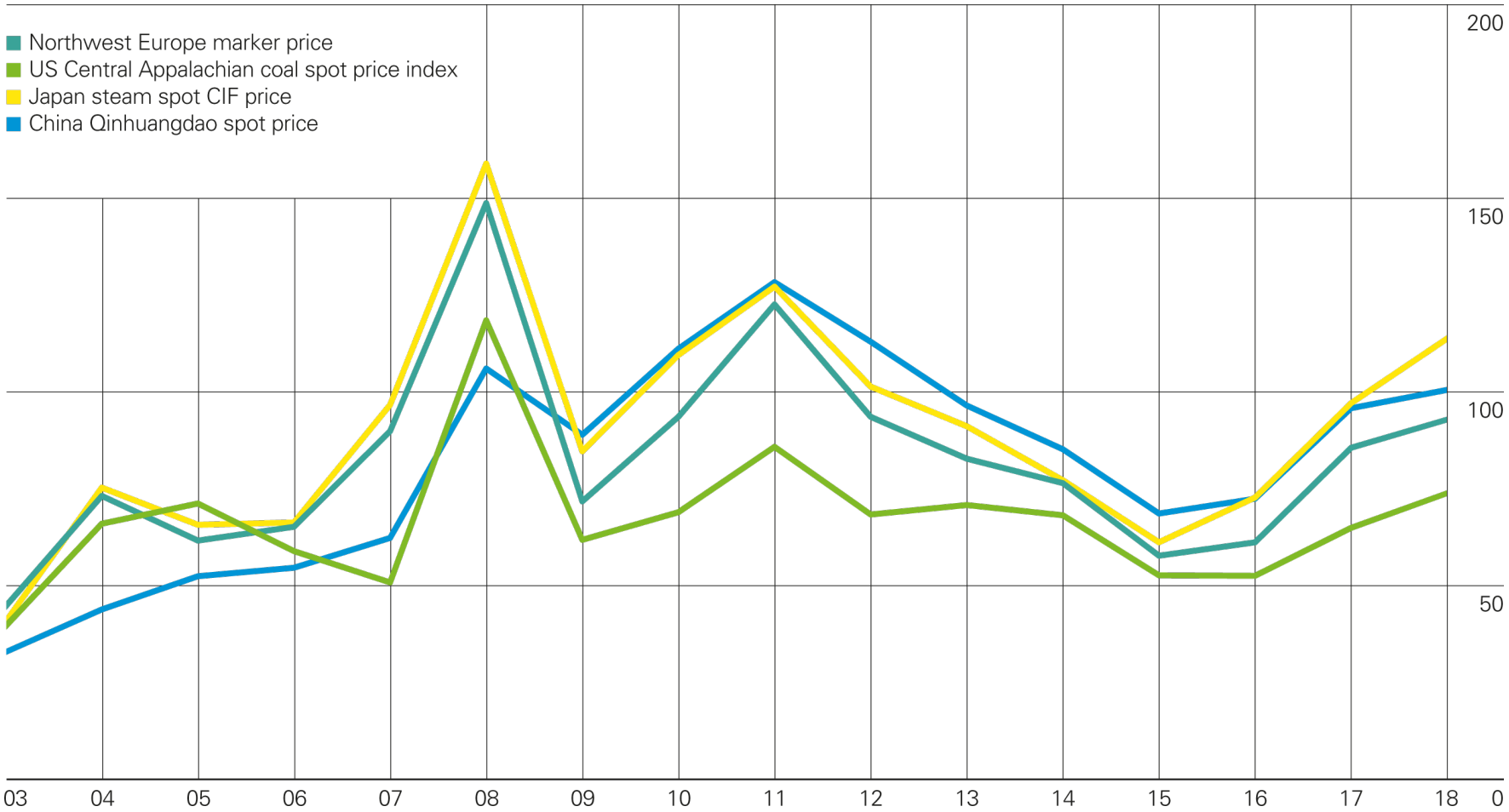
Coal production/consumption by region

Exajoules



Coal prices

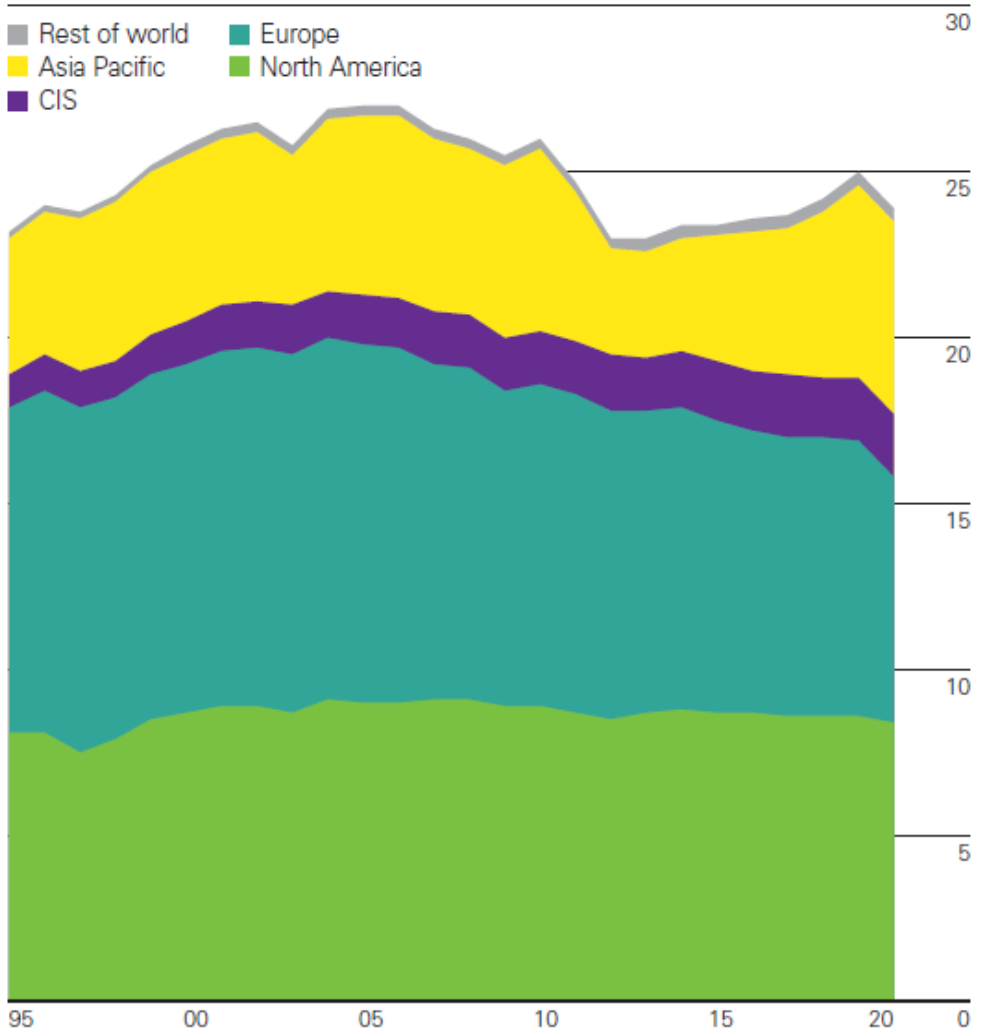
US dollars per tonne



Nuclear energy

