

2024 | 73rd edition

Statistical Review of World Energy

In collaboration with



KEARNEY

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Foreword

This 73rd Statistical Review of World Energy is the second under the custodianship of the Energy Institute (EI).

Energy has always been and remains central to human achievement and progress. It is also, increasingly, central to our very survival. With global temperature increases averaging close to 1.5°C, 2023 was the warmest year since records began, and the increasingly severe impacts of climate change were felt across all continents. We also experienced the continuing effects of geopolitical disruption on energy markets, and the economies and livelihoods they support.

As the chartered professional membership body for people working across the world of energy, the Energy Institute is proud to be the home of the Statistical Review of World Energy. Our aim is to provide an objective, independent and comprehensive evidence base for decision makers in governments, businesses and civil society grappling with these profound challenges.

In this second Statistical Review under the Institute's custodianship, we report on another year of highs in our energy hungry world. Record consumption of fossil fuels and record emissions from energy, but also record generation from renewables, driven by increasingly competitive wind and solar energy.

The progress of the transition is slow, but the big picture masks diverse energy stories playing out across different geographies. This year we provide additional visualisations to bring these contrasts to life – from advanced economies where we see signs of demand for fossil fuels peaking,

The progress of the transition is slow, but the big picture masks diverse energy stories playing out across different geographies

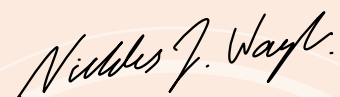
to economies in the Global South for whom economic development and improvements in quality of life continue to drive fossil growth.

This year we also introduce new data sets in areas that will grow in significance over the coming years and decades – in battery storage and battery cells, carbon capture, hydrogen, ammonia, uranium, carbon prices, and additional key minerals and materials. Over the coming months, we'll be engaging with users on further developments, to ensure the way we measure and analyse energy keeps pace and stays relevant as the transition progresses from high to low carbon, from molecule to electron, from supply-led to demand-led.

We are grateful to our co-authors KPMG and Kearney in this vital endeavour, for the support of S&P Global Commodity Insights and bp, and for the data compilation undertaken by Heriot-Watt University. Together we are able to ensure the Statistical Review remains the respected, go-to source of data for the energy community around the world.



Juliet Davenport OBE HonFEI
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CEO, Energy Institute



In collaboration with

KPMG

Businesses worldwide rely on independent and authoritative data to inform their energy transition strategies and investment decisions. The Energy Institute's 2024 Statistical Review of World Energy provides comprehensive insights, which is why KPMG International is proud to collaborate with them on the production of this report.

We saw renewables continuing to scale at pace, with record highs in 2023 and China adding more renewable generation than the rest of the world combined. But fossil fuels grew as well to meet the rising demand for energy globally. As a result, the share of fossil fuels in world energy demand remained stubbornly stuck around the 80% mark.

With record CO₂ emissions as well in 2023, this recent data should serve as a timely reminder for the world to redouble efforts to reduce carbon emissions and reach net zero. In particular, we should do more to provide finance and capacity to support the building of more low-carbon energy sources in the Global South, where demand is growing at a rapid pace.

Kearney

COP28 and rhetoric from world leaders on the energy transition demonstrates the ambition to reduce the world's fossil fuel dependency. However, this ambition is futile unless it is matched with drastic and coordinated actions resulting in real and immediate impact on climate change mitigation.

The Statistical Review of World Energy is the perfect opportunity for us to take a step back and examine the reality of our energy usage to understand just how far we must go on this transitional journey. While progress has been made, 2023 was unfortunately another record year for the consumption of fossil fuels and emissions from energy. With global temperature increases closing in on 1.5°C, we are also seeing a real disconnect with the Paris goals and the progress of the transition is too slow.

We hope that this report will help governments, world leaders and analysts around the world move forward, clear-eyed about the challenge that lies ahead, and ready to take a lead in promoting and enabling the use of clean energy across the world.



Simon Virley CB FEI

Vice Chair and Head of Energy and Natural Resources, KPMG in the UK



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Partner and Managing Director, Energy Transition Institute, Kearney

2023 Key highlights

2023 was a year of production and consumption records across the board with most markets returning to at least their 2019 pre-COVID long-term trends as supply chain issues finally eased.

Oil consumption in particular rebounded strongly, largely on the back of China relaxing its zero-COVID lockdown policies. Although demand for natural gas remained flat, consumption of crude oil broke through the 100 million barrels per day level for the first time ever and coal demand beat the previous year's record level. Consumption of renewable energy grew at six times the rate of total primary energy, and electricity demand grew 25% faster than total primary energy consumption.

Energy developments

- Total primary energy consumption increased by 2% over its 2022 level, 0.6% above its ten-year average and over 5% above its 2019 pre-COVID level.
- Renewables' share of total primary energy consumption reached 14.6%, an increase of 0.4% over the previous year. Together with nuclear, they represented over 18% of total primary energy consumption.
- Fossil fuel consumption as a percentage of primary energy dropped 0.4% to 81.5%.

Carbon emissions

- Greenhouse gas emissions from energy use, industrial processes, flaring and methane (in carbon dioxide equivalent terms) increased 2.1% to exceed the record level set in 2022. For the first time ever, energy-related emissions exceeded the 40 GtCO₂e level, with emissions from the direct use of energy breaching 35 GtCO₂e for the first time ever.
- Carbon dioxide emissions from flaring increased by 7% along with emissions from methane and industrial processes that also increased by over 5%.

Oil

- Although Brent crude oil prices fell 18% to average \$83/bbl in 2023, they were still some 29% above their 2019 pre-COVID levels.
- Global oil production increased by 2.1 million b/d to reach a record level of 96 million b/d in 2023. The US remained the largest producer seeing its output grow by over 8%. Overall production from non-OPEC+ countries exceeded global incremental demand growth by 20%.
- Back in 2022 the combined consumption of oil and biofuel products exceeded 100 million barrels per day for the first time ever. In 2023, consumption of oil products alone exceeded this level.

- Regionally, whilst North America witnessed a modest increase in oil consumption of around 0.8%, demand in Europe fell by nearly 1% to 13.9 million barrels per day. By contrast, the Asia Pacific region saw an increase of over 5% to 38 million barrels per day.
- The ending of China's extended zero-COVID lockdown measures saw demand for gasoline and diesel rebound to 7,179 kbd, 15% above its 2019 pre-COVID levels. Whilst its demand for jet/kerosene grew by 74% in 2023 to 828 kbd, this is still 14% below its 2019 level which was a record year for China.
- China's refining capacity (18,484 kb/d) exceeded the US (18,429 kb/d) for the first time ever making it the largest oil refining market by capacity. However, throughput of refined products from China still lags the US with an overall utilisation of 81.7% versus 86.6%.

Natural gas

- On average natural gas prices in Europe and Asia fell 30% from their record highs recorded in 2022, averaging around \$13/mmBtu. US Henry Hub prices exhibited an even greater fall of 60% to average \$2.5/mmBtu across the year, back to their 2019 pre-COVID level.
- Global gas production remained relatively constant compared to 2022. The US remains the largest producer of gas delivering around a quarter of the world's supply. Output in Europe and the CIS fell by around 7% and 4% respectively. In absolute terms, the Russian Federation saw the largest fall in output with a 5% drop of 32 bcm.
- In 2023 LNG supply grew nearly 2% (10 bcm) to 549 bcm. The US overtook Qatar as the world's largest exporter of LNG, seeing its supply increase nearly 10% versus a 2% drop from Qatar. The Russian Federation saw falls in both its LNG and pipeline exports with LNG dropping nearly 2% (0.8 bcm) and pipeline supplies dropping around 24% (30 bcm).
- Global natural gas demand increased by only 1 bcm in 2023, a rise of only 0.02% and only slightly above its 2019 pre-COVID level. Whilst its share of global fossil fuel consumption remained around the 29% mark, its share of total primary energy consumption fell 0.5% from 2019.
- The global growth in LNG demand was triggered primarily by the Asia Pacific region with China, India, and other non-OECD Asia Pacific countries' demand increasing by 11 bcm, 2.6 bcm, and 7.6 bcm respectively. LNG into both Europe and OECD Asia Pacific countries fell by 3 bcm and 11 bcm respectively.

- China regained its position as the world's largest LNG importing country followed by Japan and South Korea. Together, they accounted for around 45% of global LNG trade.
- Overall natural gas pipeline net trade fell by around 8% (or 35 bcm) in 2023. European pipeline imports fell by 26% (40 bcm), almost entirely attributable to supplies from the Russian Federation which accounted for 91% of the drop.

Coal

- From the record levels recorded in 2022, coal prices fell 46% on average with European delivered prices settling around \$130/tonne and delivered prices in Asia averaging around \$125/tonne.
- Global coal production reached its highest ever level (179 EJ), beating the previous high set the year before. The Asia Pacific region accounted for nearly 80% of global output with activity concentrated in just four countries, Australia, China, India, and Indonesia.
- Global coal consumption continued to increase and breached 164 EJ for the first time ever. The increase of 1.6% over 2022 was seven times higher than the previous ten-year average growth rate.
- Whilst China is by far the largest consumer of coal (it beat its own record set in 2022 and now accounts for 56% of the world's total consumption), in 2023 India exceeded the combined consumption of Europe and North America for the first time ever. Coal consumption in both Europe and North America fell below 10 EJ each and has been in constant decline over the past 10 years.

Electricity

- Global electricity generation increased by 2.5% in 2023 to reach a record level of 29,925 TWh. Whilst electricity demand in Asia Pacific and the Middle East increased by around 5%, demand in both Europe and North America fell by 2.4% and 1% respectively.
- For fossil fuels, coal retained its position as the dominant fuel for power generation in 2023 with a stable share around 35%. Natural gas' share of the generation fleet also remained stable at around 23%. Oil-fired plant contributed just over 2% of total electrical output.
- Renewables share of total power generation rose from 29% to 30%. At a regional level, Southern & Central America recorded the highest contribution from renewables at 72%. In Brazil, responsible for over 40% of electricity demand in the region, wind and solar increased by 17% and 71% respectively.

- The share of nuclear remained flat at around 9% with new build in China and returns to service of plant in France and Japan being offset by the closure of Germany's remaining plant.
- In 2023, grid-scale battery electricity storage system (BESS) capacity stood at 55.7 GW, nearly 50% of which was installed in China.

Wind and Solar

- Solar and wind capacity continued to grow rapidly in 2023 beating the previous year's record of 276 GW by around 186 GW, a 67% increase.
- Solar accounted for 75% (346 GW) of the capacity additions with China responsible for around a quarter of the growth. Europe installed just over 56 GW of solar, representing 16% of total solar capacity additions.
- Wind achieved a record year for new build with over 115 GW coming online. Nearly 66% of capacity additions were in China and its total installed capacity is now equal to North America and Europe combined. Although Europe has the highest share of offshore in its wind portfolio (12%), China has 37 GW compared to Europe's 32 GW.

Biofuels

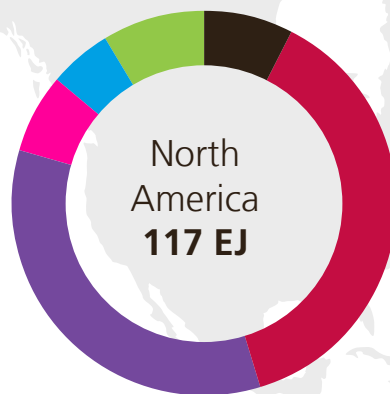
- Global biofuels' production grew by over 8% in 2023 with the biggest increases seen in the US (75 mboe/d) and Brazil (65 mboe/d). Indonesia was responsible for around 46% of Asia Pacific region's production of 422 mboe/d.
- The production split in 2023 was 54% biogasoline and 46% biodiesel.
- The US, Brazil, and Europe were responsible for around three-quarters of all biofuels consumed globally.

Key minerals

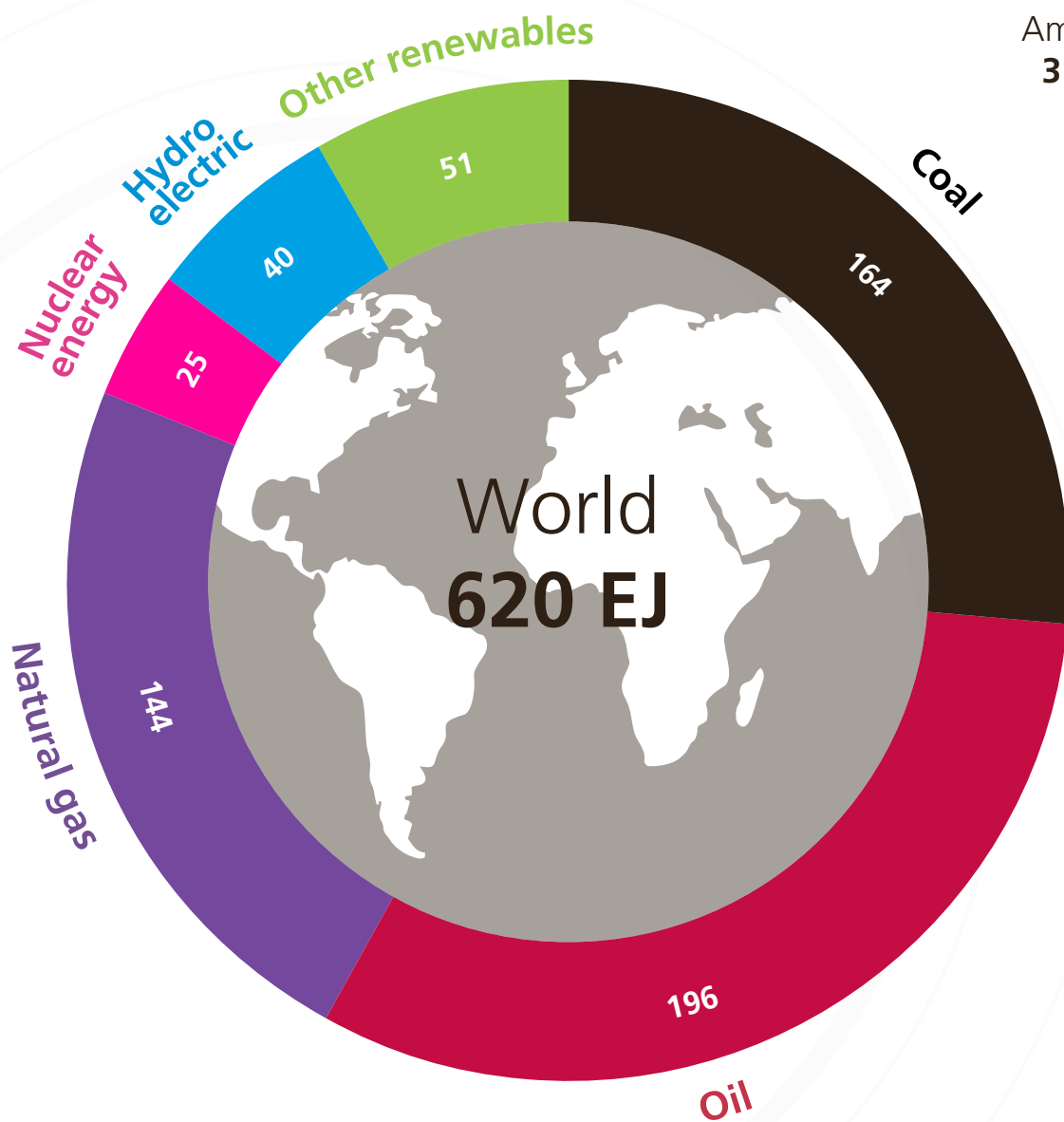
- Across the board, prices for key metals and materials fell by around 26% in 2023. The biggest declines were in cobalt (-47%), pet needle coke (-36%), and lithium carbonate (-32%). Prices for copper and natural graphite fell by only 4% and 15% respectively.
- Africa was responsible for nearly 75% of the world's cobalt production. Within this, the Democratic Republic of Congo was responsible for around 96% (or 56% of the global total).

2023 Regional overview – access to energy and sustainability

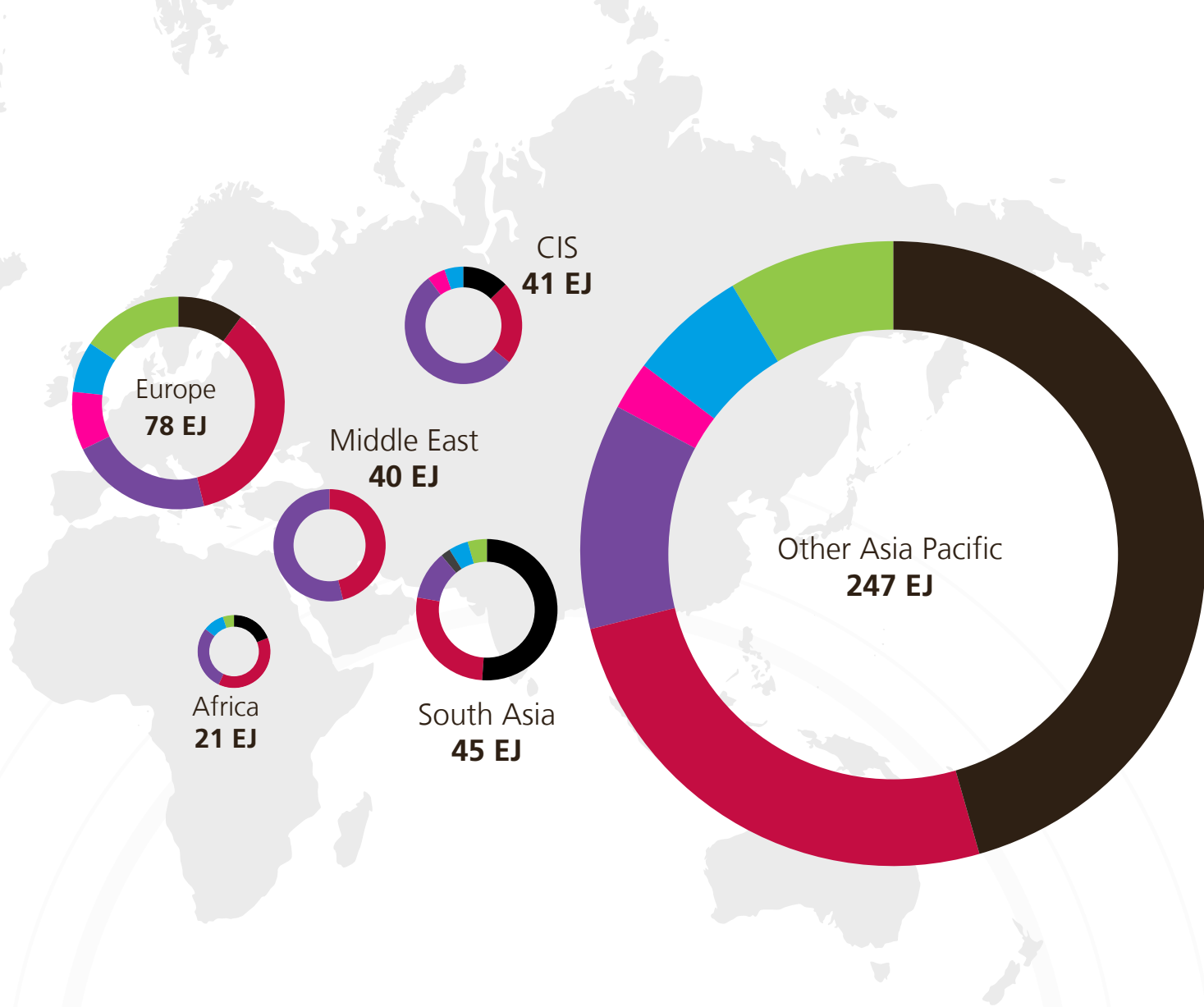
Global primary energy consumption reached a new record for the second consecutive year with non-OECD countries dominating both the share and annual growth rates. Fossil fuels continue to underpin their development accounting for 84% of their energy mix.