Nuclear energy consumption by region

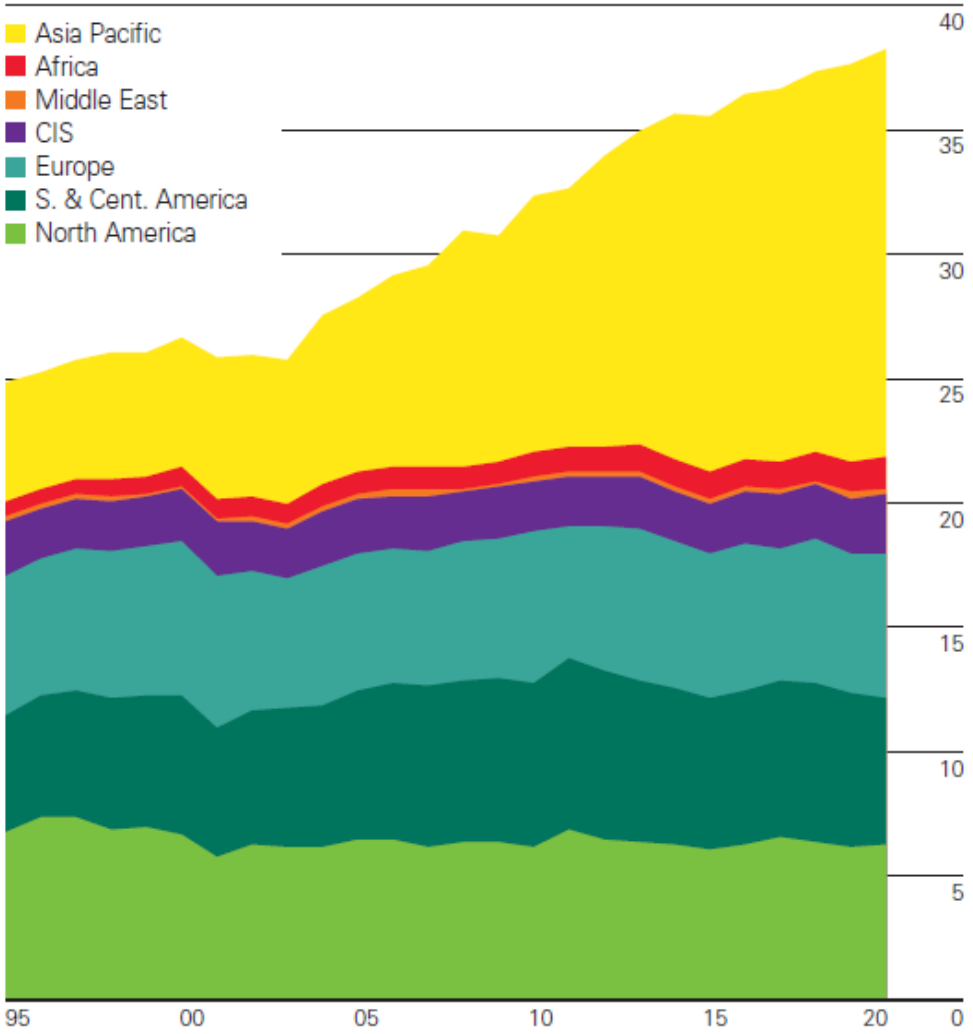
Exajoules



Hydroelectricity

Hydroelectricity consumption by region

Exajoules