S. & Cent. America
31 EJ



Note: primary energy resources in the charts are ordered according to their carbon intensity.



The contrasts between the northern and southern hemispheres is quite stark. Consumption of primary energy in the Global South first exceeded that of the Global North in 2014. In 2023 it accounted for 56% of total energy consumed and grew at twice the global average rate of 2%. The Asia Pacific region was responsible for 85% of the Global South's demand (and 47% of global demand) where the economies of China, India, Indonesia, Japan and South Korea dominated. Whilst Southern & Central America, and Asia Pacific experienced growth rates above the global average, total demand in Africa dropped by 0.4% in 2023 and electricity consumption remained flat. Electricity demand in both North America and Europe experienced falls of -1% and -2% respectively. In these regions, electricity demand in particular is increasingly impacted by energy efficiency regulations, energy-efficient lighting, and changing consumer habits.

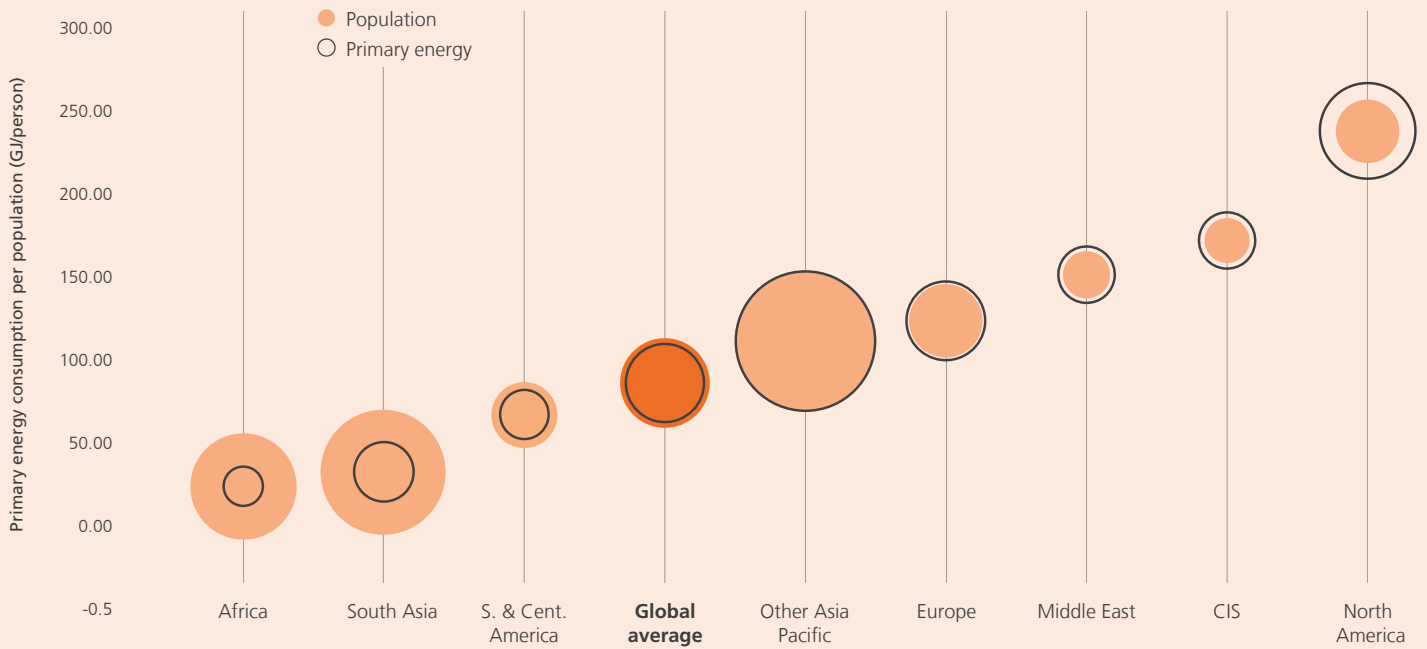
2023 Regional overview – energy access, efficiency, and sustainability

Whilst collectively Africa and South Asia were responsible for less than 10% of the world's energy demand in 2023, a prevalence of developing economies, large populations, low rate of access to energy today, potentially positions them for significant energy demand growth in the future.

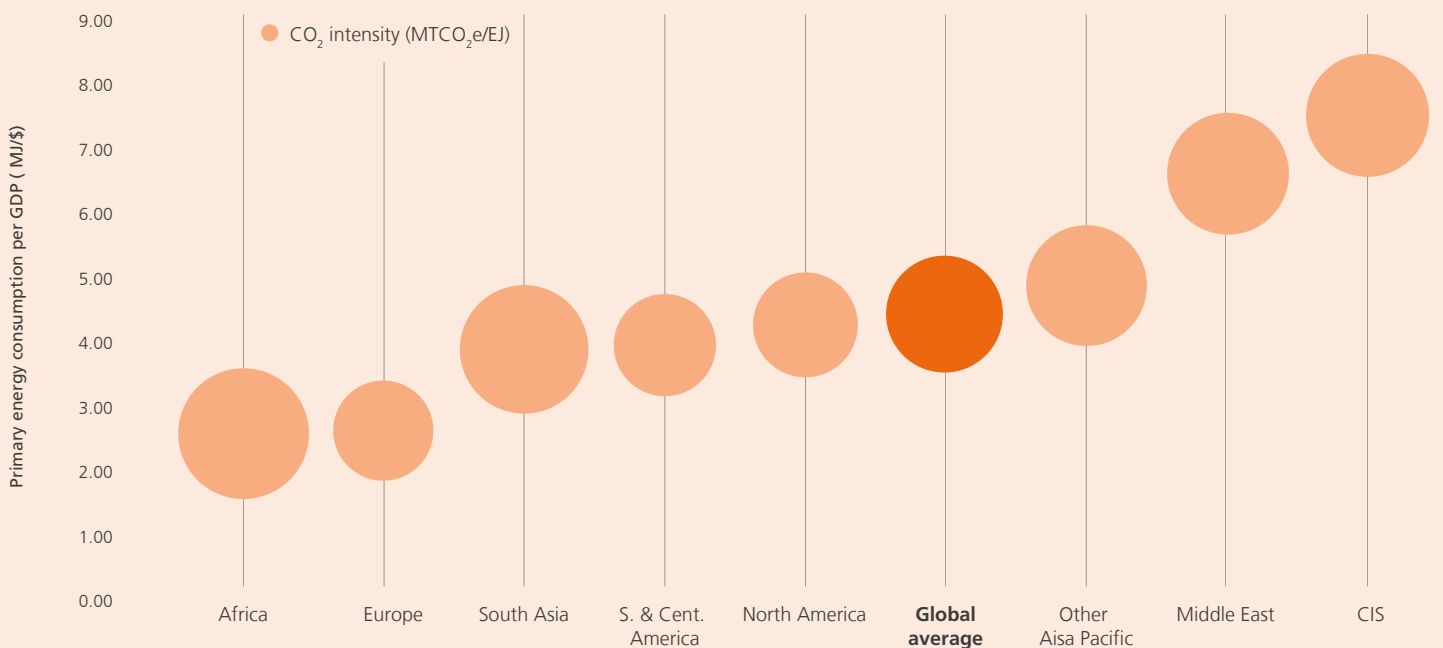
It is estimated that globally around 750 million people – 1 out of 10 – do not have access to electricity to light their homes, refrigerate their food, or keep cool in rising temperatures and around 2.6 billion people rely on heavily polluting biomass fuels such as charcoal, coal, and animal waste for heating and cooking. In 2023 significant geographical variations were evident in the relationships between regional population sizes and regional energy consumption. In Africa, South Asia, and Southern & Central America, the average amount of energy consumed per person stood at 30 Gigajoules (GJ). This was in stark contrast to North America, the CIS, and the Middle East, where energy consumption per capita averaged 180 GJ. In North America, the ratio was almost three times the global average of 77 GJ.

A similar pattern also played out for average greenhouse gas emissions per person where Africa, South Asia, and Southern & Central America averaged 2 MtCO₂e relative to a global average of 6.7 MtCO₂e. North America, the CIS, and the Middle East collectively averaged 11.5 MtCO₂e, almost twice the global average. The exception was Other Asia Pacific that was just below the global average for energy consumption per capita but 0.7 MtCO₂e above the global average for greenhouse gas emissions per person. This was primarily due to China, the world's largest consumer of coal and second largest consumer of oil.

Today, both Africa and South Asia have very low levels of energy demand relative to the size of their population



Europe and Southern & Central America are the only regions to be below both the global average for CO₂ Intensity and Energy Consumption per GDP



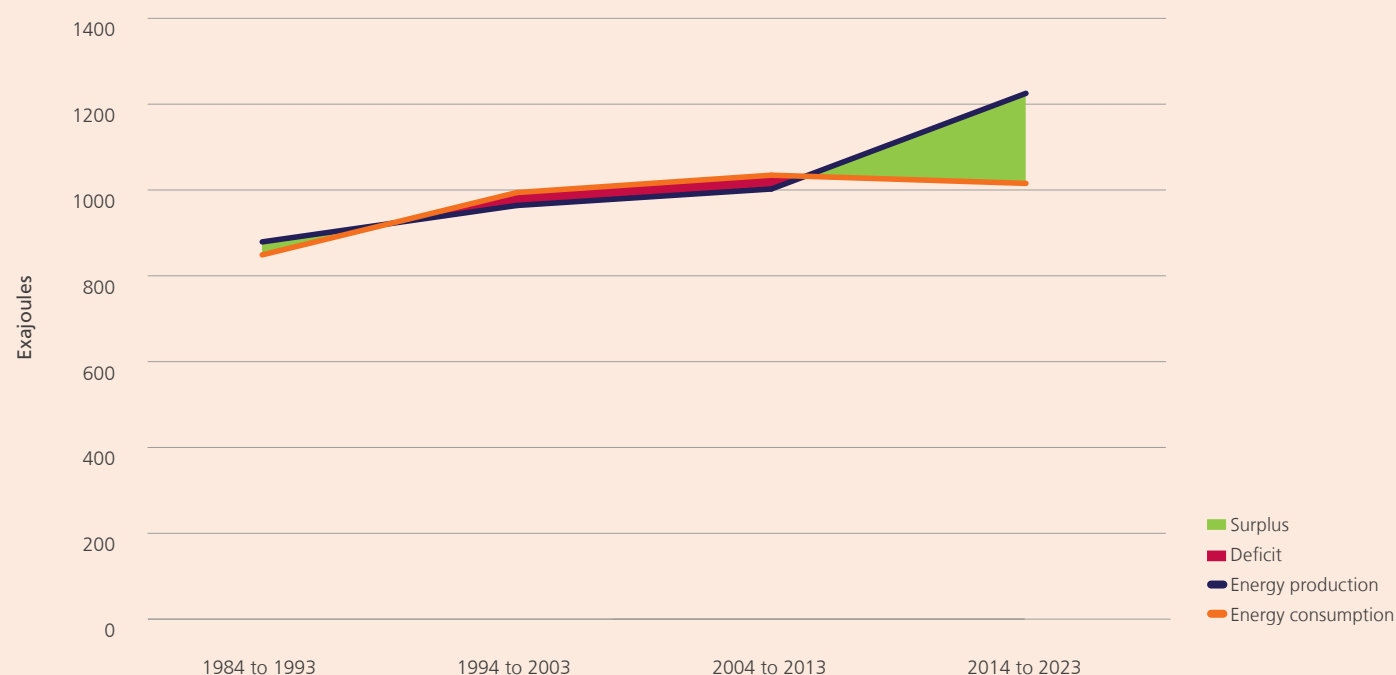
2023 Regional overview – energy security

Along with sustainability and affordability, secure supply of energy is a key pillar of the energy trilemma. In 2023, the total international trade of oil, gas, and coal was 53% higher than it was in 2000. Collectively, North America, Europe, and Asia Pacific regions consumed 78% of the world's total energy in 2023. Over the past two decades, North America's energy system has been transformed by the growth in unconventional oil and gas that began in the early 2000s. As a result, in the past 10 years the region has moved from being a net importer of energy to a net exporter. In 2023, oil production in North America was 16% above its domestic consumption whilst gas production sat at 14% above its demand level. Since the 1980s, Europe has consistently been a net importer of energy. Its biggest deficit in 2023 was

in oil where production only met 23% of demand. Whilst European gas production was only able to meet 44% of consumption, the balance with coal was less severe with production meeting 58% of demand. The Asia Pacific region had the highest demand of any region in 2023, consuming 292 EJ of primary energy, 47% of the world's total demand. Like Europe, it has consistently been a net importer of energy since the 1980s. In 2023, its biggest shortfall was in servicing its demand for oil with production only meeting around 19% of its consumption. Its gas position was more positive with production able to meet 74% of its demand. For coal, production in the Asia Pacific region achieved a surplus in 2023, with supply exceeding the region's demand by 5%.