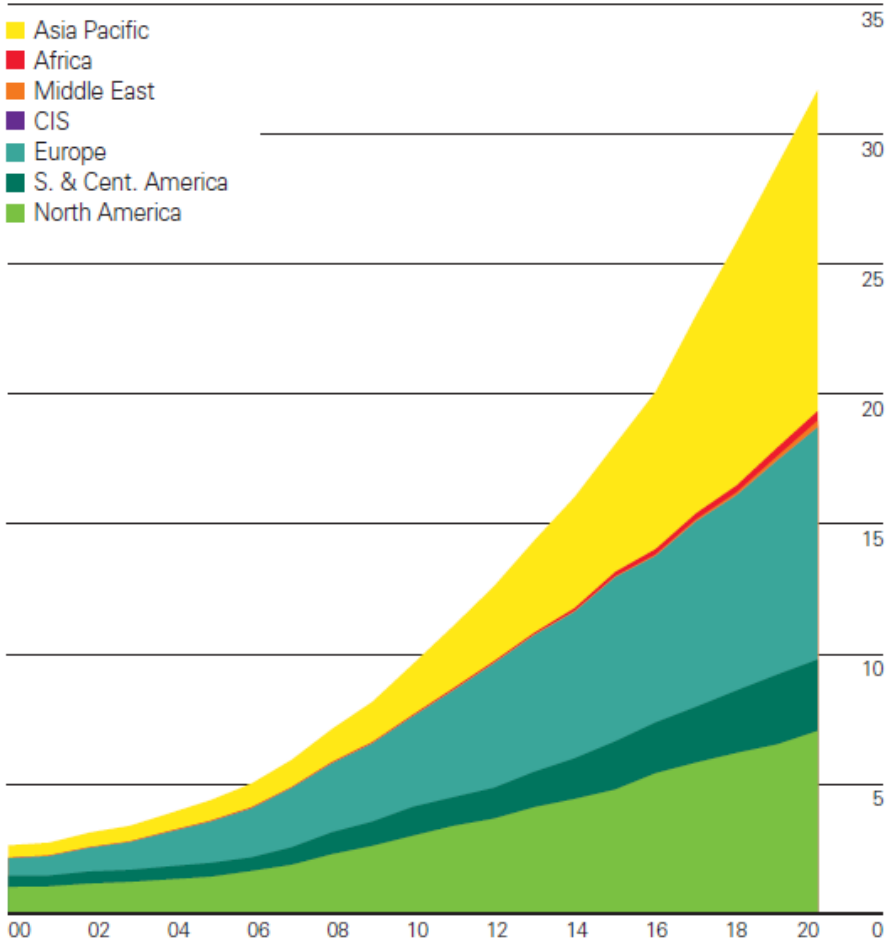


Renewable energy

Renewable energy consumption by region/ generation by source

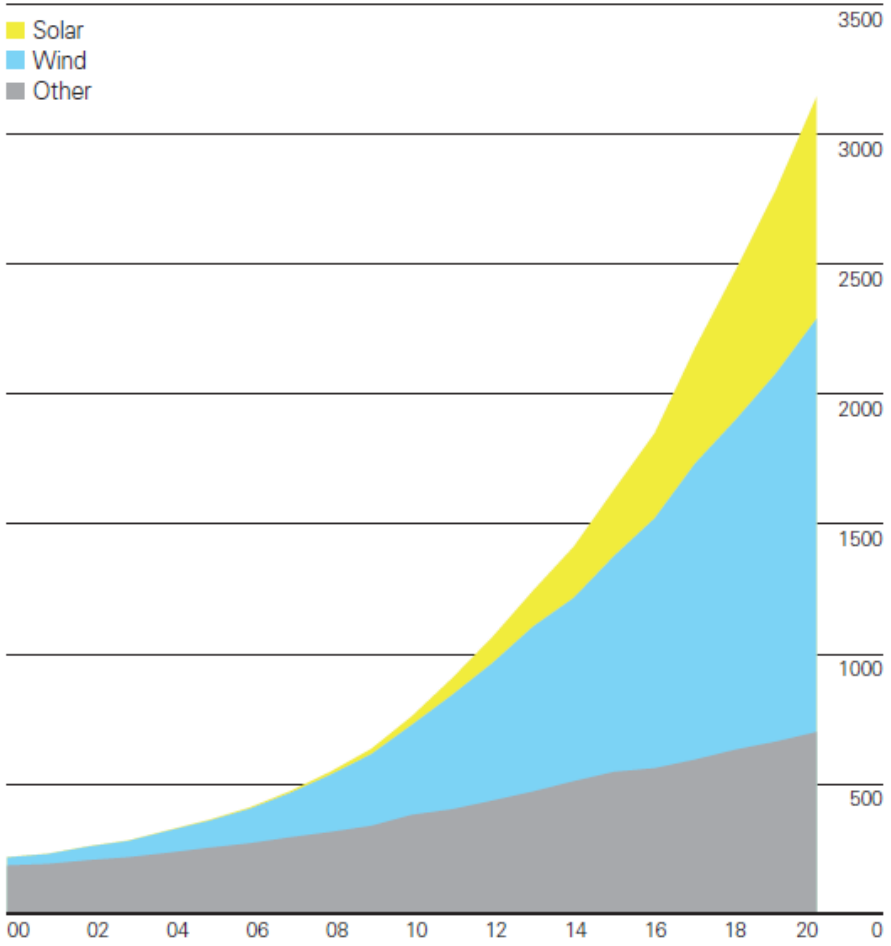
Renewables consumption by region