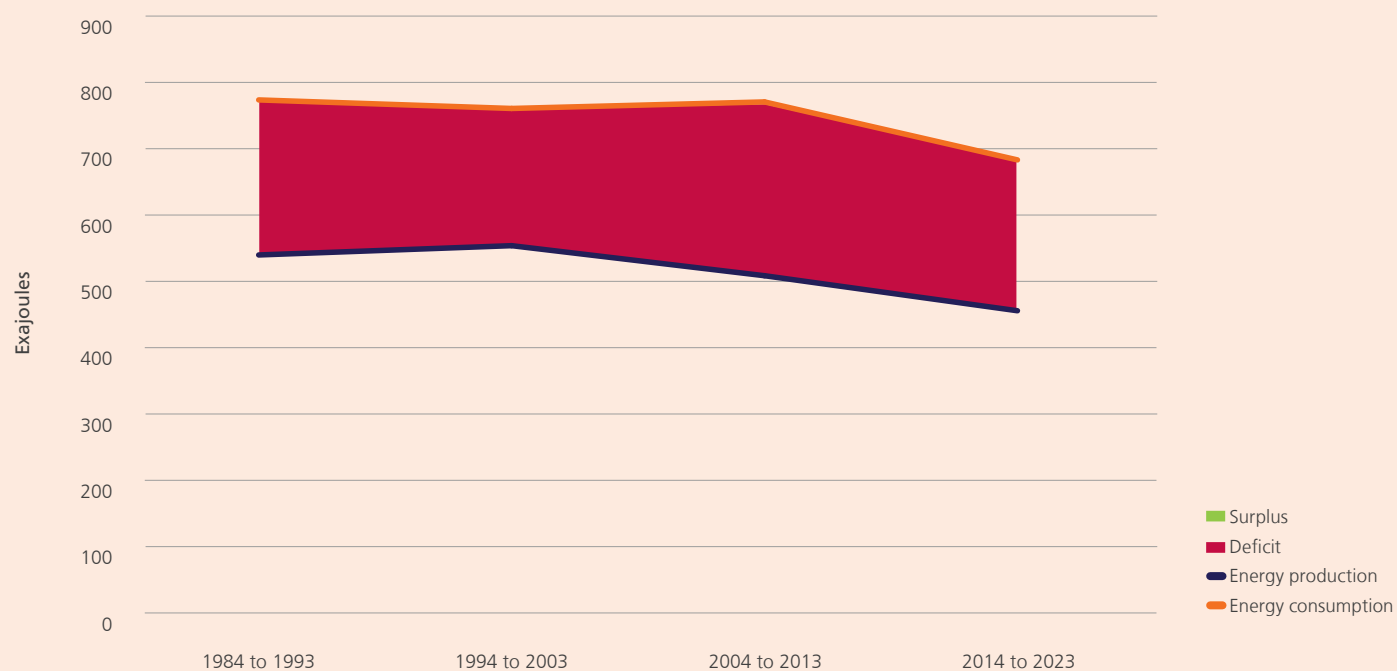
Production vs consumption by region

North America



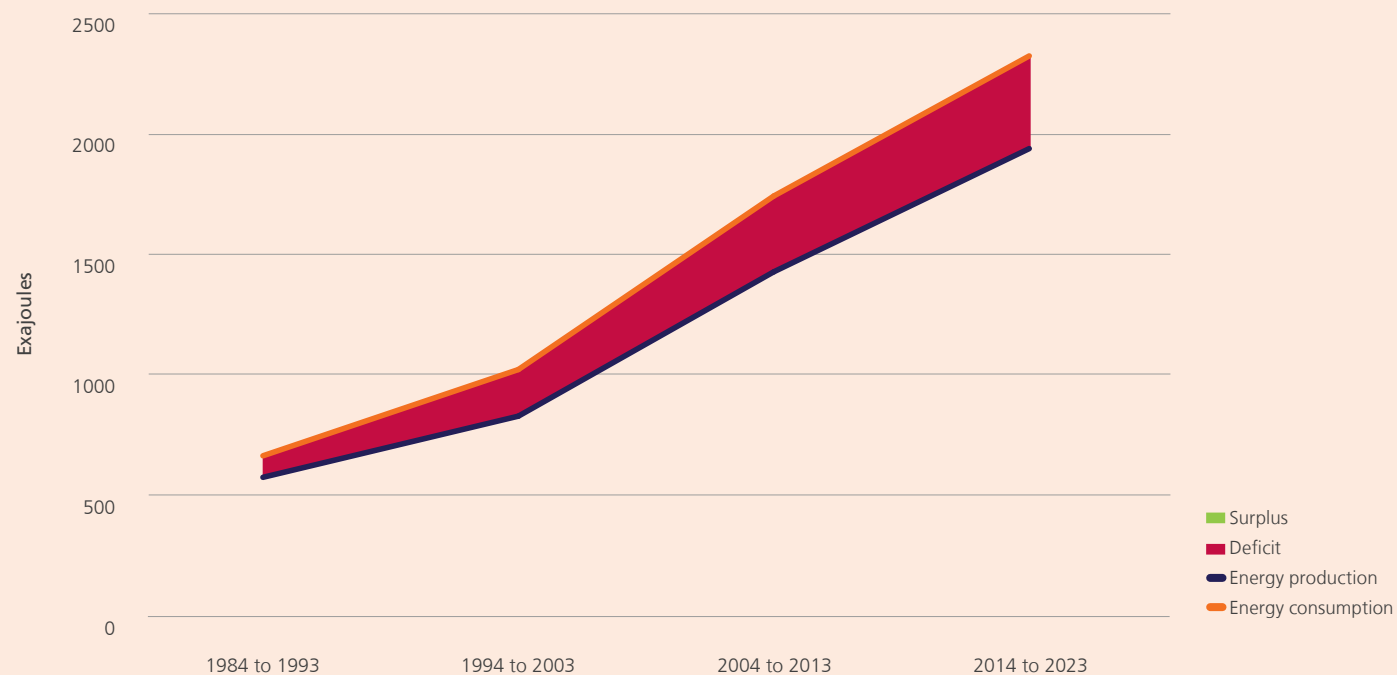
Production vs consumption by region

Europe



Production vs consumption by region

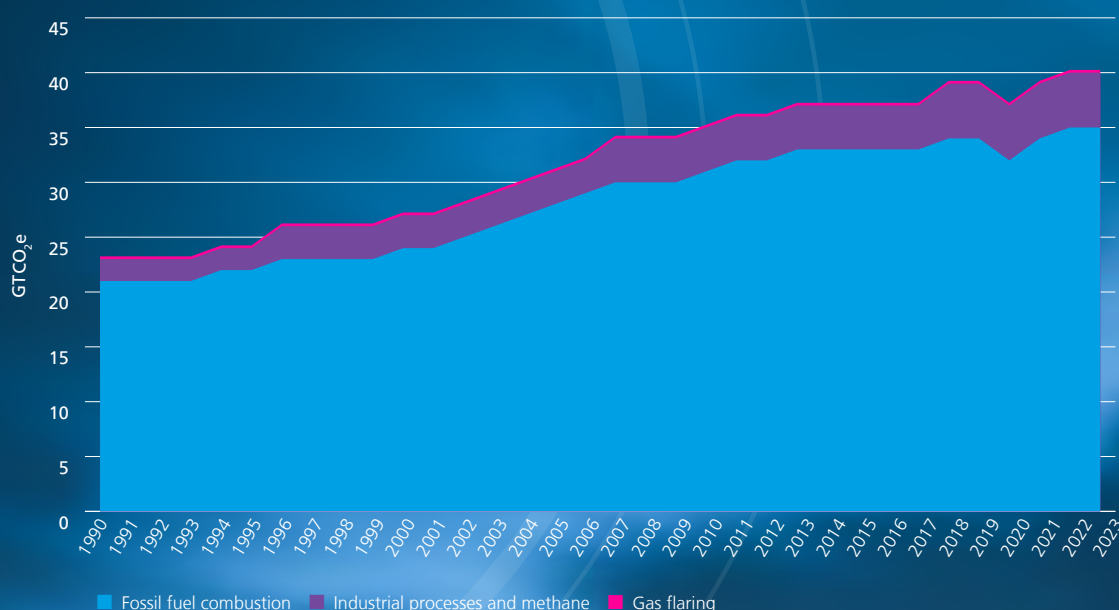
Asia Pacific



Primary energy and carbon

2023 saw a second consecutive record year for global primary energy consumption as it grew by 2%, reaching 620 EJ. Its growth rate was 0.6% above its ten-year average and over 5% above its 2019 pre-COVID level. Whilst a new record in the consumption of fossil fuels (in absolute terms) was recorded. In 2023, it fell to 81.5% compared to almost 81.9% in 2022. With demand for natural gas, a relatively low carbon-intensive fossil fuel, remaining flat, the increased use of more carbon-intensive oil and coal meant that energy-related greenhouse gas emissions also reached a record high, exceeding 40 GtCO₂e for the very first time. CO₂ emissions from the combustion of fossil fuels is by far the largest source of energy-related greenhouse gas emissions contributing around 87% of the total.

2023 global energy-related greenhouse gas emissions exceeded 40 gigatonnes for the first time ever



P Primary energy Consumption*

Exajoules	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		Share
												2023	2013-23	2023
Canada	14.40	14.43	14.47	14.34	14.54	14.72	14.64	13.76	13.92	14.30	13.95	-2.4%	-0.3%	2.3%
Mexico	8.07	8.03	7.94	8.11	8.26	8.15	8.07	7.35	7.83	8.18	8.45	3.3%	0.5%	1.4%
US	92.62	93.59	92.69	92.62	92.97	96.37	95.68	88.64	93.44	95.42	94.28	-1.2%	0.2%	15.2%
Total North America	115.09	116.04	115.10	115.07	115.76	119.25	118.40	109.75	115.20	117.90	116.68	-1.0%	0.1%	18.8%
Argentina	3.53	3.53	3.59	3.57	3.57	3.54	3.34	3.13	3.45	3.71	3.67	-0.9%	0.4%	0.6%
Brazil	12.51	12.83	12.66	12.36	12.47	12.51	12.72	12.22	12.85	13.44	13.87	3.3%	1.0%	2.2%
Chile	1.49	1.47	1.49	1.56	1.62	1.69	1.71	1.59	1.72	1.81	1.81	0.1%	2.0%	0.3%
Colombia	1.75	1.84	1.74	1.96	1.98	2.01	2.03	1.85	2.07	2.20	2.26	2.7%	2.6%	0.4%
Ecuador	0.65	0.68	0.68	0.67	0.70	0.74	0.76	0.66	0.77	0.80	0.84	5.2%	2.7%	0.1%
Peru	0.95	0.97	1.01	1.08	1.09	1.15	1.18	1.04	1.18	1.22	1.24	1.7%	2.7%	0.2%
Trinidad & Tobago	0.82	0.82	0.80	0.70	0.75	0.70	0.70	0.61	0.62	0.62	0.59	-5.3%	-3.3%	0.1%
Venezuela	3.73	3.65	3.49	3.20	3.14	2.62	2.37	1.90	2.17	2.34	2.53	8.1%	-3.8%	0.4%
Other S. & Cent. America	3.90	3.92	4.11	4.33	4.33	4.41	4.39	3.93	4.15	4.24	4.46	5.2%	1.4%	0.7%
Total S. & Cent. America	29.32	29.71	29.57	29.44	29.65	29.37	29.19	26.92	28.99	30.37	31.28	3.0%	0.6%	5.0%
Austria	1.48	1.42	1.43	1.47	1.50	1.47	1.54	1.44	1.46	1.37	1.39	1.3%	-0.7%	0.2%
Belgium	2.53	2.34	2.37	2.55	2.58	2.57	2.66	2.39	2.66	2.50	2.31	-7.5%	-0.9%	0.4%
Czech Republic	1.76	1.73	1.69	1.67	1.77	1.76	1.72	1.59	1.68	1.64	1.52	-7.1%	-1.5%	0.2%
Finland	1.23	1.19	1.18	1.20	1.18	1.20	1.18	1.13	1.15	1.15	1.20	3.6%	-0.3%	0.2%
France	10.53	10.07	10.16	9.96	9.92	10.04	9.83	8.79	9.34	8.27	8.66	4.7%	-1.9%	1.4%
Germany	13.93	13.36	13.61	13.83	14.00	13.64	13.30	12.40	12.76	12.29	11.41	-7.1%	-2.0%	1.8%
Greece	1.18	1.11	1.12	1.11	1.16	1.17	1.14	1.00	1.09	1.13	1.10	-2.9%	-0.7%	0.2%
Hungary	0.86	0.86	0.90	0.92	0.97	0.98	0.99	0.97	1.02	0.96	0.91	-5.3%	0.6%	0.1%
Italy	6.69	6.34	6.53	6.56	6.64	6.67	6.55	5.95	6.37	6.19	5.95	-3.9%	-1.2%	1.0%
Netherlands	3.83	3.66	3.69	3.76	3.79	3.70	3.68	3.56	3.65	3.44	3.44	-0.1%	-1.1%	0.6%
Norway	1.89	1.95	1.98	2.01	2.02	1.99	1.86	2.01	2.05	1.92	1.99	3.8%	0.5%	0.3%
Poland	4.07	3.92	3.97	4.14	4.35	4.40	4.27	4.10	4.41	4.27	4.12	-3.7%	0.1%	0.7%
Portugal	1.04	1.05	1.04	1.12	1.09	1.11	1.06	0.95	0.96	0.95	0.95	0.3%	-0.9%	0.2%
Romania	1.33	1.36	1.37	1.37	1.40	1.41	1.38	1.33	1.40	1.30	1.28	-1.6%	-0.4%	0.2%
Spain	5.68	5.60	5.66	5.70	5.77	5.86	5.70	5.12	5.51	5.73	5.66	-1.1%	†	0.9%
Sweden	2.17	2.16	2.24	2.19	2.27	2.19	2.25	2.16	2.28	2.24	2.15	-3.9%	-0.1%	0.3%
Switzerland	1.29	1.24	1.21	1.14	1.14	1.16	1.21	1.11	1.07	1.04	1.13	8.5%	-1.3%	0.2%
Türkiye	5.08	5.24	5.72	6.01	6.43	6.44	6.66	6.56	7.02	7.10	7.00	-1.4%	3.3%	1.1%
Ukraine	4.93	4.35	3.61	3.78	3.51	3.64	3.45	3.31	3.36	2.33	2.22	-4.6%	-7.7%	0.4%
United Kingdom	8.56	8.09	8.21	8.08	8.10	8.09	7.92	7.10	7.17	7.27	6.95	-4.4%	-2.1%	1.1%
Other Europe	6.41	6.19	6.33	6.50	6.62	6.73	6.56	6.19	6.59	6.52	6.51	-0.2%	0.2%	1.1%
Total Europe	86.47	83.23	84.05	85.06	86.19	86.21	84.90	79.16	83.01	79.60	77.85	-2.2%	-1.0%	12.6%
Azerbaijan	0.56	0.57	0.62	0.61	0.60	0.63	0.67	0.67	0.71	0.76	0.82	8.4%	4.0%	0.1%
Belarus	1.06	1.06	0.96	0.98	1.00	1.11	1.11	1.03	1.10	1.06	1.07	0.6%	0.1%	0.2%
Kazakhstan	2.63	2.77	2.29	2.56	2.75	2.84	2.88	2.65	2.96	2.95	2.98	1.1%	1.2%	0.5%
Russian Federation	28.92	29.01	28.55	29.11	29.29	30.36	30.13	29.08	30.01	31.08	31.29	0.7%	0.8%	5.1%
Turkmenistan	0.96	1.02	1.16	1.26	1.17	1.32	1.26	1.58	1.60	1.63	1.60	-1.7%	5.2%	0.3%
Uzbekistan	1.96	2.04	1.94	1.88	1.93	1.94	1.95	1.94	2.04	2.12	2.10	-0.7%	0.7%	0.3%
Other CIS	0.72	0.75	0.75	0.75	0.78	0.85	0.82	0.82	0.84	0.84	0.86	2.6%	1.7%	0.1%
Total CIS	36.81	37.21	36.27	37.15	37.52	39.05	38.82	37.78	39.25	40.43	40.72	0.7%	1.0%	6.6%
Iran	9.55	9.97	9.85	10.39	10.78	11.15	11.75	12.20	11.96	12.48	12.71	1.9%	2.9%	2.1%
Iraq	1.69	1.64	1.61	1.75	2.04	2.13	2.30	2.06	2.13	2.39	2.51	5.1%	4.0%	0.4%
Israel	0.96	0.94	0.99	1.01	1.03	1.05	1.09	1.03	1.05	1.11	1.11	0.3%	1.5%	0.2%
Kuwait	1.53	1.49	1.60	1.59	1.60	1.66	1.51	1.43	1.53	1.56	1.58	1.3%	0.3%	0.3%
Oman	1.14	1.14	1.21	1.22	1.27	1.35	1.34	1.30	1.42	1.50	1.55	3.2%	3.1%	0.2%
Qatar	1.74	1.88	2.14	2.10	2.03	2.01	2.10	1.84	1.95	2.04	2.22	8.7%	2.5%	0.4%
Saudi Arabia	9.83	10.55	11.00	11.45	11.45	11.17	10.68	10.39	10.73	11.34	11.60	2.3%	1.7%	1.9%
United Arab Emirates	4.08	4.07	4.42	4.59	4.38	4.14	4.39	4.34	4.49	4.88	5.13	5.2%	2.3%	0.8%
Other Middle East	2.15	2.14	2.00	1.96	2.00	2.00	2.00	1.93	2.01	1.99	2.05	2.7%	-0.5%	0.3%
Total Middle East	32.67	33.81	34.82	36.05	36.59	36.65	37.17	36.51	37.27	39.29	40.46	3.0%	2.2%	6.5%
Algeria	1.93	2.11	2.22	2.22	2.25	2.41	2.50	2.34	2.55	2.64	2.54	-4.0%	2.8%	0.4%
Egypt	3.50	3.46	3.51	3.71	3.85	3.86	3.78	3.56	3.81	3.98	3.94	-1.1%	1.2%	0.6%
Morocco	0.77	0.78	0.80	0.80	0.84	0.87	0.95	0.87	0.97	0.96	0.98	1.6%	2.4%	0.2%
South Africa	5.15	5.21	5.10	5.34	5.32	5.12	5.35	5.01	5.06	4.87	4.85	-0.4%	-0.6%	0.8%
Other Africa	5.95	6.22	6.53	6.60	7.04	7.52	7.61	7.36	8.36	8.49	8.56	0.7%	3.7%	1.4%
Total Africa	17.31	17.78	18.16	18.67	19.29	19.77	20.20	19.14	20.75	20.95	20.87	-0.5%	1.9%	3.4%
Australia	5.60	5.64	5.76	5.78	5.77	5.85	6.05	5.71	5.72	5.98	6.02	0.7%	0.7%	1.0%
Bangladesh	1.10	1.15	1.39	1.39	1.45	1.55	1.74	1.65	1.77	1.86	1.83	-1.8%	5.2%	0.3%
China	121.87	125.02	126.49	127.00	131.94	138.27	144.68	149.38	157.85	160.26	170.74	6.5%	3.4%	27.6%
China Hong Kong SAR	1.17	1.14	1.18	1.21	1.29	1.31	1.24	0.93	0.88	0.78	0.90	15.4%	-2.6%	0.1%
India	25.84	27.59	28.55	29.83	30.96	32.72	33.54	31.78	34.51	36.37	39.02	7.3%	4.2%	6.3%
Indonesia	6.52	6.62	6.72	6.83	7.08	7.75	8.28	7.79	7.97	10.05	10.11	0.6%	4.5%	1.6%
Japan	20.07	19.55	19.31	19.06	19.28	19.14	18.74	17.37	18.13	18.02	17.40	-3.4%	-1.4%	2.8%
Malaysia	3.91	3.95	4.01	4.22	4.28	4.35	4.47	4.31	4.49	4.79	4.81	0.3%	2.1%	0.8%
New Zealand	0.86	0.90	0.91	0.92	0.94	0.93	0.95	0.86	0.85	0.84	0.86	3.0%	†	0.1%
Pakistan	2.71	2.79	2.94	1.95	3.39	3.50	3.54	3.52	3.90	3.60	3.37	-6.2%	2.2%	0.5%
Philippines	1.39	1.46	1.60	1.74	1.91	1.98	2.04	1.85	1.96	2.06	2.19	6.7%	4.7%	0.4%
Singapore	2.92	2.98	3.16	3.34	3.42	3.42	3.35	3.28	3.28	3.17	3.47	9.3%	1.7%	0.6%
South Korea	11.61	11.71	11.91	12.27	12.40	12.61	12.47	12.05	12.62	12.75	12.43	-2.5%	0.7%	2.0%
Sri Lanka	0.29	0.31	0.33	0.36	0.38	0.40	0.41	0.38	0.39	0.35	0.36	1.8%	2.3	