Exajoules



Renewables generation by source

Terawatt-hours



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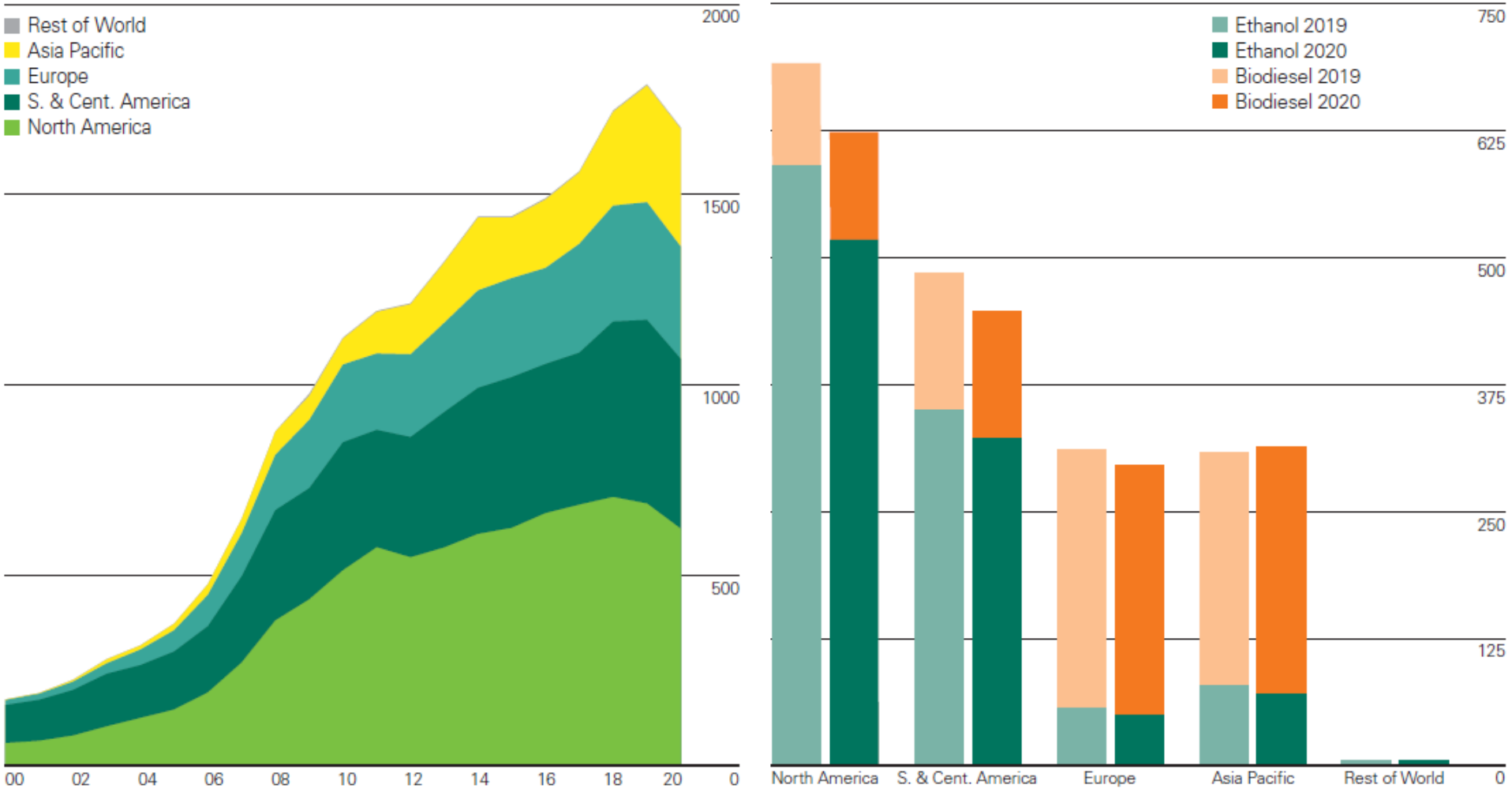
Biofuels production by region