P Primary energy Consumption by fuel*

Exajoules	2022							2023						
	Oil	Natural gas	Coal	Nuclear energy	Hydro-electricity	Renewables	Total	Oil	Natural gas	Coal	Nuclear energy	Hydro-electricity	Renewables	Total
Canada	4.31	4.46	0.39	0.78	3.73	0.64	14.30	4.35	4.35	0.37	0.80	3.41	0.68	13.95
Mexico	3.77	3.27	0.24	0.10	0.33	0.46	8.18	3.84	3.51	0.26	0.11	0.19	0.54	8.45
US	35.75	31.67	9.91	7.31	2.36	8.42	95.42	35.86	31.91	8.20	7.32	2.21	8.78	94.28
Total North America	43.83	39.40	10.54	8.19	6.43	9.51	117.90	44.05	39.77	8.83	8.23	5.81	9.99	116.68
Argentina	1.48	1.65	0.05	0.07	0.21	0.24	3.71	1.41	1.62	0.05	0.08	0.28	0.24	3.67
Brazil	5.01	1.15	0.59	0.13	4.01	2.55	13.44	5.11	1.08	0.57	0.13	4.01	2.97	13.87
Chile	0.82	0.26	0.24	–	0.19	0.30	1.81	0.83	0.25	0.18	–	0.22	0.33	1.81
Colombia	0.96	0.45	0.10	–	0.60	0.08	2.20	0.98	0.47	0.16	–	0.56	0.09	2.26
Ecuador	0.54	0.02	^	–	0.23	0.01	0.80	0.58	0.02	^	–	0.24	0.01	0.84
Peru	0.50	0.35	0.03	–	0.28	0.05	1.22	0.52	0.36	0.03	–	0.27	0.05	1.24
Trinidad & Tobago	0.07	0.56	–	–	–	^	0.62	0.07	0.52	–	–	–	^	0.59
Venezuela	0.65	1.05	0.01	–	0.64	^	2.34	0.84	1.07	0.01	–	0.61	^	2.53
Other S. & Cent. America	2.56	0.36	0.17	–	0.82	0.34	4.24	2.68	0.43	0.18	–	0.82	0.36	4.46
Total S. & Cent. America	12.59	5.85	1.19	0.20	6.99	3.56	30.37	13.01	5.82	1.16	0.21	7.01	4.06	31.28
Austria	0.49	0.28	0.10	–	0.32	0.17	1.37	0.49	0.25	0.10	–	0.36	0.19	1.39
Belgium	1.19	0.52	0.12	0.40	^	0.27	2.50	1.13	0.49	0.10	0.30	^	0.29	2.31
Czech Republic	0.42	0.27	0.56	0.28	0.02	0.10	1.64	0.42	0.24	0.47	0.27	0.02	0.10	1.52
Finland	0.35	0.04	0.12	0.23	0.13	0.29	1.15	0.33	0.04	0.09	0.31	0.14	0.29	1.20
France	2.80	1.38	0.23	2.65	0.42	0.79	8.27	2.76	1.22	0.18	3.03	0.52	0.95	8.66
Germany	4.25	2.79	2.31	0.31	0.17	2.46	12.29	4.01	2.72	1.83	0.06	0.18	2.60	11.41
Greece	0.62	0.22	0.07	–	0.04	0.19	1.13	0.62	0.19	0.05	–	0.04	0.20	1.10
Hungary	0.35	0.33	0.05	0.14	^	0.09	0.96	0.34	0.29	0.04	0.14	^	0.10	0.91
Italy	2.51	2.35	0.31	–	0.27	0.76	6.19	2.47	2.11	0.22	–	0.36	0.78	5.95
Netherlands	1.66	0.99	0.23	0.04	^	0.52	3.44	1.70	0.93	0.16	0.04	^	0.61	3.44
Norway	0.39	0.14	0.03	–	1.20	0.16	1.92	0.38	0.14	0.03	–	1.27	0.16	1.99
Poland	1.40	0.67	1.78	–	0.02	0.40	4.27	1.41	0.70	1.51	–	0.02	0.48	4.12
Portugal	0.46	0.20	^	–	0.06	0.22	0.95	0.45	0.16	^	–	0.11	0.23	0.95
Romania	0.46	0.35	0.15	0.10	0.13	0.11	1.30	0.46	0.33	0.11	0.10	0.17	0.11	1.28
Spain	2.61	1.19	0.16	0.53	0.17	1.08	5.73	2.57	1.05	0.12	0.51	0.24	1.17	5.66
Sweden	0.48	0.03	0.07	0.47	0.66	0.54	2.24	0.47	0.03	0.07	0.43	0.62	0.54	2.15
Switzerland	0.38	0.11	^	0.21	0.28	0.07	1.04	0.39	0.10	^	0.21	0.35	0.09	1.13
Türkiye	2.18	1.84	1.76	–	0.63	0.69	7.10	2.30	1.74	1.65	–	0.60	0.71	7.00
Ukraine	0.39	0.66	0.54	0.56	0.10	0.07	2.33	0.39	0.67	0.49	0.47	0.12	0.08	2.22
United Kingdom	2.65	2.55	0.21	0.43	0.05	1.37	7.27	2.69	2.29	0.18	0.37	0.05	1.38	6.95
Other Europe	2.57	1.00	1.21	0.34	0.65	0.75	6.52	2.57	0.97	1.02	0.36	0.79	0.81	6.51
Total Europe	28.60	17.92	10.02	6.68	5.29	11.09	79.60	28.33	16.68	8.39	6.60	5.97	11.86	77.85
Azerbaijan	0.25	0.49	^	–	0.01	^	0.76	0.26	0.54	^	–	0.02	^	0.82
Belarus	0.30	0.66	0.04	0.04	^	0.01	1.06	0.30	0.60	0.04	0.11	^	0.01	1.07
Kazakhstan	0.65	0.77	1.41	–	0.09	0.04	2.95	0.69	0.77	1.39	–	0.08	0.05	2.98
Russian Federation	7.14	16.14	3.84	2.01	1.86	0.08	31.08	7.21	16.32	3.83	1.95	1.88	0.10	31.29
Turkmenistan	0.28	1.35	–	–	–	^	1.63	0.28	1.32	–	–	^	^	1.60
Uzbekistan	0.22	1.74	0.11	–	0.05	^	2.12	0.22	1.68	0.14	–	0.07	^	2.10
Other CIS	0.20	0.20	0.09	0.03	0.32	0.01	0.84	0.20	0.22	0.09	0.02	0.32	0.01	0.86
Total CIS	9.03	21.35	5.49	2.08	2.33	0.14	40.43	9.16	21.46	5.49	2.08	2.37	0.17	40.72
Iran	3.58	8.62	0.08	0.06	0.13	0.02	12.48	3.50	8.84	0.08	0.06	0.21	0.02	12.71
Iraq	1.70	0.66	–	–	0.02	^	2.39	1.80	0.67	–	–	0.03	^	2.51
Israel	0.45	0.44	0.16	–	–	0.06	1.11	0.44	0.45	0.14	–	–	0.08	1.11
Kuwait	0.77	0.78	0.01	–	–	^	1.56	0.76	0.81	0.01	–	–	^	1.58
Oman	0.45	1.03	0.01	–	–	0.01	1.50	0.47	1.06	0.01	–	–	0.01	1.55
Qatar	0.58	1.45	^	–	–	^	2.04	0.61	1.59	^	–	–	0.01	2.22
Saudi Arabia	7.11	4.20	^	–	–	0.02	11.34	7.43	4.11	^	–	–	0.05	11.60
United Arab Emirates	2.14	2.38	0.10	0.18	–	0.07	4.88	2.20	2.41	0.10	0.29	–	0.13	5.13
Other Middle East	1.06	0.82	0.03	–	0.01	0.07	1.99	1.06	0.85	0.04	–	0.01	0.07	2.05
Total Middle East	17.85	20.38	0.38	0.24	0.17	0.27	39.29	18.28	20.80	0.38	0.35	0.26	0.39	40.46
Algeria	0.82	1.81	0.01	–	–	0.01	2.64	0.86	1.67	0.01	–	–	0.01	2.54
Egypt	1.53	2.18	0.04	–	0.12	0.10	3.98	1.49	2.16	0.05	–	0.13	0.10	3.94
Morocco	0.58	0.01	0.31	–	–	0.06	0.96	0.57	0.03	0.29	–	–	0.08	0.98
South Africa	1.06	0.15	3.38	0.09	0.03	0.16	4.87	1.09	0.17	3.33	0.08	0.02	0.18	4.85
Other Africa	4.52	2.13	0.38	–	1.31	0.15	8.49	4.48	2.13	0.41	–	1.36	0.17	8.56
Total Africa	8.50	6.29	4.12	0.09	1.47	0.48	20.95	8.49	6.16	4.08	0.08	1.51	0.54	20.87
Australia	2.05	1.56	1.54	–	0.16	0.68	5.98	2.17	1.44	1.51	–	0.14	0.76	6.02
Bangladesh	0.62	1.03	0.20	–	0.01	0.01	1.86	0.52	1.01	0.28	–	0.01	0.01	1.83
China	29.51	13.60	87.83	3.76	12.18	13.37	160.26	32.73	14.57	91.94	3.90	11.46	16.13	170.74
China Hong Kong SAR	0.46	0.16	0.15	–	–	0.01	0.78	0.57	0.17	0.15	–	–	0.01	0.90
India	10.10	2.10	20.03	0.42	1.64	2.09	36.37	10.57	2.25	21.98	0.43	1.39	2.38	39.02
Indonesia	3.09	1.59	4.38	–	0.26	0.74	10.05	3.10	1.64	4.32	–	0.23	0.83	10.11
Japan	6.94	3.61	4.92	0.47	0.70	1.39	18.02	6.65	3.33	4.54	0.70	0.70	1.49	17.40
Malaysia	1.60	1.87	0.95	–	0.30	0.08	4.79	1.79	1.66	0.98	–	0.29	0.08	4.81
New Zealand	0.30	0.13	0.05	–	0.25	0.11	0.84	0.32	0.14	0.04	–	0.25	0.12	0.86
Pakistan	0.99	1.38	0.64	0.20	0.32	0.06	3.60	0.78	1.36	0.62	0.20	0.35	0.06	3.37
Philippines	0.89	0.11	0.80	–	0.10	0.16	2.06	0.93	0.12	0.88	–	0.10	0.17	2.19
Singapore	2.67	0.47	0.02	–	–	0.02	3.17	2.99	0.44	0.01	–	–	0.02	3.47
South Korea	5.47	2.25	2.87	1.59	0.03	0.55	12.75	5.36	2.16	2.69	1.62	0.03	0.56	12.43
Sri Lanka	0.20	–	0.07	–	0.06	0.02	0.35	0.22	–	0.06	–	0.05	0.03	0.36
Taiwan	1.73	1.01	1.58	0.21	0.05	0.16	4.75	1.63	1.01	1.49	0.16	0.04	0.20	4.53
Thailand	2.32	1.60	0.71	–	0.06	0.31	5.00	2.31	1.70	0.60	–	0.06	0.33	5.01
Vietnam	1.07	0.28	1.90	–	0.90	0.33	4.48	1.20	0.26	2.32	–	0.76	0.36	4.89
Other Asia Pacific	1.22	0.40	1.17	–	0.87	0.03	3.70	1.26	0.41	1.27	–	0.85	0.04	3.83
Total Asia Pacific	71.21	33.13												

Primary energy Consumption per capita*

Gigajoule per capita												Growth rate per annum	
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23
Canada	410.6	407.5	404.9	397.1	397.7	397.6	390.3	363.1	364.9	371.8	359.7	-3.3%	-1.3%
Mexico	68.8	67.6	66.1	66.8	67.2	65.8	64.5	58.3	61.8	64.2	65.8	2.5%	-0.4%
US	290.0	290.6	285.5	283.1	281.9	290.1	286.2	263.9	277.3	282.1	277.3	-1.7%	-0.4%
Total North America	244.0	243.7	239.5	237.3	236.6	241.8	238.3	219.6	229.5	233.8	230.0	-1.6%	-0.6%
Argentina	83.3	82.4	83.0	81.8	81.0	79.8	74.6	69.5	76.2	81.4	80.2	-1.5%	-0.4%
Brazil	62.0	63.1	61.7	59.7	59.8	59.5	60.1	57.3	60.0	62.4	64.1	2.7%	0.3%
Chile	85.1	83.4	83.4	86.4	88.3	90.1	89.6	82.5	88.1	92.5	92.4	↑	0.8%
Colombia	37.8	39.4	36.9	41.2	40.9	40.8	40.4	36.2	40.2	42.3	43.3	2.3%	1.4%
Ecuador	41.1	42.5	41.8	41.0	42.1	43.7	43.9	37.4	43.0	44.5	46.4	4.1%	1.2%
Peru	31.5	31.9	33.0	34.6	34.6	35.6	35.8	31.1	35.0	35.7	36.0	0.8%	1.4%
Trinidad & Tobago	571.2	567.9	546.4	479.7	504.2	464.2	462.3	401.6	408.5	406.9	384.3	-5.6%	-3.9%
Venezuela	125.1	120.8	114.3	104.2	102.8	87.9	81.6	66.7	77.1	82.7	87.8	6.1%	-3.5%
Other S. & Cent. America	36.0	35.8	37.2	38.7	38.3	38.6	38.1	33.7	35.3	35.7	37.2	4.1%	0.3%
Total S. & Cent. America	59.5	59.7	58.8	58.0	57.8	56.8	55.9	51.2	54.7	57.0	58.3	2.2%	-0.2%
Austria	174.4	166.3	165.1	168.8	170.9	166.3	173.5	161.7	163.8	152.9	154.6	1.1%	-1.2%
Belgium	227.6	209.6	210.4	225.7	226.4	224.6	230.9	206.8	228.9	214.5	197.8	-7.8%	-1.4%
Czech Republic	167.8	164.3	161.0	158.8	167.7	167.1	163.3	151.3	159.7	156.3	145.2	-7.1%	-1.4%
Finland	226.2	217.4	216.1	218.9	213.9	217.9	213.2	204.4	208.5	208.4	215.6	3.5%	-0.5%
France	166.2	158.3	159.2	155.6	154.6	156.2	152.6	136.3	144.7	128.0	133.8	4.5%	-2.1%
Germany	170.5	163.2	165.8	168.0	169.4	164.5	160.0	148.8	153.0	147.4	137.0	-7.0%	-2.2%
Greece	108.3	102.0	103.8	102.8	108.5	109.7	107.9	94.8	104.3	109.0	106.2	-2.5%	-0.2%
Hungary	86.6	86.9	91.8	93.7	99.0	99.9	101.3	99.8	105.3	96.4	89.7	-7.0%	0.3%
Italy	110.9	105.2	108.5	109.1	110.6	111.4	109.7	99.9	107.5	104.8	101.0	-3.6%	-0.9%
Netherlands	226.9	215.8	216.8	219.5	220.1	213.8	212.0	204.5	208.7	195.8	195.0	-0.4%	-1.5%
Norway	371.3	380.4	381.6	384.0	382.7	374.4	347.8	373.0	378.8	352.9	363.7	3.1%	-0.2%
Poland	105.5	101.6	103.0	107.5	112.9	114.2	111.0	106.7	115.1	107.2	100.3	-6.4%	-0.5%
Portugal	99.6	100.9	100.6	108.0	105.4	107.7	102.5	92.7	93.2	92.1	92.6	0.5%	-0.7%
Romania	66.3	68.3	68.9	69.3	70.9	72.0	70.8	68.4	72.6	65.9	64.1	-2.7%	-0.3%
Spain	121.9	120.4	122.0	122.6	123.8	125.3	121.0	108.2	116.0	120.4	119.2	-1.1%	-0.2%
Sweden	225.2	221.9	227.4	220.4	226.0	215.8	219.4	208.4	217.9	212.2	202.7	-4.5%	-1.0%
Switzerland	159.9	151.4	146.2	136.0	135.0	135.9	141.0	128.6	123.5	119.5	128.8	7.8%	-2.1%
Türkiye	66.4	67.0	71.8	74.2	78.4	77.7	79.7	78.0	82.9	83.2	81.6	-1.9%	2.1%
Ukraine	108.8	96.4	80.3	84.3	78.6	82.0	78.0	75.3	77.3	58.6	60.4	3.1%	-5.7%
United Kingdom	133.1	124.8	125.9	123.0	122.6	121.8	118.6	105.8	106.5	107.7	102.6	-4.7%	-2.6%
Other Europe	104.9	101.5	104.0	106.9	109.2	111.0	108.3	102.5	109.6	108.6	108.6	-0.1%	0.3%
Total Europe	130.2	124.8	125.6	126.7	128.1	127.8	125.6	116.9	122.6	117.7	115.2	-2.1%	-1.2%
Azerbaijan	57.7	58.1	62.7	61.4	59.7	62.5	65.4	64.7	69.0	73.1	78.8	7.8%	3.2%
Belarus	109.3	109.5	99.1	101.2	103.0	114.1	114.9	107.1	115.0	111.1	112.2	1.0%	0.3%
Kazakhstan	151.8	157.4	128.4	141.6	150.4	153.3	153.3	139.6	154.2	152.0	152.0	↑	↑
Russian Federation	200.9	201.0	197.3	200.6	201.4	208.4	206.7	199.7	206.8	214.7	216.6	0.9%	0.8%
Turkmenistan	173.5	180.3	201.5	214.2	196.0	217.5	204.5	253.3	251.5	253.5	245.8	-3.0%	3.5%
Uzbekistan	65.4	67.1	62.7	59.8	60.3	59.9	59.2	58.0	59.8	61.2	59.8	-2.2%	-0.9%
Other CIS	35.8	36.6	36.2	36.0	37.1	39.9	38.1	37.5	37.8	36.9	37.1	0.6%	0.4%
Total CIS	155.8	156.5	151.5	154.1	154.7	160.1	158.4	153.5	159.1	163.2	163.7	0.3%	0.5%
Iran	121.7	124.7	120.4	124.7	127.6	130.2	135.7	139.7	136.0	140.9	142.6	1.1%	1.6%
Iraq	47.7	44.6	42.6	45.2	51.6	52.4	55.4	48.4	49.0	53.7	55.2	2.8%	1.5%
Israel	124.5	119.3	123.7	123.8	123.8	124.4	126.1	117.2	118.1	122.9	121.4	-1.2%	-0.2%
Kuwait	418.9	395.9	409.5	393.9	388.8	383.5	340.7	328.5	359.3	364.6	365.9	0.4%	-1.3%
Oman	299.5	283.6	289.6	277.1	280.1	294.0	291.9	285.6	313.3	328.0	333.4	1.7%	1.1%
Qatar	853.1	847.8	884.6	808.1	748.9	727.2	748.3	667.1	725.6	756.9	816.7	7.9%	-0.4%
Saudi Arabia	312.3	328.5	336.0	342.6	335.0	318.9	298.2	288.7	298.6	311.5	313.9	0.8%	0.1%
United Arab Emirates	466.2	460.7	495.7	510.9	482.5	453.1	476.4	467.0	479.1	516.9	539.4	4.3%	1.5%
Other Middle East	31.9	31.3	28.8	27.8	27.9	27.5	26.9	25.4	25.9	25.1	25.2	0.2%	-2.3%
Total Middle East	136.8	138.6	139.7	141.9	141.5	139.2	138.6	134.4	135.6	140.9	142.9	1.4%	0.4%
Algeria	50.9	54.4	56.2	55.1	54.6	57.5	58.5	53.8	57.7	58.9	55.7	-5.5%	0.9%
Egypt	37.5	36.2	36.0	37.2	37.9	37.2	35.8	33.1	34.9	35.9	34.9	-2.7%	-0.7%
Morocco	22.8	22.8	22.9	22.9	23.7	24.2	26.2	23.8	26.1	25.7	25.8	0.6%	1.3%
South Africa	95.6	95.2	91.3	94.6	93.9	89.2	92.1	85.3	85.2	81.3	80.3	-1.2%	-1.7%
Other Africa	6.5	6.6	6.7	6.6	6.8	7.1	7.0	6.6	7.3	7.2	7.1	-1.7%	1.0%
Total Africa	15.2	15.2	15.1	15.2	15.3	15.3	15.2	14.1	14.9	14.7	14.3	-2.7%	-0.6%
Australia	242.3	240.3	242.0	239.0	234.5	234.2	238.5	222.3	220.7	228.4	227.7	-0.3%	-0.6%
Bangladesh	7.2	7.3	8.8	8.7	9.0	9.5	10.5	9.8	10.5	10.9	10.6	-2.8%	4.0%
China	88.6	90.3	90.8	90.6	93.6	97.6	101.8	104.8	110.7	112.4	119.8	6.6%	3.1%
China Hong Kong SAR	160.4	155.3	158.8	162.2	173.4	174.9	165.5	123.8	117.0	104.5	120.6	15.4%	-2.8%
India	20.0	21.1	21.6	22.3	22.9	23.9	24.3	22.8	24.5	25.7	27.3	6.4%	3.2%
Indonesia	25.7	25.8	25.9	26.1	26.8	29.0	30.7	28.7	29.1	36.5	36.4	-0.2%	3.5%
Japan	157.2	153.4	151.7	150.1	152.2	151.6	149.0	138.7	145.5	145.4	141.2	-2.9%	-1.1%
Malaysia	129.8	129.1	129.1	133.9	133.8	134.4	136.2	129.7	133.7	141.2	140.1	-0.8%	0.8%
New Zealand	193.8	199.9	197.8	197.2	197.1	192.3	191.4	170.2	165.3	161.2	164.7	2.1%	-1.6%
Pakistan	13.2	13.4	13.9	9.1	15.7	15.9	15.8	15.5	16.9	15.2	14.0	-8.0%	0.6%
Philippines	13.9	14.4	15.5	16.6	17.9	18.2	18.5	16.5	17.2	17.8	18.7	5.1%	3.0%
Singapore	533.9	535.3	559.7	584.1	593.3	588.5	570.5	554.6	551.8	531.3	577.0	8.6%	0.8%
South Korea	231.8	231.6	233.6	239.1	240.8	244.0	240.6	232.4	243.6	246.1	240.1	-2.4%	0.4%
Sri Lanka	13.5	14.6	15.4	16.9	17.9	18.7	18.8	17.6	18.1	16.1	16.3	1.5%	1.9%
Taiwan	201.3	205.0	204.1	204.4	204.0	205.9	201.5	195.2	207.2	198.7	189.3	-4.7%	-0.6%
Thailand	67.9	69.8	70.5	71.7	72.7	74.8	74.7	69.3	69.7	69.7	69.7	0.1%	0.3%
Vietnam	26.3	28.7	32.3	34.7	36.9	41.1	45.2	44.9	44.6	45.6	49.5	8.5%	6.5%
Other Asia Pacific	12.3	13.											



Carbon Carbon dioxide emissions from energy

Million tonnes of carbon dioxide												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada	559.3	564.5	559.4	546.9	561.2	574.2	562.4	502.2	511.3	525.0	519.5	-1.0%	-0.7%	1.5%
Mexico	496.7	482.8	480.9	491.1	503.3	489.0	480.6	413.4	442.5	469.3	489.9	4.4%	-0.1%	1.4%
US	5246.9	5252.5	5137.8	5039.3	4980.3	5134.6	4982.8	4466.8	4755.3	4798.2	4639.7	-3.3%	-1.2%	13.2%
Total North America	6302.9	6299.8	6178.1	6077.3	6044.9	6197.8	6025.8	5382.4	5709.2	5792.4	5649.1	-2.5%	-1.1%	16.1%
Argentina	187.6	187.8	191.2	190.1	188.5	186.0	174.6	162.3	183.5	198.4	190.9	-3.8%	0.2%	0.5%
Brazil	487.0	511.7	494.8	455.9	461.7	442.1	435.5	408.3	461.6	443.4	451.0	1.7%	-0.8%	1.3%
Chile	88.9	87.2	87.4	92.2	93.9	93.5	94.8	85.1	93.8	93.0	86.5	-7.0%	-0.3%	0.2%
Colombia	89.1	94.9	87.7	102.3	95.3	96.9	99.7	89.6	96.8	103.0	110.2	7.0%	2.1%	0.3%
Ecuador	36.5	38.4	37.6	35.4	34.4	37.2	35.7	29.2	36.2	39.6	42.2	6.7%	1.5%	0.1%
Peru	46.0	46.8	49.2	53.2	51.0	52.8	54.4	45.3	54.0	57.9	59.5	2.7%	2.6%	0.2%
Trinidad & Tobago	25.1	24.7	23.8	21.5	20.7	19.6	19.0	16.4	15.5	15.8	15.2	-3.7%	-4.9%	0.0%
Venezuela	186.1	181.7	172.1	159.2	149.9	123.8	111.3	77.7	93.6	104.7	120.8	15.5%	-4.2%	0.3%
Central America	60.1	61.8	68.7	71.6	72.1	72.9	80.7	63.7	72.4	75.0	81.0	8.0%	3.0%	0.2%
Other Caribbean	103.8	105.5	110.0	112.8	109.6	112.1	111.5	101.2	101.4	101.0	106.9	5.9%	0.3%	0.3%
Other South America	34.7	35.2	35.6	37.3	38.2	39.4	40.0	35.9	41.4	42.6	43.8	2.7%	2.4%	0.1%
Total S. & Cent. America	1344.9	1375.9	1357.9	1331.5	1315.3	1276.3	1257.3	1114.8	1250.2	1274.3	1308.1	2.7%	-0.3%	3.7%
Austria	62.8	59.0	61.6	62.1	64.5	62.3	63.8	56.2	59.3	56.3	53.8	-4.5%	-1.5%	0.2%
Belgium	117.3	109.0	115.2	116.9	118.8	125.5	121.8	105.3	113.9	109.7	103.3	-5.8%	-1.3%	0.3%
Bulgaria	40.7	43.2	45.9	43.1	45.9	42.7	41.5	36.1	42.0	46.4	35.5	-23.5%	-1.4%	0.1%
Croatia	16.1	15.8	16.2	16.7	17.1	16.3	16.3	14.9	15.7	16.0	16.0	-0.1%	-0.1%	0.0%
Cyprus	7.3	7.3	7.5	8.1	8.3	8.2	8.2	7.0	7.2	7.7	7.6	-0.5%	0.5%	0.0%
Czech Republic	105.0	102.0	102.8	104.8	104.8	103.8	98.2	88.4	92.9	91.9	82.9	-9.8%	-2.3%	0.2%
Denmark	43.0	39.2	36.7	38.0	35.5	35.8	32.6	27.4	28.8	29.8	28.4	-4.5%	-4.1%	0.1%
Estonia	24.5	23.5	21.4	22.2	24.5	24.1	18.3	15.7	16.8	17.8	15.0	-15.6%	-4.8%	0.0%
Finland	52.0	47.7	44.9	47.7	45.1	46.5	43.4	36.8	36.3	35.8	31.7	-11.5%	-4.8%	0.1%
France	339.5	304.4	308.9	314.2	319.1	308.9	301.5	252.9	278.6	272.5	254.6	-6.6%	-2.8%	0.7%
Germany	797.6	751.1	755.6	767.4	758.2	731.0	678.4	603.0	640.2	631.8	571.9	-9.5%	-3.3%	1.6%
Greece	79.9	76.1	73.8	70.7	75.0	73.6	69.6	56.3	59.6	62.8	59.4	-5.5%	-2.9%	0.2%
Hungary	42.0	41.3	43.8	44.7	46.9	47.3	47.1	44.6	46.0	43.3	39.1	-9.6%	-0.7%	0.1%
Iceland	2.6	2.6	2.9	2.8	3.1	3.3	2.8	1.8	2.1	2.6	2.4	-6.6%	-0.8%	0.0%
Ireland	37.5	37.2	38.7	40.4	39.3	39.1	37.6	33.4	35.5	36.2	34.0	-6.3%	-1.0%	0.1%
Italy	341.4	318.8	334.4	331.4	335.5	336.1	328.6	286.3	318.2	324.9	301.3	-7.3%	-1.2%	0.9%
Latvia	8.0	7.7	7.9	8.2	8.0	7.8	8.4	7.1	7.5	6.7	6.5	-2.1%	-1.9%	0.0%
Lithuania	11.7	11.0	11.3	11.8	12.0	12.6	12.4	12.1	12.4	11.9	11.7	-1.5%	0.0%	0.0%
Luxembourg	10.9	10.5	10.1	10.0	10.3	10.8	10.9	9.0	9.7	8.6	8.3	-3.8%	-2.7%	0.0%
Netherlands	211.4	202.5	207.6	208.0	204.3	198.2	193.7	173.1	176.9	164.8	156.1	-5.3%	-3.0%	0.4%
North Macedonia	8.1	7.7	7.4	7.5	7.8	7.5	8.3	7.0	7.1	7.9	8.2	4.3%	0.1%	0.0%
Norway	37.5	37.4	38.0	37.0	37.1	37.3	36.0	33.7	34.6	34.7	34.0	-1.9%	-1.0%	0.1%
Poland	307.5	290.3	290.1	303.2	316.0	320.7	302.5	284.3	310.3	294.5	270.3	-8.2%	-1.3%	0.8%
Portugal	48.8	48.0	52.6	52.0	57.3	54.3	50.3	40.5	39.1	42.2	39.7	-5.7%	-2.0%	0.1%
Romania	70.4	70.7	71.5	69.1	72.6	72.2	70.7	64.5	69.6	64.8	59.9	-7.7%	-1.6%	0.2%
Slovakia	32.6	30.0	30.4	30.8	32.9	32.3	30.0	27.8	31.3	28.4	27.6	-2.6%	-1.6%	0.1%
Slovenia	14.1	12.6	12.7	13.6	13.9	13.9	13.3	11.9	12.1	11.6	10.4	-10.5%	-3.0%	0.0%
Spain	273.5	271.1	286.9	279.4	297.1	291.4	274.6	221.4	242.3	260.3	246.8	-5.2%	-1.0%	0.7%
Sweden	45.6	44.5	44.7	44.8	44.9	40.9	41.2	38.9	41.2	37.8	35.8	-5.3%	-2.4%	0.1%
Switzerland	43.4	38.9	39.6	38.1	38.9	37.1	38.2	32.6	33.3	32.8	32.7	-0.1%	-2.8%	0.1%
Türkiye	303.3	335.1	341.1	359.2	404.2	401.8	394.0	384.6	420.7	420.4	411.1	-2.2%	3.1%	1.2%
Ukraine	286.5	246.8	195.1	215.6	187.9	198.7	185.5	171.5	167.7	109.4	105.3	-3.7%	-9.5%	0.3%
United Kingdom	499.0	458.0	440.9	413.8	403.6	397.1	381.8	320.9	339.4	341.1	327.3	-4.1%	-4.1%	0.9%
Other Europe	113.3	102.3	111.7	116.5	120.4	119.4	119.9	117.9	118.2	119.8	118.3	-1.3%	0.4%	0.3%
Total Europe	4434.7	4203.5	4210.0	4250.1	4310.8	4258.5	4081.5	3625.0	3866.4	3783.0	3546.8	-6.2%	-2.2%	10.1%
Azerbaijan	30.4	31.2	33.7	33.2	32.2	34.3	34.3	34.5	36.6	39.3	42.4	8.0%	3.4%	0.1%
Belarus	60.0	59.1	54.8	54.9	55.6	60.5	60.8	55.8	57.0	55.1	52.5	-4.8%	-1.3%	0.1%
Kazakhstan	210.8	218.0	175.2	197.0	211.3	218.6	217.0	199.3	221.8	220.9	221.2	0.1%	0.5%	0.6%
Russian Federation	1548.8	1551.5	1520.8	1529.3	1516.9	1573.3	1557.1	1461.1	1512.4	1599.1	1614.7	1.0%	0.4%	4.6%
Turkmenistan	58.2	62.0	68.9	76.0	69.8	78.5	74.4	94.0	93.4	95.4	93.9	-1.6%	4.9%	0.3%
Uzbekistan	109.4	114.0	107.6	103.6	105.4	109.0	108.9	110.8	115.7	120.7	120.1	-0.5%	0.9%	0.3%
Other CIS	25.3	27.5	28.9	29.3	29.8	33.3	31.3	31.9	33.6	32.9	34.1	3.6%	3.0%	0.1%
Total CIS	2042.8	2063.2	1989.8	2023.5	2021.1	2107.5	2084.0	1987.2	2070.4	2163.3	2178.8	0.7%	0.6%	6.2%
Iran	542.8	552.3	546.9	567.2	575.8	602.3	627.4	653.2	649.3	677.2	683.6	1.0%	2.3%	1.9%
Iraq	114.1	112.3	110.6	118.8	140.4	144.5	151.5	134.7	141.9	159.9	168.2	5.2%	4.0%	0.5%
Israel	66.8	64.0	66.7	66.0	66.5	67.1	69.1	62.9	63.4	67.2	65.5	-2.5%	-0.2%	0.2%
Kuwait	93.2	90.0	97.1	96.3	96.7	100.3	91.1	85.2	91.3	92.1	93.9	2.0%	0.1%	0.3%
Oman	65.2	64.7	69.0	69.5	72.2	74.9	74.6	70.1	76.6	82.3	85.1	3.4%	2.7%	0.2%
Qatar	100.3	110.3	123.9	124.3	116.8	119.2	125.2	108.6	117.0	119.7	132.5	10.7%	2.8%	0.4%
Saudi Arabia	526.0	565.1	601.8	634.5	631.2	612.4	576.3	556.9	572.2	609.4	620.4	1.8%	1.7%	1.8%
United Arab Emirates	247.1	243.0	265.1	275.8	264.1	248.8	261.8	255.0	262.0	281.4	287.2	2.1%	1.5%	0.8%
Other Middle East	134.2	135.2	124.8	120.3	122.7	123.1	121.2	115.1	119.8	118.3	121.8	3.0%	-1.0%	0.3%
Total Middle East	1889.8	1936.8	2006.0	2072.8	2086.4	2092.6	2098.2	2041.7	2093.6	2207.4	2258.3	2.3%	1.8%	6.4%
Algeria	115.4	123.6	129.0	127.7	130.7	137.3	142.4	132.7	144.5	149.6	144.7	-3.3%	2.3%	0.4%
Egypt	202.7	201.6	204.2	216.6	221.6	217.7	209.6	189.7	221.2	235.6	232.1	-1.5%	1.4%	0.7%
Morocco	54.4	56.6	56.8	57.2	60.2	61.8	67.9	62.8	69.9	70.3	69.1	-1.8%	2.4%	0.2%
South Africa	463.0	467.4	455.3	474.4	470.5	452.4	474.9	448.9	444.8	425.7	425.0	-0.1%	-0.9%	1.2%
Eastern Africa	90.7	101.8	106.0	105.0	114.3	121.1	117.7	109.6	119.0	114.3	116.8	2.2%	2.6%	0.3%
Middle Africa	45.5	47.9	48.3	46.4	44.5	45.5	4							



Carbon Emissions from natural gas flaring

Million tonnes of carbon dioxide												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada	3.3	4.3	3.9	2.9	2.9	2.9	2.3	2.5	2.5	2.3	2.6	13.5%	-2.4%	0.8%
Mexico	10.3	11.5	12.1	11.7	9.1	9.2	10.7	13.5	15.8	13.8	14.4	4.9%	3.4%	4.6%
US	18.7	23.0	24.2	18.3	19.5	28.6	34.9	25.0	19.6	17.7	21.0	18.6%	1.2%	6.6%
Total North America	32.4	38.8	40.2	32.8	31.4	40.6	47.9	41.0	37.9	33.8	38.1	12.6%	1.6%	12.0%
Argentina	1.6	1.7	1.5	1.3	1.2	1.6	2.0	2.3	2.7	2.5	2.4	-4.9%	4.0%	0.7%
Bolivia	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-7.3%	1.3%	0.0%
Brazil	3.0	3.4	3.0	3.4	2.6	2.4	2.7	2.3	2.2	2.0	2.7	31.8%	-1.0%	0.8%
Colombia	1.7	1.7	1.6	1.2	1.1	1.0	1.1	0.8	0.7	0.5	0.7	30.0%	-8.8%	0.2%
Peru	0.4	0.5	0.5	0.4	0.3	0.3	0.2	0.3	0.3	0.3	0.3	2.4%	-2.7%	0.1%
Trinidad & Tobago	0.8	0.7	0.6	0.5	0.5	0.5	0.8	0.4	0.3	0.3	0.3	-10.5%	-9.4%	0.1%
Venezuela	19.7	21.1	20.0	20.5	16.1	18.7	21.2	18.9	18.5	19.7	19.1	-3.2%	-0.3%	6.0%
Other S. & Cent. America	2.1	2.6	2.7	2.9	2.6	2.3	2.3	3.1	3.2	3.4	3.9	14.1%	6.6%	1.2%
Total S. & Cent. America	29.3	31.8	30.1	30.2	24.4	26.7	30.3	28.2	28.0	28.9	29.4	1.7%	0.0%	9.3%
Denmark	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-13.1%	-8.7%	0.0%
Germany	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	26.2%	0.6%	0.0%
Italy	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-0.1%	-5.7%	0.0%
Netherlands	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-6.7%	-2.0%	0.0%
Norway	0.9	0.7	0.8	0.8	0.5	0.4	0.3	0.3	0.4	0.3	0.3	-9.7%	-11.1%	0.1%
Poland	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	69.9%	7.0%	0.0%
Romania	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	-5.7%	-1.9%	0.0%
Ukraine	0.5	0.5	0.5	0.5	0.3	0.3	0.2	0.2	0.3	0.2	0.2	21.6%	-6.3%	0.1%
United Kingdom	2.8	2.7	2.7	2.8	2.8	2.5	2.4	2.2	1.8	1.2	1.4	12.0%	-6.7%	0.4%
Other Europe	0.9	1.0	0.9	0.9	0.6	0.7	0.9	0.8	0.8	0.7	0.7	2.0%	-2.0%	0.2%
Total Europe	5.6	5.6	5.5	5.7	4.7	4.5	4.2	3.9	3.8	2.8	3.0	7.6%	-5.8%	1.0%
Azerbaijan	0.9	0.7	0.4	0.5	0.4	0.5	0.5	0.3	0.3	0.4	0.8	68.0%	-1.9%	0.2%
Kazakhstan	7.4	7.8	7.3	5.3	4.8	4.1	3.1	2.9	3.0	2.0	2.0	-1.2%	-12.2%	0.6%
Russian Federation	42.3	39.4	42.5	48.2	42.3	42.9	48.0	50.6	53.3	52.6	59.4	13.0%	3.5%	18.7%
Turkmenistan	4.5	4.0	3.7	3.6	3.3	3.0	2.7	3.3	2.4	2.2	2.4	11.2%	-6.1%	0.8%
Uzbekistan	3.0	2.6	2.2	2.1	1.7	1.6	1.2	1.1	0.9	0.9	0.8	-9.8%	-12.5%	0.2%
Other CIS	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.3	129.7%	7.3%	0.1%
Total CIS	58.2	54.5	56.2	59.8	52.6	52.1	55.9	58.4	60.1	58.2	65.7	12.8%	1.2%	20.7%
Bahrain	0.2	0.1	0.1	0.2	0.3	0.2	0.4	0.5	0.3	0.2	0.2	-1.7%	2.4%	0.1%
Iran	24.3	26.4	25.7	34.4	37.4	36.5	29.6	28.6	37.3	37.1	43.1	16.3%	5.9%	13.6%
Iraq	26.8	27.9	32.0	35.3	35.4	35.5	35.8	34.7	35.8	35.9	35.6	-0.9%	2.9%	11.2%
Kuwait	3.0	3.1	2.0	2.6	1.8	2.0	1.7	1.8	2.1	1.5	1.6	12.4%	-5.9%	0.5%
Oman	4.6	5.1	4.8	5.6	5.2	5.2	5.2	5.1	5.2	4.2	3.7	-11.6%	-2.1%	1.2%
Qatar	3.5	3.2	2.8	2.8	2.6	2.6	3.3	2.6	2.8	2.6	2.6	1.0%	-2.8%	0.8%
Saudi Arabia	5.4	5.1	5.5	6.3	5.8	5.8	5.2	5.7	5.6	5.1	6.8	31.9%	2.3%	2.1%
Syria	0.9	0.8	1.1	1.2	2.4	1.4	1.9	2.0	2.1	2.2	2.2	2.1%	9.5%	0.7%
United Arab Emirates	2.7	2.2	2.3	2.0	2.2	2.6	2.0	2.2	2.0	2.2	2.1	-5.3%	-2.3%	0.7%
Other Middle East	2.3	2.4	1.3	0.7	0.8	0.9	1.4	1.7	1.9	1.4	0.9	-35.6%	-8.6%	0.3%
Total Middle East	73.7	76.2	77.5	91.0	93.9	92.7	86.5	84.9	95.0	92.5	99.0	7.1%	3.0%	31.2%
Algeria	17.8	18.5	19.5	19.5	18.6	19.0	19.6	18.8	16.4	17.3	16.7	-3.0%	-0.6%	5.3%
Egypt	5.2	6.0	6.1	6.1	5.1	4.9	5.1	5.1	4.7	4.4	4.4	-1.0%	-1.7%	1.4%
Libya	8.3	5.9	5.4	4.9	8.0	9.4	10.2	5.0	12.0	11.0	13.6	24.5%	5.1%	4.3%
Nigeria	18.7	16.7	15.1	14.6	15.2	14.7	15.7	14.2	13.1	10.7	11.5	8.4%	-4.7%	3.6%
Other Africa	18.7	19.5	21.0	21.0	18.9	17.3	16.5	15.8	15.0	15.9	14.5	-9.1%	-2.5%	4.6%
Total Africa	68.8	66.7	67.0	66.2	65.8	65.3	67.2	59.0	61.1	59.2	60.8	2.6%	-1.2%	19.2%
Australia	1.6	2.2	2.2	1.4	1.4	1.7	2.8	2.0	1.6	1.4	1.3	-5.9%	-1.5%	0.4%
Bangladesh	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-2.5%	6.9%	0.0%
Brunei	0.4	0.4	0.4	0.6	0.6	0.4	0.6	0.3	0.4	0.2	0.3	35.3%	-4.5%	0.1%
China	4.9	5.0	5.0	4.7	3.6	4.0	4.4	5.8	5.4	5.0	4.9	-2.7%	-0.1%	1.5%
India	4.4	4.8	5.4	4.9	4.1	3.7	3.6	4.1	3.8	4.1	4.1	-0.1%	-0.8%	1.3%
Indonesia	6.6	6.4	6.1	5.8	4.9	4.3	4.3	4.0	3.5	3.7	4.2	13.1%	-4.4%	1.3%
Malaysia	6.3	7.2	7.9	6.9	6.2	5.1	5.5	5.4	4.3	3.5	3.4	-2.4%	-5.8%	1.1%
Myanmar	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	-11.6%	-17.8%	0.0%
Pakistan	1.2	0.9	0.9	0.9	0.7	0.6	0.6	0.6	0.5	0.6	0.5	-4.0%	-7.8%	0.2%
Thailand	0.9	0.9	0.9	0.9	0.8	0.7	0.7	0.7	0.7	0.5	0.5	2.6%	-6.4%	0.1%
Vietnam	2.1	2.1	2.0	1.8	1.9	1.6	1.6	1.4	1.1	1.2	1.3	14.3%	-4.6%	0.4%
Other Asia Pacific	1.4	1.7	1.4	1.4	0.9	0.9	0.6	0.6	0.8	0.9	0.8	-15.6%	-5.8%	0.2%
Total Asia Pacific	29.9	31.9	32.4	29.5	25.3	23.1	24.8	25.1	22.4	21.1	21.3	1.2%	-3.3%	6.7%
Total World	297.9	305.6	309.0	315.2	298.1	305.0	316.8	300.5	308.3	296.6	317.4	7.0%	0.6%	100.0%
of which: OECD	41.0	48.0	49.3	41.0	38.5	47.8	55.9	47.7	44.0	38.6	43.1	11.7%	0.5%	13.6%
Non-OECD	256.9	257.6	259.6	274.2	259.6	257.2	260.9	252.8	264.3	258.0	274.3	6.3%	0.7%	86.4%
European Union	1.4	1.6	1.4	1.4	1.0	1.2	1.2	1.1	1.2	1.0	1.0	3.7%	-2.9%	0.3%

Data from 2013 onward: Made utilising VIIRS Nightfire (VNF) nightly data produced by the Earth Observation Group, Payne Institute for Public Policy, Colorado School of Mines. These data include flaring from upstream, downstream oil and gas. Emissions have been calculated using flared natural gas volumes based on standard cubic metres (standardized using a Gross Calorific Value (GCV) of 40 MJ/m³) and the standard conversion factor for emissions from the IPCC. Perfect combustion has been assumed.