Thousand barrels of oil equivalent per day

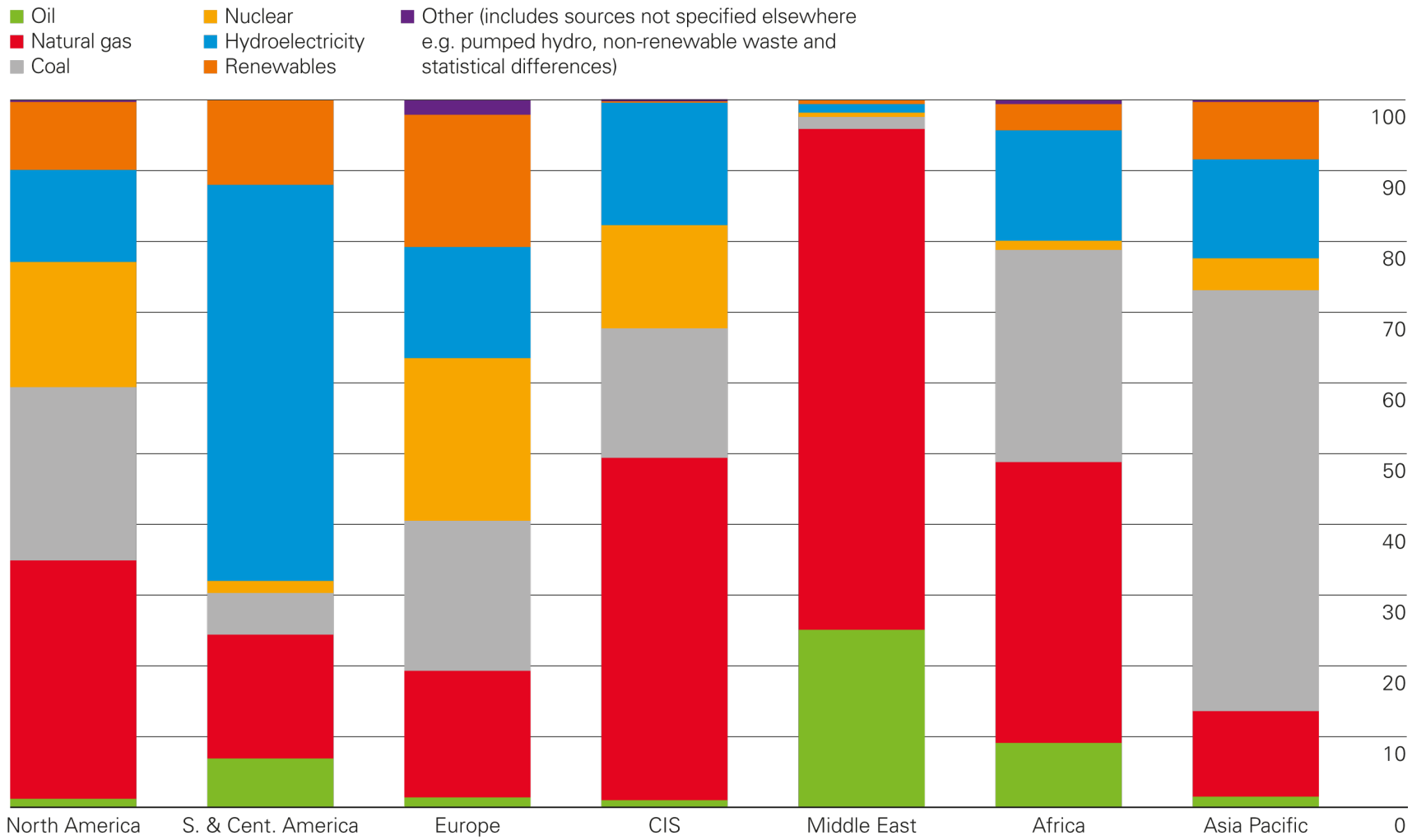
World biofuels production