Note: Annual changes and shares of total are calculated using exajoules figures.



Carbon Carbon dioxide equivalent emissions from energy, process emissions, methane and flaring

Million tonnes of carbon dioxide equivalent												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada	615.8	625.0	620.3	608.9	627.7	643.8	632.0	567.8	580.0	596.7	599.4	0.4%	-0.3%	1.5%
Mexico	570.2	557.5	553.9	562.7	568.2	553.1	544.8	481.3	514.0	538.1	559.7	4.0%	-0.2%	1.4%
US	5610.0	5648.5	5540.6	5415.7	5375.0	5579.0	5474.3	4912.9	5197.2	5270.1	5130.1	-2.7%	-0.9%	12.7%
Total North America	6796.0	6831.0	6714.8	6587.3	6570.8	6776.0	6651.0	5962.0	6291.1	6405.0	6289.3	-1.8%	-0.8%	15.6%
Argentina	218.4	218.6	222.1	220.2	218.4	217.6	208.4	193.3	218.3	235.2	229.4	-2.5%	0.5%	0.6%
Brazil	544.7	573.0	555.3	514.3	518.5	498.0	494.3	469.2	524.0	505.5	525.0	3.9%	-0.4%	1.3%
Chile	90.4	88.7	88.9	93.8	95.2	94.8	96.2	86.5	95.3	94.4	87.9	-6.9%	-0.3%	0.2%
Colombia	121.8	128.4	120.7	134.1	126.6	127.4	130.8	112.8	121.8	129.4	138.2	6.8%	1.3%	0.3%
Ecuador	47.7	50.5	49.2	47.2	45.7	48.0	46.7	39.1	46.6	50.4	56.2	11.7%	1.7%	0.1%
Peru	53.9	55.5	57.5	61.2	58.6	60.4	62.2	52.2	62.3	66.6	69.2	3.9%	2.5%	0.2%
Trinidad & Tobago	34.0	33.4	31.9	28.5	27.7	26.6	26.4	22.4	20.8	21.2	20.4	-3.7%	-5.0%	0.1%
Venezuela	364.4	359.3	342.7	320.2	287.8	244.1	214.5	156.4	174.8	195.2	225.0	15.3%	-4.7%	0.6%
Central America	64.2	66.0	73.0	75.7	76.4	76.9	84.5	66.9	75.8	78.5	84.5	7.7%	2.8%	0.2%
Other Caribbean	107.7	109.7	114.2	116.8	113.5	116.0	115.4	104.7	105.4	105.0	111.2	5.8%	0.3%	0.3%
Other South America	43.7	44.8	45.4	47.1	47.7	48.4	48.4	44.4	50.1	52.4	52.1	-0.5%	1.8%	0.1%
Total S. & Cent. America	1691.0	1727.8	1700.7	1659.2	1616.2	1558.2	1527.9	1347.9	1495.1	1533.7	1599.1	4.3%	-0.6%	4.0%
Austria	65.0	61.3	63.8	64.4	66.7	64.6	66.0	58.5	61.5	58.5	56.0	-4.3%	-1.5%	0.1%
Belgium	120.0	111.7	117.7	119.4	121.2	128.1	124.7	108.0	116.6	112.4	106.0	-5.7%	-1.2%	0.3%
Bulgaria	43.1	45.6	48.7	45.8	48.7	45.4	44.2	38.5	44.5	48.8	37.6	-22.9%	-1.3%	0.1%
Croatia	18.2	17.9	18.3	18.7	19.2	18.3	18.1	16.7	17.4	17.4	17.5	0.7%	-0.4%	0.0%
Czech Republic	111.4	108.3	109.2	111.1	110.9	109.9	104.5	94.0	98.2	96.5	87.8	-9.0%	-2.4%	0.2%
Denmark	45.3	41.5	39.0	40.5	37.9	38.0	34.6	29.3	30.6	31.6	30.1	-4.6%	-4.0%	0.1%
Estonia	25.0	24.0	21.7	22.5	24.9	24.5	18.7	15.8	16.9	17.9	15.1	-15.4%	-4.9%	0.0%
France	349.0	313.3	317.5	323.0	327.7	317.6	310.4	261.0	287.1	280.8	262.9	-6.3%	-2.8%	0.7%
Germany	815.0	768.2	772.5	784.5	776.3	748.7	696.1	620.6	658.3	649.2	589.4	-9.2%	-3.2%	1.5%
Greece	85.5	81.8	79.0	75.7	80.0	78.3	74.0	59.9	63.2	66.7	63.3	-5.2%	-3.0%	0.2%
Hungary	43.7	43.0	45.6	46.5	48.8	49.3	49.5	47.0	48.2	45.2	41.2	-8.8%	-0.6%	0.1%
Ireland	39.0	38.9	40.6	43.1	42.1	42.0	40.3	35.8	38.1	38.6	36.4	-5.9%	-0.7%	0.1%
Italy	355.3	331.7	347.4	343.8	348.1	348.7	341.3	298.1	331.0	337.0	312.7	-7.2%	-1.3%	0.8%
Lithuania	12.1	11.4	11.9	12.3	12.4	13.1	13.0	12.6	13.0	12.5	12.3	-1.4%	0.2%	0.0%
Netherlands	212.0	203.1	208.1	208.5	204.8	198.6	193.9	173.3	177.0	165.0	156.5	-5.2%	-3.0%	0.4%
North Macedonia	8.1	7.7	7.4	7.5	7.8	7.5	8.3	7.0	7.1	7.9	8.2	4.3%	0.1%	0.0%
Norway	39.8	39.5	40.1	39.2	39.1	39.2	37.7	35.5	36.4	36.4	35.5	-2.6%	-1.2%	0.1%
Poland	336.6	319.5	319.7	334.1	347.7	353.0	335.4	317.3	343.7	326.9	299.1	-8.5%	-1.2%	0.7%
Romania	80.0	80.6	81.6	78.6	82.5	82.2	80.8	74.4	79.6	74.5	69.6	-6.6%	-1.4%	0.2%
Slovakia	33.9	31.5	31.9	32.4	34.5	33.8	31.5	29.4	32.8	29.9	29.1	-2.6%	-1.5%	0.1%
Slovenia	14.5	13.1	13.1	14.0	14.3	14.4	13.8	12.4	12.6	12.1	10.9	-10.0%	-2.8%	0.0%
Spain	281.5	280.4	296.3	288.9	306.7	301.3	283.8	229.8	251.0	268.5	254.9	-5.1%	-1.0%	0.6%
Sweden	47.1	45.9	46.3	46.4	46.5	42.5	42.6	40.3	42.5	39.1	37.1	-4.9%	-2.3%	0.1%
Türkiye	342.4	375.1	380.1	402.0	448.8	446.9	433.0	432.2	471.9	464.0	457.1	-1.5%	2.9%	1.1%
Ukraine	323.9	280.6	225.4	246.0	217.2	229.6	215.5	200.8	196.8	132.6	131.4	-1.0%	-8.6%	0.3%
United Kingdom	511.1	470.1	453.5	427.0	416.6	409.8	394.4	332.6	350.4	351.2	338.5	-3.6%	-4.0%	0.8%
Other Europe	297.2	276.4	288.2	293.9	302.7	298.4	293.1	264.4	264.9	267.2	279.6	4.6%	-0.6%	0.7%
Total Europe	4655.5	4422.3	4424.5	4469.8	4534.0	4483.6	4299.4	3844.9	4091.5	3988.3	3775.8	-5.3%	-2.1%	9.3%
Azerbaijan	40.8	41.2	43.2	42.5	41.1	43.8	44.1	43.4	46.2	49.2	54.3	10.4%	2.9%	0.1%
Belarus	63.9	62.9	58.1	58.3	59.2	64.5	65.0	59.3	60.5	58.3	55.2	-5.4%	-1.5%	0.1%
Kazakhstan	278.0	284.1	237.9	256.2	274.6	283.6	277.7	259.8	279.4	277.5	308.7	11.2%	1.1%	0.8%
Russian Federation	2060.5	2055.3	2029.5	2055.0	2052.9	2136.1	2139.2	2015.4	2103.4	2165.6	2176.1	0.5%	0.5%	5.4%
Turkmenistan	133.1	135.3	143.8	148.7	142.0	152.5	150.2	168.1	178.6	181.8	222.2	22.3%	5.3%	0.5%
Uzbekistan	137.8	140.0	133.1	129.7	131.5	138.4	138.7	140.3	147.7	150.8	152.9	1.4%	1.0%	0.4%
Other CIS	27.1	29.9	31.3	31.7	33.4	37.7	36.1	36.6	38.8	37.7	39.0	3.4%	3.7%	0.1%
Total CIS	2741.3	2748.8	2676.9	2722.1	2734.8	2856.7	2851.1	2723.0	2854.7	2920.9	3008.4	3.0%	0.9%	7.4%
Iran	740.9	762.1	756.2	810.7	834.3	859.9	856.1	879.6	896.3	927.6	937.0	1.0%	2.4%	2.3%
Iraq	225.3	228.6	245.7	270.7	294.1	304.0	314.9	286.1	295.6	321.6	278.3	-13.5%	2.1%	0.7%
Israel	69.4	66.8	69.5	68.6	69.2	69.5	71.3	65.3	66.1	70.0	68.2	-2.6%	-0.2%	0.2%
Kuwait	119.5	116.1	122.2	123.8	121.6	125.7	116.2	108.5	114.9	117.2	125.8	7.3%	0.5%	0.3%
Oman	87.8	87.4	91.9	94.3	95.9	99.9	99.7	94.9	102.8	108.6	110.0	1.3%	2.3%	0.3%
Qatar	125.8	135.1	148.5	149.0	141.1	143.5	149.7	132.1	140.8	143.8	164.2	14.3%	2.7%	0.4%
Saudi Arabia	629.1	669.7	709.0	745.8	734.5	719.0	679.2	658.1	676.3	720.9	725.9	0.7%	1.4%	1.8%
United Arab Emirates	298.6	294.7	320.1	330.5	316.7	301.2	315.8	305.6	312.7	336.3	340.8	1.3%	1.3%	0.8%
Other Middle East	172.8	170.0	149.3	141.2	147.4	146.0	145.0	138.7	144.3	142.7	149.4	4.7%	-1.4%	0.4%
Total Middle East	2469.2	2530.4	2612.3	2734.6	2754.7	2768.7	2747.9	2668.8	2749.8	2888.7	2899.5	0.4%	1.6%	7.2%
Algeria	206.7	219.1	225.7	228.8	231.6	239.5	243.2	229.2	248.5	254.7	248.5	-2.4%	1.9%	0.6%
Egypt	249.9	250.3	253.1	267.2	271.0	267.6	259.1	236.1	269.7	282.4	279.3	-1.1%	1.1%	0.7%
Morocco	60.6	61.9	62.2	62.5	65.3	66.8	73.0	67.4	75.1	75.5	74.4	-1.5%	2.1%	0.2%
South Africa	501.4	506.2	494.2	513.5	509.3	491.4	513.9	486.0	479.9	461.7	478.1	3.6%	-0.5%	1.2%
Eastern Africa	109.0	122.7	128.0	127.0	136.8	144.4	141.9	134.0	143.0	139.8	142.7	2.0%	2.7%	0.4%
Middle Africa	98.9	105.3	109.7	107.3	101.9	100.9	102.3	92.3	94.8	99.9	113.7	13.9%	1.4%	0.3%
Western Africa	214.0	212.3	226.3	225.2	238.1	258.2	267.2	263.8	286.2	278.2	276.5	-0.6%	2.6%	0.7%
Other Northern Africa	140.3	123.0	113.8	113.6	138.4	148.7	154.2	107.6	168.7	161.5	158.8	-1.7%	1.2%	0.4%
Other Southern Africa	12.7	14.0	14.1	13.9	14.9	15.6	14.9	12.8	14.4	15.9	16.2	2.4%	2.5%	0.0%
Total Africa	1593.5	1614.8	1627.1	1659.0	1707.4	1733.2	1769.5	1629.2	1					

Carbon Capture, usage and storage (CCUS)

Capture capacity Million tonnes per year												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada	0.1	1.1	2.3	2.3	2.3	2.3	2.3	4.0	4.0	4.0	4.0	–	48.0%	7.3%
Mexico	–	–	–	–	–	–	–	–	–	–	–	–	–	–
US	19.5	19.5	19.5	19.5	21.9	21.9	21.6	21.6	21.6	21.8	22.5	3.4%	1.5%	40.9%
Total North America	19.5	20.5	21.7	21.7	24.1	24.1	23.9	25.6	25.6	25.8	26.5	2.9%	3.1%	48.3%
Brazil	1.1	2.1	2.8	4.1	4.6	6.5	8.9	9.6	10.3	10.5	10.6	1.0%	25.4%	19.3%
Total S. & Cent. America	1.1	2.1	2.8	4.1	4.6	6.5	8.9	9.6	10.3	10.5	10.6	1.0%	25.4%	19.3%
Norway	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	–	–	3.1%
Other Europe	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.7	16.1%	-5.0%	1.3%
Total Europe	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.3	2.4	4.3%	-1.8%	4.4%
Russian Federation	–	–	–	–	–	–	–	–	0.4	0.4	0.4	–	–	0.8%
Total CIS	–	–	–	–	–	–	–	–	0.4	0.4	0.4	–	–	0.8%
Qatar	–	–	0.2	0.2	0.2	0.2	2.3	2.3	2.3	2.3	2.3	–	–	4.1%
Saudi Arabia	–	–	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	–	–	2.4%
Other Middle East	0.3	0.3	0.3	1.1	1.1	1.1	1.1	1.4	1.4	1.4	1.4	–	16.4%	2.6%
Total Middle East	0.3	0.3	1.8	2.6	2.6	2.6	4.7	5.0	5.0	5.0	5.0	–	32.0%	9.1%
Algeria	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	–	–	2.2%
Total Africa	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	–	–	2.2%
Australia	–	–	–	–	–	–	–	4.0	4.0	4.0	4.0	–	–	7.3%
China	0.3	0.3	0.4	0.4	0.4	0.7	0.7	0.7	0.9	1.1	3.5	221.8%	28.4%	6.4%
Other Asia Pacific	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.3	–	2.5%	2.3%
Total Asia Pacific	1.3	1.3	1.4	1.4	1.5	1.8	5.8	6.0	6.2	6.4	8.8	38.2%	21.2%	16.0%
Total World	26.3	28.4	31.9	34.0	37.0	39.3	47.6	50.4	51.7	51.6	55.0	6.6%	7.6%	100.0%
of which: OECD	22.1	23.1	24.4	24.4	26.9	26.9	30.7	32.6	32.5	32.1	32.9	2.6%	4.1%	59.8%
Non-OECD	4.2	5.2	7.5	9.6	10.1	12.4	16.9	17.9	19.2	19.6	22.1	13.0%	18.0%	40.2%
European Union	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.6	0.7	16.7%	-5.2%	1.3%

Source: Rystad Energy. For further information please contact billy.snaih@rystadenergy.com

Carbon Prices

	Compliance Markets				Voluntary Markets				
	UK Emissions trading scheme GBP£/teCO ₂	EU Emissions trading scheme EUR€/teCO ₂	California carbon allowance USD\$/teCO ₂	Regional greenhouse gas initiative USD\$/tonCO ₂	Platts CORSIA-eligible credits (CEC) USD\$/teCO ₂ e	Platts carbon removal credits (CRC) USD\$/teCO ₂ e	Platts CAC USD\$/teCO ₂ e	Platts technological carbon capture USD\$/teCO ₂ e	Platts renewable energy USD\$/teCO ₂ e
2012	–	6.87	–	–	–	–	–	–	–
2013	–	4.53	–	–	–	–	–	–	–
2014	–	6.01	–	–	–	–	–	–	–
2015	–	7.72	–	–	–	–	–	–	–
2016	–	5.36	–	–	–	–	–	–	–
2017	–	5.84	–	–	–	–	–	–	–
2018	–	15.85	–	–	–	–	–	–	–
2019	–	24.91	–	–	–	–	–	–	–
2020	–	24.83	–	–	–	–	–	–	–
2021	66.76	53.52	–	–	4.09	14.53	8.53	7.32	112.80
2022	92.81	81.17	92.81	13.42	4.77	16.00	9.55	6.81	138.84
2023	63.53	85.27	63.53	13.61	1.41	13.36	1.96	3.02	129.72

Source: S&P Global Commodity Insights, ©2024 by S&P Global Inc.

Oil

In 2023, global oil production reached a record level of just over 96 million barrels per day. The US remained the largest producer seeing its output grow by over 8%. In contrast, the Russian Federation's production decreased by over 1% as a full year of international sanctions were felt. Southern & Central America continues to grow rapidly post-COVID and recorded the highest growth rate (11%) for any region in 2023. In Asia Pacific, China's production rose by 2%, accounting for around 57% of the region's total production.

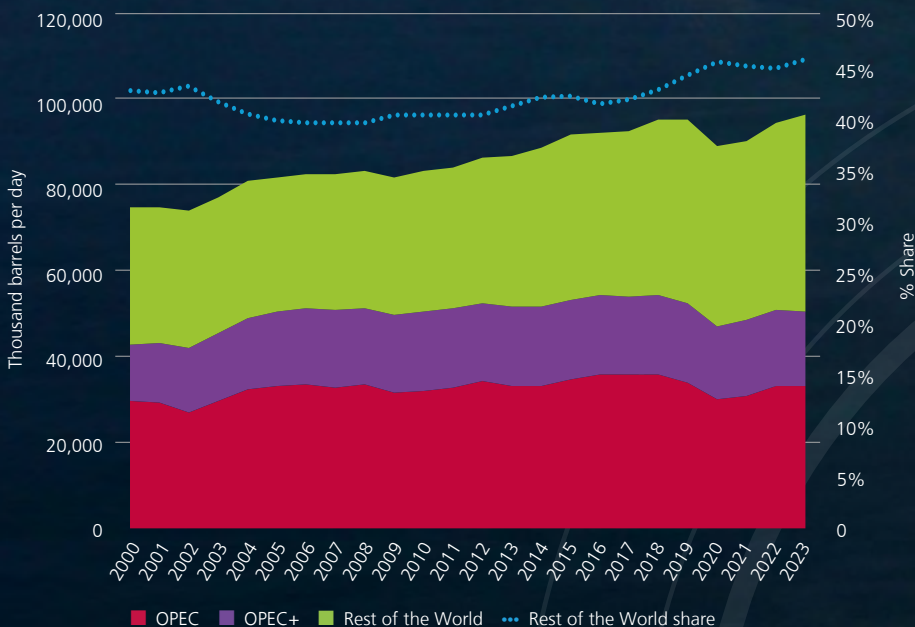
Whilst the US lost its position as the largest oil refining market by capacity with China

reaching 18,484 thousand barrels per day, throughput of refined products from China still lags the US with a utilisation of nearly 82% compared to around 87%.

Consumption of oil exceeded 100 million barrels of oil per day (mbpd) for the first time ever. Gasoline, diesel and kerosene (aviation) use returned to or beyond their 2019 levels, but within the data sets there are some national/regional differences. Whilst global gasoline consumption (25 mbpd) was just above its 2019 pre-COVID level, kerosene, although growing strongly (17.5% in 2023), has yet to return to its 2019 peak.

In 2023, production from non-OPEC+ countries exceeded global incremental demand growth by 20%

Since 2008, countries beyond OPEC+ have been steadily increasing their share of oil production with the US, Canada, and Brazil making notable increases



Thousand barrels daily												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Canada	4000	4271	4388	4464	4813	5244	5372	5130	5414	5575	5653	1.4%	3.5%	5.9%
Mexico	2875	2784	2587	2456	2224	2068	1918	1910	1926	1943	2040	5.0%	-3.4%	2.1%
US	10101	11805	12782	12356	13140	15321	17135	16493	16693	17844	19358	8.5%	6.7%	20.1%
Total North America	16976	18860	19756	19275	20178	22633	24426	23533	24033	25361	27050	6.7%	4.8%	28.1%
Argentina	644	638	646	610	590	592	720	721	797	955	1074	12.5%	5.2%	1.1%
Brazil	2110	2341	2525	2607	2731	2691	2890	3030	2991	3112	3502	12.5%	5.2%	3.6%
Colombia	1010	990	1006	886	854	865	886	781	736	754	777	3.0%	-2.6%	0.8%
Ecuador	527	557	543	548	531	517	531	479	473	481	475	-1.2%	-1.0%	0.5%
Guyana	-	-	-	-	-	-	1	74	117	278	391	40.8%	-	0.4%
Peru	171	175	153	141	136	139	144	131	128	128	123	-3.9%	-3.2%	0.1%
Trinidad & Tobago	116	114	109	97	99	87	82	76	77	74	72	-2.8%	-4.7%	0.1%
Venezuela	2680	2692	2864	2566	2199	1642	1051	680	678	735	853	16.1%	-10.8%	0.9%
Other S. & Cent. America	152	154	146	135	133	128	121	112	114	108	99	-7.8%	-4.2%	0.1%
Total S. & Cent. America	7411	7661	7991	7590	7275	6661	6426	6086	6111	6626	7368	11.2%	-0.1%	7.6%
Denmark	178	167	158	142	138	116	103	72	66	65	60	-8.3%	-10.3%	0.1%
Italy	114	120	113	78	86	97	89	112	100	94	90	-4.4%	-2.3%	0.1%
Norway	1849	1894	1953	2004	1982	1863	1774	2018	2036	1906	2022	6.1%	0.9%	2.1%
Romania	86	84	83	79	76	75	75	72	70	66	63	-4.7%	-3.1%	0.1%
United Kingdom	865	854	964	1015	1005	1092	1118	1049	874	809	715	-11.6%	-1.9%	0.7%
Other Europe	344	341	331	312	303	308	302	289	289	274	275	0.5%	-	0.3%
Total Europe	3437	3460	3602	3630	3590	3550	3460	3612	3436	3214	3225	0.3%	-0.6%	3.3%
Azerbaijan	878	851	841	828	782	784	763	703	708	669	620	-7.2%	-3.4%	0.6%
Kazakhstan	1720	1701	1672	1637	1813	1900	1903	1796	1805	1771	1891	6.8%	1.0%	2.0%
Russian Federation	10807	10927	11087	11342	11374	11562	11679	10666	11000	11202	11075	-1.1%	0.2%	11.5%
Turkmenistan	256	263	271	270	269	259	254	219	206	203	194	-4.2%	-2.7%	0.2%
Uzbekistan	69	63	60	57	61	64	62	44	46	45	43	-5.3%	-4.6%	†
Other CIS	35	35	36	36	37	38	39	39	41	43	44	3.2%	2.3%	†
Total CIS	13765	13840	13966	14171	14336	14607	14701	13468	13806	13933	13868	-0.5%	0.1%	14.4%
Iran	3609	3714	3853	4578	4939	4720	3510	3230	3766	3945	4662	18.2%	2.6%	4.8%
Iraq	3099	3239	3986	4423	4538	4632	4779	4114	4102	4520	4355	-3.6%	3.5%	4.5%
Kuwait	3134	3106	3069	3150	3009	3050	2976	2721	2706	3036	2908	-4.2%	-0.7%	3.0%
Oman	942	943	981	1004	971	978	971	951	971	1064	1049	-1.5%	1.1%	1.1%
Qatar	1934	1892	1844	1846	1783	1798	1737	1715	1697	1743	1772	1.6%	-0.9%	1.8%
Saudi Arabia	11393	11519	11998	12406	11892	12261	11832	11039	10954	12191	11389	-6.6%	†	11.8%
Syria	59	33	27	25	25	24	34	43	43	43	40	-6.6%	-3.8%	†
United Arab Emirates	3540	3592	3876	4020	3880	3894	3984	3679	3640	4020	3922	-2.5%	1.0%	4.1%
Yemen	198	153	54	43	71	94	95	88	83	74	49	-32.8%	-13.0%	0.1%
Other Middle East	208	214	213	214	208	207	214	202	208	209	217	3.7%	0.4%	0.2%
Total Middle East	28117	28405	29901	31709	31316	31658	30132	27782	28171	30844	30362	-1.6%	0.8%	31.5%
Algeria	1485	1589	1558	1577	1540	1511	1487	1332	1353	1443	1408	-2.4%	-0.5%	1.5%
Angola	1738	1701	1796	1745	1671	1519	1420	1325	1177	1191	1150	-3.4%	-4.0%	1.2%
Chad	91	89	111	117	98	116	127	126	116	124	134	8.2%	4.0%	0.1%
Republic of Congo	243	253	234	232	270	330	336	307	274	269	278	3.5%	1.4%	0.3%
Egypt	710	714	726	691	660	674	653	632	608	613	610	-0.4%	-1.5%	0.6%
Equatorial Guinea	282	284	260	223	195	176	160	158	131	121	88	-27.0%	-11.0%	0.1%
Gabon	213	211	214	221	210	193	218	207	181	191	1271	17.0%	0.4%	0.2%
Libya	1048	518	437	412	929	1165	1232	420	1286	1143	1223	11.2%	2.0%	1.3%
Nigeria	2276	2273	2199	1898	1966	2000	2093	1894	1678	1445	1540	6.6%	-3.8%	1.6%
South Sudan	100	155	148	137	147	144	172	165	153	141	148	4.7%	4.0%	0.2%
Sudan	118	120	109	84	70	74	72	63	64	62	57	-7.3%	-6.9%	0.1%
Tunisia	68	63	57	54	45	44	40	37	45	38	38	-0.4%	-5.7%	†
Other Africa	242	247	276	270	317	315	348	331	294	284	282	-1.0%	1.5%	0.3%
Total Africa	8612	8218	8123	7660	8121	8263	8358	6998	7360	7063	7228	2.3%	-1.7%	7.5%
Australia	401	420	378	353	322	342	458	454	444	412	383	-7.0%	-0.5%	0.4%
Brunei	135	126	127	121	113	112	121	110	107	93	93	0.2%	-3.7%	0.1%
China	4216	4246	4309	3999	3846	3802	3848	3901	3994	4111	4198	2.1%	†	4.4%
India	921	914	904	896	897	892	851	795	770	739	728	-1.5%	-2.3%	0.8%
Indonesia	871	847	838	873	837	808	781	742	692	647	638	-1.4%	-3.1%	0.7%
Malaysia	627	649	696	726	718	713	672	615	571	561	565	0.7%	-1.0%	0.6%
Thailand	466	464	481	489	486	475	475	421	398	328	324	-1.3%	-3.6%	0.3%
Vietnam	346	325	352	317	284	257	236	207	196	194	188	-2.9%	-5.9%	0.2%
Other Asia Pacific	270	292	293	277	269	230	227	204	195	167	158	-5.4%	-5.2%	0.2%
Total Asia Pacific	8254	8284	8378	8051	7774	7630	7669	7449	7366	7252	7275	0.3%	-1.3%	7.5%
Total World	86572	88728	91717	92085	92588	95002	95172	88928	90282	94292	96376	2.2%	1.1%	100.0%
of which: OECD	21670	23589	24605	24010	24814	27251	29089	28244	28514	29614	31330	5.8%	3.8%	32.5%
Non-OECD	64901	65139	67113	68075	67774	67751	66084	60684	61768	64677	65046	0.6%	†	67.5%
OPEC	34740	34693	36342	37449	37240	37094	35079	31107	31928	34247	34048	-0.6%	-0.2%	35.3%
Non-OPEC	51832	54036	55375	54636	55348	57908	60093	57821	58354	60044	62328	3.8%	1.9%	64.7%
European Union	559	554	534	468	464	448	414	392	370	346	328	-5.1%	-5.2%	0.3%

Source: includes data from FGE Iran Service.

* Includes crude oil, shale oil, oil sands, condensates (lease condensate or gas condensates that require further refining) and NGLs (natural gas liquids – ethane, LPG and naphtha separated from the production of natural gas).

Excludes liquid fuels from other sources such as biofuels and synthetic derivatives of coal and natural gas. This also excludes liquid fuel adjustment factors such as refinery processing gain. Excludes oil shales/kerozen extracted in solid form.

† Less than 0.05.

Note: Annual changes and shares of total are calculated using thousand barrels daily figures.

Million tonnes												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Canada	195.4	209.8	216.1	218.8	236.6	257.7	263.5	252.0	266.6	273.9	277.9	1.4%	3.6%	6.2%
Mexico	141.8	137.1	127.5	121.4	109.5	102.3	94.9	95.1	96.4	97.6	102.5	5.0%	-3.2%	2.3%
US	448.6	524.6	567.0	542.7	574.2	669.6	751.0	713.3	715.9	762.1	827.1	8.5%	6.3%	18.3%
Total North America	785.8	871.5	910.6	882.9	920.3	1029.6	1109.4	1060.4	1079.0	1133.6	1207.5	6.5%	4.4%	26.8%
Argentina	30.2	29.8	30.0	28.6	27.3	27.6	33.8	33.7	37.6	45.4	51.2	13.0%	5.4%	1.1%
Brazil	110.2	122.5	132.2	136.7	142.6	140.6	151.2	159.3	156.9	163.2	183.7	12.5%	5.2%	4.1%
Colombia	53.2	52.2	53.0	46.8	45.0	45.6	46.7	41.3	38.8	39.7	40.9	3.0%	-2.6%	0.9%
Ecuador	29.2	29.8	29.1	29.5	28.5	27.7	28.5	25.8	25.3	25.8	25.5	-1.2%	-1.0%	0.6%
Guyana	-	-	-	-	-	-	0.1	3.7	5.8	13.8	19.5	40.8%	-	0.4%
Peru	7.3	7.5	6.5	5.8	5.7	5.9	6.1	5.5	5.3	5.4	5.1	-4.4%	-3.4%	0.1%
Trinidad & Tobago	5.1	5.1	4.8	4.3	4.4	3.9	3.7	3.4	3.5	3.4	3.3	-1.8%	-4.2%	0.1%
Venezuela	137.8	138.5	147.6	132.6	113.2	84.3	53.4	34.6	34.5	37.5	43.7	16.6%	-10.8%	1.0%
Other S. & Cent. America	7.6	7.7	7.4	6.8	6.7	6.4	6.1	5.7	5.8	5.5	5.1	-7.4%	-4.0%	0.1%
Total S. & Cent. America	379.6	393.1	410.7	391.2	373.3	342.0	329.5	313.0	313.5	339.7	378.1	11.3%	†	8.4%
Denmark	8.7	8.1	7.7	6.9	6.7	5.6	5.0	3.5	3.2	3.2	2.9	-8.3%	-10.3%	0.1%
Italy	5.5	5.8	5.5	3.8	4.1	4.7	4.3	5.4	4.8	4.5	4.3	-4.5%	-2.4%	0.1%
Norway	83.5	85.4	88.0	90.7	89.4	83.9	80.3	92.7	94.3	89.2	94.7	6.2%	1.3%	2.1%
Romania	4.1	4.1	4.0	3.8	3.6	3.6	3.6	3.5	3.3	3.1	3.0	-4.7%	-3.2%	0.1%
United Kingdom	40.6	39.9	45.3	47.4	46.6	50.9	51.8	49.0	40.9	37.8	33.4	-11.4%	-1.9%	0.7%
Other Europe	17.1	17.0	16.5	15.6	15.0	15.2	15.0	14.4	14.3	13.6	13.7	0.6%	-2.2%	0.3%
Total Europe	159.5	160.3	166.9	168.2	165.5	163.9	160.0	168.4	160.9	151.4	152.1	0.5%	-0.5%	3.4%
Azerbaijan	43.5	42.1	41.7	41.1	38.7	38.8	37.6	34.6	34.6	32.7	30.2	-7.5%	-3.6%	0.7%
Kazakhstan	81.8	80.8	79.5	78.0	86.2	90.4	90.6	85.7	85.9	84.2	90.0	6.8%	1.0%	2.0%
Russian Federation	532.2	537.4	544.6	558.5	558.5	567.9	573.4	524.4	538.8	548.5	541.7	-1.3%	0.2%	12.0%
Turkmenistan	12.5	12.9	13.2	13.2	13.1	12.5	12.2	10.4	9.8	9.6	9.2	-4.0%	-3.0%	0.2%
Uzbekistan	3.2	2.9	2.7	2.6	2.8	2.9	2.8	2.0	2.1	2.1	2.0	-5.2%	-4.6%	†
Other CIS	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.2	3.2%	2.3%	†
Total CIS	674.9	677.9	683.4	695.2	701.1	714.3	718.5	659.1	673.2	679.2	675.2	-0.6%	0.0%	15.0%
Iran	169.7	174.0	180.2	216.1	234.5	222.6	161.7	147.7	172.2	180.2	214.3	18.9%	2.4%	4.7%
Iraq	151.9	158.8	195.6	217.6	222.4	227.0	234.2	202.0	200.8	221.3	213.0	-3.7%	3.4%	4.7%
Kuwait	151.4	150.2	148.2	152.7	145.0	146.8	143.4	131.2	130.0	145.9	139.8	-4.2%	-0.8%	3.1%
Oman	46.1	46.2	48.0	49.3	47.6	47.8	47.3	46.1	46.8	51.4	50.6	-1.7%	0.9%	1.1%
Qatar	81.7	79.9	77.4	77.6	74.8	75.1	72.3	72.2	70.8	72.7	74.1	2.0%	-1.0%	1.6%
Saudi Arabia	538.4	543.8	568.0	586.7	559.3	576.8	556.6	519.6	515.0	574.2	531.7	-7.4%	-0.1%	11.8%
Syria	2.7	1.5	1.2	1.1	1.1	1.1	1.5	2.0	2.0	2.0	1.8	-6.9%	-3.8%	†
United Arab Emirates	161.6	162.9	175.1	181.6	174.9	176.0	179.9	165.9	163.4	181.1	176.1	-2.8%	0.9%	3.9%
Yemen	9.1	6.9	2.2	1.6	3.0	4.1	4.1	3.8	3.5	3.1	1.9	-37.7%	-14.4%	†
Other Middle East	10.3	10.5	10.5	10.6	10.2	10.2	10.4	9.9	10.2	10.2	10.6	4.0%	0.3%	0.2%
Total Middle East	1322.9	1334.8	1406.5	1495.0	1472.8	1487.4	1411.4	1300.3	1314.7	1442.1	1413.9	-2.0%	0.7%	31.3%
Algeria	64.8	68.8	67.2	68.4	66.6	65.3	64.3	57.6	58.2	62.1	60.4	-2.7%	-0.7%	1.3%
Angola	85.2	83.3	88.2	85.8	81.6	74.1	69.1	64.6	57.1	57.8	55.8	-3.5%	-4.1%	1.2%
Chad	4.8	4.7	5.8	6.1	5.2	6.1	6.7	6.6	6.1	6.5	7.0	8.2%	4.0%	0.2%
Republic of Congo	12.3	12.9	11.9	11.9	13.8	16.9	17.2	15.8	14.0	13.7	14.2	3.5%	1.4%	0.3%
Egypt	34.4	35.1	35.4	33.8	32.2	32.8	31.8	31.1	29.6	29.9	29.8	-0.3%	-1.4%	0.7%
Equatorial Guinea	13.2	13.3	12.1	10.3	9.0	8.1	7.4	7.4	6.1	5.6	4.0	-27.7%	-11.2%	0.1%
Gabon	10.7	10.5	10.7	11.0	10.5	9.7	10.9	10.4	9.0	9.5	11.1	17.0%	0.4%	0.2%
Libya	49.4	24.4	20.5	19.3	43.8	54.9	58.0	19.7	60.4	53.6	59.7	11.4%	1.9%	1.3%
Nigeria	109.4	109.2	105.7	91.3	94.4	96.2	100.9	91.4	80.7	69.3	73.9	6.7%	-3.8%	1.6%
South Sudan	4.9	7.7	7.3	6.8	7.3	7.1	8.4	8.1	7.5	6.9	7.3	4.7%	4.0%	0.2%
Sudan	5.8	5.9	5.4	4.2	3.4	3.7	3.6	3.1	3.2	3.1	2.8	-7.3%	-6.9%	0.1%
Tunisia	3.1	2.9	2.6	2.4	2.1	2.0	1.8	1.7	2.1	1.8	1.7	-1.8%	-5.8%	†
Other Africa	12.0	12.2	13.7	13.5	15.7	15.5	17.1	16.3	14.4	13.9	13.7	-1.5%	1.3%	0.3%
Total Africa	409.9	390.8	386.4	364.8	385.4	392.4	397.2	333.9	348.4	333.6	341.5	2.4%	-1.8%	7.6%
Australia	17.6	18.6	16.8	15.4	13.9	14.6	19.3	19.1	18.4	17.1	15.7	-8.3%	-1.2%	0.3%
Brunei	6.6	6.2	6.2	5.9	5.5	5.4	5.9	5.4	5.2	4.5	4.5	0.2%	-3.7%	0.1%
China	210.0	211.4	214.6	199.7	191.5	189.3	191.6	194.8	198.9	204.7	209.0	2.1%	†	4.6%
India	42.2	41.6	41.2	40.6	40.4	39.5	37.5	35.1	34.0	33.0	32.6	-1.4%	-2.6%	0.7%
Indonesia	42.4	41.0	40.6	42.6	40.9	39.5	38.1	36.3	33.7	31.5	31.1	-1.3%	-3.0%	0.7%
Malaysia	28.7	29.8	32.2	33.3	32.9	32.5	30.6	28.0	25.9	25.3	25.5	0.7%	-1.2%	0.6%
Thailand	17.1	16.9	17.6	18.1	17.6	17.0	16.9	15.1	13.9	11.5	11.2	-2.4%	-4.1%	0.2%
Vietnam	16.9	15.9	17.2	15.5	13.9	12.4	11.4	10.0	9.5	9.3	9.0	-3.2%	-6.1%	0.2%
Other Asia Pacific	11.9	13.0	13.1	12.4	12.0	10.3	10.1	9.2	8.7	7.5	7.1	-5.0%	-5.0%	0.2%
Total Asia Pacific	393.4	394.4	399.4	383.5	368.6	360.6	361.5	353.1	348.2	344.5	345.7	0.4%	-1.3%	7.7%
Total World	4126.0	4222.7	4363.9	4380.7	4387.0	4490.2	4487.4	4188.2	4237.9	4424.1	4514.1	2.0%	0.9%	100.0%
of which: OECD	1008.5	1095.4	1140.5	1106.6	1138.3	1246.9	1328.4	1282.6	1290.6	1335.7	1411.2	5.6%	3.4%	31.3%
Non-OECD	3117.4	3127.3	3223.5	3274.1	3248.7	3243.3	3159.1	2905.6	2947.3	3088.4	3102.9	0.5%	0.0%	68.7%
OPEC	1655.8	1650.7	1731.1	1785.4	1769.0	1758.8	1657.0	1468.0	1501.5	1611.8	1597.8	-0.9%	-0.4%	35.4%
Non-OPEC	2470.2	2572.0	2632.8	2595.3	2618.0	2731.4	2830.5	2720.3	2736.4	2812.3	2916.3	3.7%	1.7%	64.6%
European Union	27.3	27.1	26.1	23.0	22.6	21.9	20.2	19.2	18.0	16.8	16.0	-5.1%	-5.2%	0.4%