Electricity

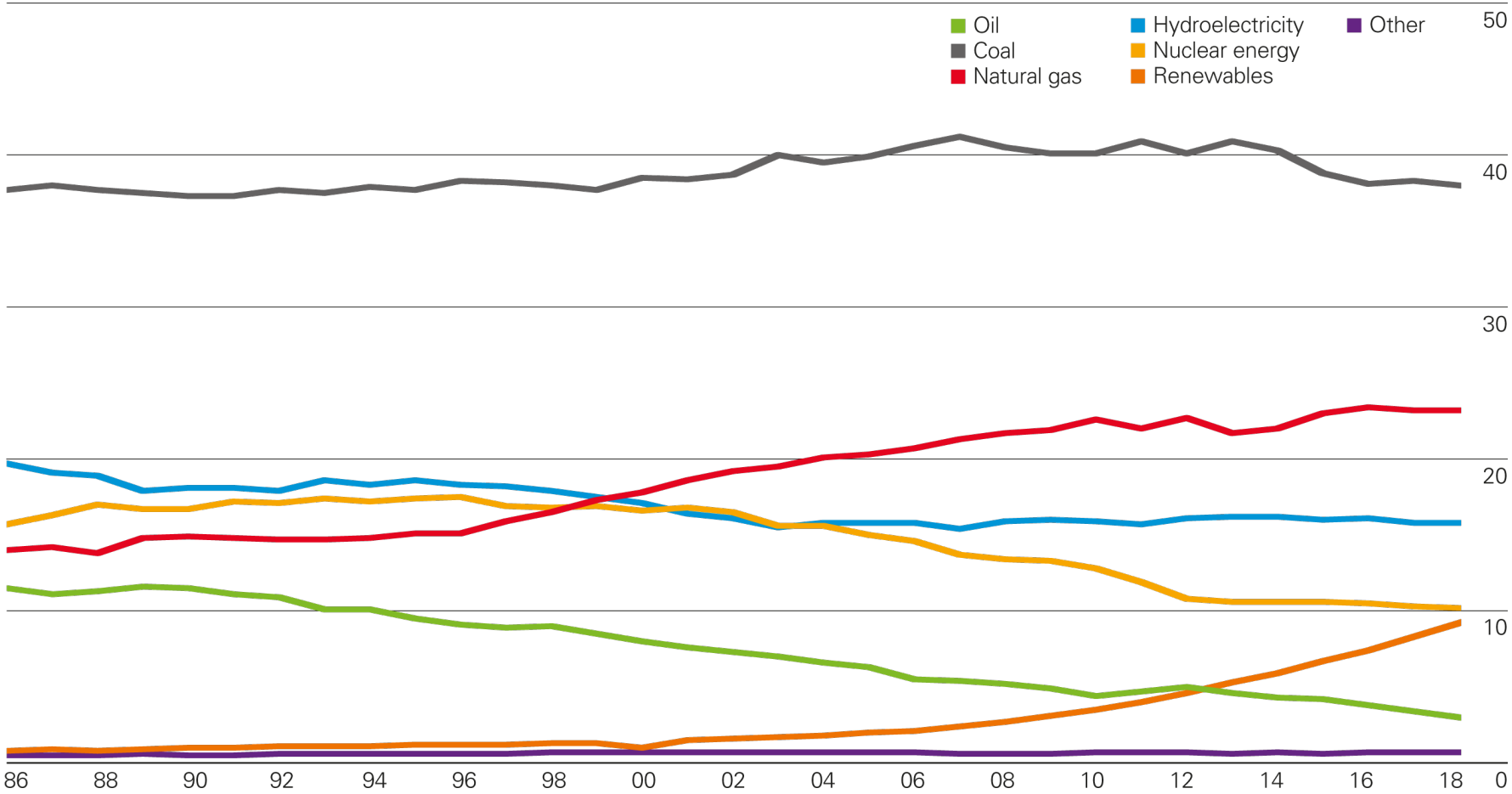
Regional electricity generation by fuel 2018

Percentage



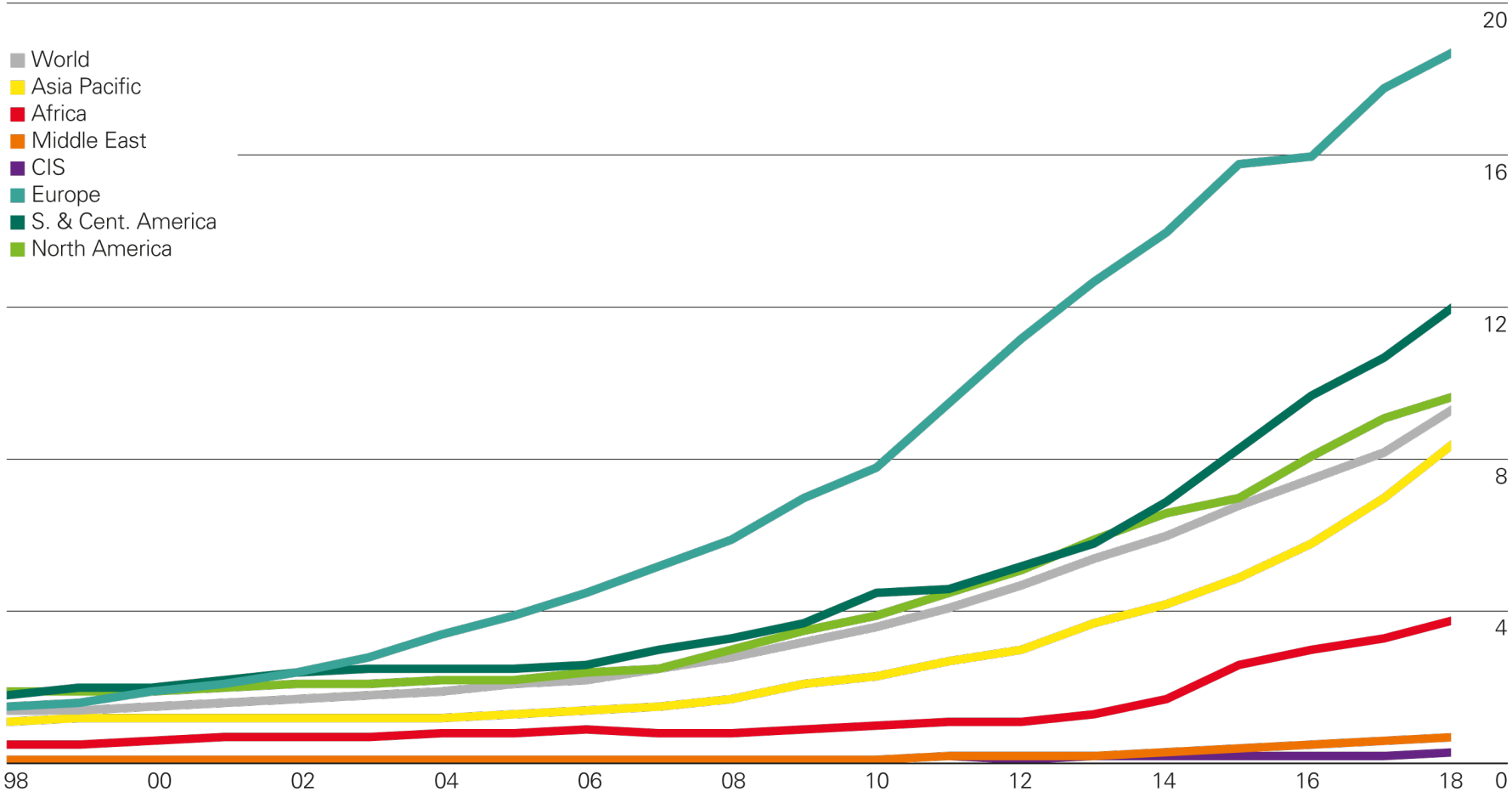
Share of global electricity generation by fuel

Percentage



Renewables share of power generation by region

Percentage

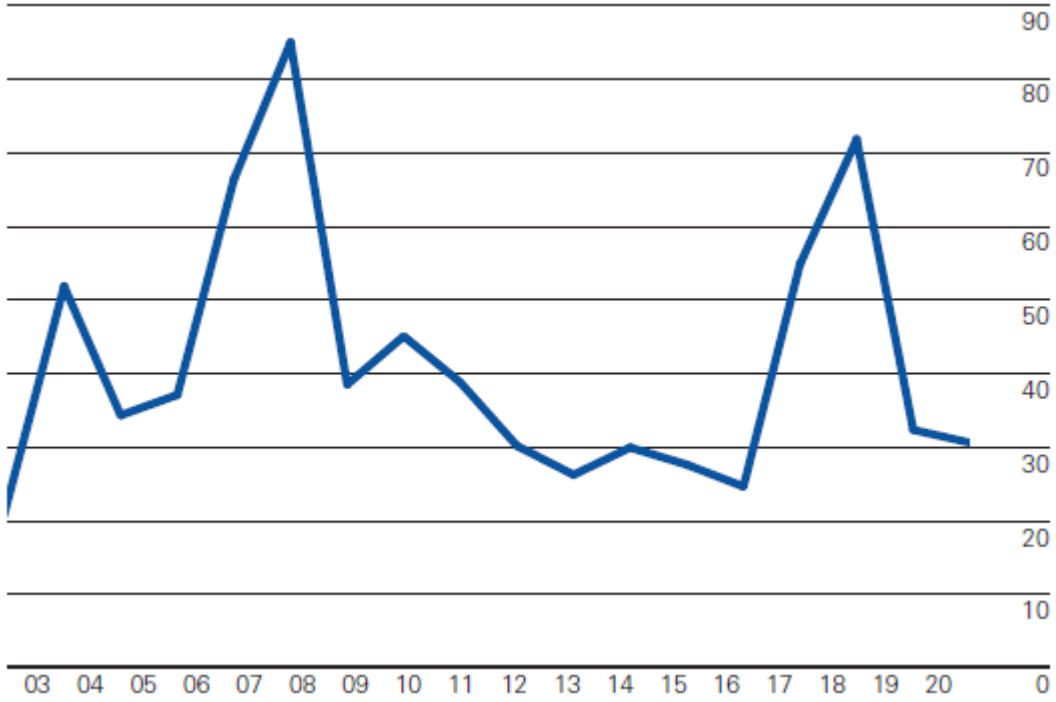


Key minerals for the changing energy system

Key minerals prices

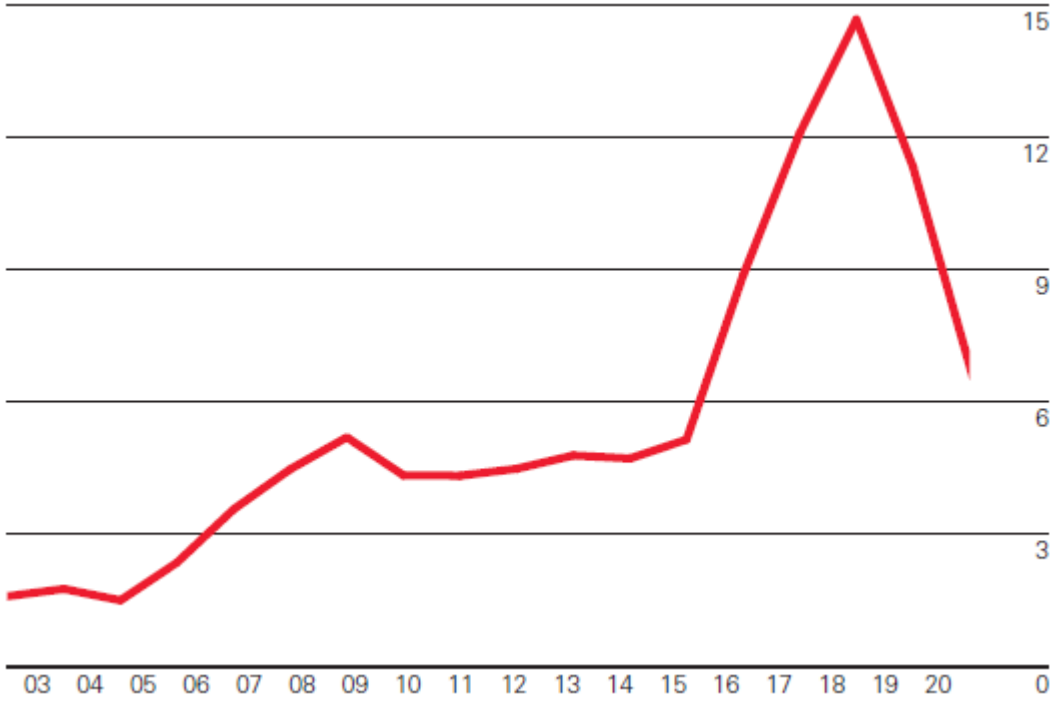
Cobalt prices

Thousands of US dollars per tonne



Lithium carbonate prices

Thousands of US dollars per tonne



Plan de la présentation

- Introduction et objectifs de la capsule
- Énergie primaire, pétrole, gaz, charbon, nucléaire, hydroélectricité, énergie renouvelable, électricité, minéraux clés dans la transition énergétique
- ***Conclusion***

Conclusion

- Energy in 2018: an unsustainable path !
- Enrergy in 2020: the year of COVID
- What else ? Did it really changed that much?
- What do you think?

Merci de votre attention !

Période de questions