Source: includes data from FGE Iran Service.

* Includes crude oil, shale oil, oil sands, condensates (lease condensate or gas condensates that require further refining) and NGLs (natural gas liquids – ethane, LPG and naphtha separated from the production of natural gas).

Excludes liquid fuels from other sources such as biofuels and synthetic derivatives of coal and natural gas. This also excludes liquid fuel adjustment factors such as refinery processing gain.

Excludes oil shales/kerogen extracted in solid form.

† Less than 0.05%.

Note: Annual changes and shares of total are calculated using million tonnes figures. Growth rates are adjusted for leap years.



Oil Crude oil and condensate production in thousands of barrels per day*

Thousand barrels daily												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Canada	3486	3758	3863	3868	4216	4596	4690	4470	4745	4866	4935	1.4%	3.5%	6.0%
Mexico	2522	2429	2267	2154	1948	1833	1701	1705	1756	1785	1875	5.1%	-2.9%	2.3%
US	7495	8791	9439	8846	9357	10951	12311	11318	11268	11911	12927	8.5%	5.6%	15.6%
Total North America	13504	14977	15569	14868	15522	17381	18702	17494	17769	18562	19737	6.3%	3.9%	23.8%
Argentina	540	532	532	511	480	490	608	601	682	832	946	13.8%	5.8%	1.1%
Brazil	2024	2255	2437	2510	2622	2587	2788	2940	2905	3022	3402	12.6%	5.3%	4.1%
Colombia	1010	990	1006	886	854	865	886	781	736	754	777	3.0%	-2.6%	0.9%
Ecuador	526	557	543	548	531	517	531	479	473	481	475	-1.2%	-1.0%	0.6%
Guyana	-	-	-	-	-	-	1	74	117	278	391	40.8%	-	0.5%
Peru	118	121	104	91	88	92	95	84	82	86	80	-6.7%	-3.8%	0.1%
Trinidad & Tobago	81	81	79	71	72	63	59	57	60	58	60	2.6%	-3.0%	0.1%
Venezuela	2564	2578	2747	2461	2095	1553	972	628	629	689	809	17.5%	-10.9%	1.0%
Other S. & Cent. America	135	139	133	123	119	114	108	100	101	95	88	-7.6%	-4.2%	0.1%
Total S. & Cent. America	6999	7254	7581	7200	6861	6281	6048	5744	5785	6295	7029	11.7%	†	8.5%
Denmark	178	167	158	142	138	116	103	72	66	65	60	-8.3%	-10.3%	0.1%
Italy	114	120	113	78	86	97	89	112	100	92	88	-4.9%	-2.6%	0.1%
Norway	1543	1570	1614	1655	1629	1527	1473	1725	1783	1709	1818	6.4%	1.7%	2.2%
Romania	83	82	80	76	73	72	71	68	66	62	59	-4.6%	-3.3%	0.1%
United Kingdom	810	791	903	933	913	1002	1019	961	807	742	659	-11.2%	-2.0%	0.8%
Other Europe	328	327	317	297	284	289	285	274	273	258	260	0.6%	-2.3%	0.3%
Total Europe	3057	3056	3186	3180	3124	3103	3040	3212	3096	2929	2944	0.5%	-0.4%	3.6%
Azerbaijan	877	849	840	826	781	783	762	702	707	667	619	-7.3%	-3.4%	0.7%
Kazakhstan	1720	1701	1672	1637	1813	1900	1903	1796	1805	1771	1891	6.8%	1.0%	2.3%
Russian Federation	10528	10479	10617	10863	10898	11083	11186	10192	10455	10669	10554	-1.1%	†	12.8%
Turkmenistan	239	246	254	250	248	236	228	189	179	173	166	-3.9%	-3.6%	0.2%
Uzbekistan	69	63	60	57	61	64	62	44	46	45	43	-5.3%	-4.6%	0.1%
Other CIS	35	35	36	36	37	38	39	39	41	43	44	3.2%	2.3%	0.1%
Total CIS	13468	13373	13478	13670	13839	14104	14180	12963	13233	13368	13317	-0.4%	-0.1%	16.1%
Iran	3192	3273	3392	4090	4491	4241	3023	2734	3184	3312	3940	19.0%	2.1%	4.8%
Iraq	3058	3198	3945	4375	4473	4568	4712	4049	4032	4446	4271	-3.9%	3.4%	5.2%
Kuwait	2847	2830	2782	2860	2704	2737	2678	2438	2415	2707	2590	-4.3%	-0.9%	3.1%
Oman	942	943	981	1004	971	978	971	951	971	1064	1049	-1.5%	1.1%	1.3%
Qatar	1463	1426	1374	1373	1333	1328	1266	1288	1256	1286	1310	1.9%	-1.1%	1.6%
Saudi Arabia	9875	9941	10420	10688	10175	10533	10145	9430	9394	10509	9609	-8.6%	-0.3%	11.6%
Syria	45	23	19	17	17	16	25	33	33	33	30	-7.7%	-3.8%	†
United Arab Emirates	3058	3053	3262	3366	3250	3293	3345	3072	3016	3364	3251	-3.4%	0.6%	3.9%
Yemen	174	128	28	16	44	67	67	60	55	46	22	-52.6%	-18.7%	†
Other Middle East	199	204	203	204	198	196	196	184	193	193	201	4.1%	0.1%	0.2%
Total Middle East	24851	25020	26407	27994	27656	27956	26427	24239	24550	26959	26274	-2.5%	0.6%	31.7%
Algeria	1275	1329	1290	1316	1287	1259	1239	1099	1105	1178	1137	-3.4%	-1.1%	1.4%
Angola	1716	1672	1780	1722	1632	1479	1373	1278	1130	1144	1103	-3.5%	-4.3%	1.3%
Chad	91	89	111	117	98	116	127	126	116	124	134	8.2%	4.0%	0.2%
Republic of Congo	234	245	227	225	263	323	329	300	267	262	271	3.6%	1.5%	0.3%
Egypt	643	667	662	631	603	617	597	587	561	568	565	-0.6%	-1.3%	0.7%
Equatorial Guinea	261	266	242	204	174	157	144	143	119	108	78	-27.6%	-11.4%	0.1%
Gabon	213	211	214	221	210	193	218	207	181	191	223	17.0%	0.4%	0.3%
Libya	1025	510	422	397	909	1144	1205	405	1246	1103	1231	11.7%	1.8%	1.5%
Nigeria	2193	2188	2119	1822	1890	1922	2014	1833	1620	1378	1471	6.7%	-3.9%	1.8%
South Sudan	100	155	148	137	147	144	172	165	153	141	148	4.7%	4.0%	0.2%
Sudan	118	120	109	84	70	74	72	63	64	62	57	-7.3%	-6.9%	0.1%
Tunisia	62	58	52	46	39	38	36	33	41	35	33	-4.5%	-6.0%	†
Other Africa	242	247	276	270	317	315	347	328	287	274	267	-2.6%	1.0%	0.3%
Total Africa	8173	7756	7651	7190	7639	7782	7872	6568	6889	6566	6719	2.3%	-1.9%	8.1%
Australia	335	353	322	290	263	282	361	351	335	311	281	-9.5%	-1.7%	0.3%
Brunei	122	114	115	109	101	100	110	100	98	84	84	0.2%	-3.7%	0.1%
China	4216	4246	4309	3999	3846	3802	3848	3901	3994	4111	4198	2.1%	†	5.1%
India	785	778	772	752	744	719	677	636	620	609	605	-0.7%	-2.6%	0.7%
Indonesia	825	789	786	829	801	772	745	708	659	612	606	-1.1%	-3.0%	0.7%
Malaysia	588	610	662	667	660	653	610	556	511	502	508	1.1%	-1.5%	0.6%
Thailand	241	233	248	258	240	228	228	202	177	143	136	-5.0%	-5.5%	0.2%
Vietnam	337	315	342	308	275	243	225	195	185	182	175	-3.8%	-6.3%	0.2%
Other Asia Pacific	233	257	261	246	237	204	202	184	177	151	144	-4.5%	-4.7%	0.2%
Total Asia Pacific	7681	7695	7816	7457	7167	7004	7006	6834	6755	6707	6737	0.5%	-1.3%	8.1%
Total World	77732	79131	81688	81561	81808	83611	83275	77053	78079	81385	82757	1.7%	0.6%	100.0%
of which: OECD	17749	19233	19945	19095	19637	21497	22854	21708	21810	22436	23642	5.4%	2.9%	28.6%
Non-OECD	59983	59898	61743	62466	62172	62114	60421	55345	56269	58949	59116	0.3%	-0.1%	71.4%
OPEC	31511	31294	32841	33746	33553	33402	31396	27616	28338	30388	29985	-1.3%	-0.5%	36.2%
Non-OPEC	46221	47836	48847	47815	48255	50209	51879	49437	49741	50997	52772	3.5%	1.3%	63.8%
European Union	546	542	522	456	450	436	403	382	359	334	317	-5.3%	-5.3%	0.4%

Source: includes data from FGE Iran Service.

* Includes crude oil, shale/tight oil, oil sands, lease condensate or gas condensates that require further refining. Excludes liquid fuels from other sources such as biomass and synthetic derivatives of coal and natural gas.

† Less than 0.05%.

Note: Annual changes and shares of total are calculated using thousand barrels daily figures.

Oil Natural gas liquids production in thousands of barrels per day*

Thousand barrels daily												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Canada	514	513	525	595	597	647	682	660	669	708	718	1.4%	3.4%	5.3%
Mexico	353	355	320	302	276	235	217	205	170	158	164	3.8%	-7.3%	1.2%
US	2606	3015	3342	3509	3783	4369	4824	5175	5425	5933	6431	8.4%	9.5%	47.2%
Total North America	3473	3883	4187	4407	4656	5252	5724	6040	6263	6800	7313	7.6%	7.7%	53.7%
Argentina	104	105	114	99	110	102	112	120	114	123	128	3.7%	2.0%	0.9%
Brazil	86	87	88	97	110	104	102	90	86	91	101	10.7%	1.6%	0.7%
Colombia	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ecuador	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Guyana	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peru	54	54	49	50	48	47	49	48	46	43	43	1.7%	-2.1%	0.3%
Trinidad & Tobago	34	33	30	25	27	24	23	20	17	15	12	-23.4%	-10.2%	0.1%
Venezuela	116	114	117	105	104	88	80	52	49	47	44	-5.0%	-9.2%	0.3%
Other S. & Cent. America	17	14	13	12	15	14	13	13	13	12	11	-9.7%	-4.0%	0.1%
Total S. & Cent. America	412	407	411	389	414	379	378	342	325	331	339	2.4%	-1.9%	2.5%
Denmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Italy	-	-	-	-	-	-	-	-	-	2	2	20.8%	-	†
Norway	306	324	338	349	352	335	301	293	252	197	204	3.6%	-4.0%	1.5%
Romania	3	3	3	4	3	3	4	4	4	4	3	-6.2%	1.8%	†
United Kingdom	55	62	60	82	92	90	99	88	67	67	56	-16.3%	0.1%	0.4%
Other Europe	16	14	14	15	18	18	17	15	16	16	15	-1.0%	-0.3%	0.1%
Total Europe	380	404	415	450	466	446	421	400	339	284	281	-1.3%	-3.0%	2.1%
Azerbaijan	1	2	1	1	1	1	1	1	1	1	2	39.5%	2.2%	†
Kazakhstan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Russian Federation	278	448	470	479	476	479	493	474	544	533	522	-2.2%	6.5%	3.8%
Turkmenistan	17	17	17	20	21	23	27	30	27	30	28	-6.2%	5.3%	0.2%
Uzbekistan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other CIS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total CIS	297	467	488	500	497	503	521	505	573	565	551	-2.3%	6.4%	4.0%
Iran	418	441	461	488	448	479	487	496	582	633	722	14.1%	5.6%	5.3%
Iraq	41	40	41	48	64	64	68	64	70	74	84	13.3%	7.3%	0.6%
Kuwait	287	276	288	290	305	313	299	283	291	329	318	-3.2%	1.0%	2.3%
Oman	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Qatar	471	466	470	473	450	471	470	427	441	457	461	0.8%	-0.2%	3.4%
Saudi Arabia	1518	1577	1578	1718	1717	1728	1687	1609	1560	1682	1780	5.8%	1.6%	13.1%
Syria	14	10	8	8	8	8	9	10	10	10	10	-3.0%	-3.9%	0.1%
United Arab Emirates	482	539	614	654	630	600	639	608	625	656	671	2.2%	3.3%	4.9%
Yemen	24	25	26	26	27	28	28	28	28	28	28	-	1.2%	0.2%
Other Middle East	10	10	10	10	10	11	19	18	15	16	16	-1.4%	5.0%	0.1%
Total Middle East	3266	3386	3494	3715	3659	3703	3705	3543	3622	3885	4088	5.2%	2.3%	30.0%
Algeria	210	260	268	261	254	252	247	233	248	265	271	2.2%	2.6%	2.0%
Angola	22	30	16	23	39	40	47	47	47	47	47	-0.8%	7.7%	0.3%
Chad	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Republic of Congo	9	8	7	7	7	7	7	7	7	7	7	-	-2.5%	0.1%
Egypt	67	47	64	60	57	58	56	44	47	45	45	1.5%	-3.8%	0.3%
Equatorial Guinea	21	19	17	19	21	19	17	15	12	13	10	-21.8%	-7.1%	0.1%
Gabon	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Libya	22	8	15	15	20	21	27	15	40	40	40	-	6.0%	0.3%
Nigeria	82	86	80	76	77	79	79	61	59	67	70	4.3%	-1.6%	0.5%
South Sudan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sudan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tunisia	6	5	5	7	6	5	4	4	5	3	5	45.0%	-2.6%	†
Other Africa	-	-	-	-	-	1	1	3	7	11	15	39.1%	-	0.1%
Total Africa	440	462	472	469	481	481	486	430	471	497	509	2.4%	1.5%	3.7%
Australia	66	67	56	64	59	60	97	103	109	101	101	0.9%	4.4%	0.7%
Brunei	13	12	11	12	13	12	12	10	8	9	9	-	-3.9%	0.1%
China	-	-	-	-	-	-	-	-	-	-	-	-	-	-
India	136	136	133	144	153	173	174	159	151	130	123	-5.4%	-1.1%	0.9%
Indonesia	46	58	52	44	36	36	35	34	33	34	32	-6.3%	-3.5%	0.2%
Malaysia	39	39	35	59	58	60	62	59	60	59	57	-2.1%	4.0%	0.4%
Thailand	225	231	233	231	247	247	246	219	221	185	188	1.6%	-1.8%	1.4%
Vietnam	10	10	9	10	9	13	12	12	11	11	13	10.6%	2.9%	0.1%
Other Asia Pacific	38	36	33	31	32	26	26	21	17	16	14	-13.3%	-9.3%	0.1%
Total Asia Pacific	572	588	562	594	606	626	664	615	610	545	537	-1.4%	-0.6%	3.9%
Total World	8840	9597	10029	10524	10779	11391	11898	11875	12203	12906	13619	5.5%	4.4%	100.0%
of which: OECD	3921	4356	4659	4916	5177	5754	6235	6536	6704	7178	7689	7.1%	7.0%	56.5%
Non-OECD	4918	5241	5370	5608	5602	5637	5663	5339	5499	5728	5930	3.5%	1.9%	43.5%
OPEC	3230	3398	3501	3704	3686	3691	3684	3491	3590	3859	4063	5.3%	2.3%	29.8%
Non-OPEC	5610	6199	6529	6820	7093	7699	8214	8384	8613	9047	9556	5.6%	5.5%	70.2%
European Union	13	12	12	13	13	12	11	10	10	11	11	0.1%	-1.2%	0.1%

Source: Includes data from FGE, FGE Iran Service, and ICIS.

* Includes ethane, LPG and naphtha separated from the production of natural gas. Excludes condensates.

† Less than 0.05%.

Note: Annual changes and shares of total are calculated using thousand barrels daily figures.

Oil Total liquids consumption in thousands of barrels per day*

Thousand barrels daily												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Canada	2471	2467	2487	2494	2471	2542	2552	2181	2283	2388	2439	2.1%	-0.1%	2.4%
Mexico	2172	2093	2044	2091	2044	1925	1825	1611	1777	1939	1970	1.6%	-1.0%	1.9%
US	18967	19100	19532	19692	19952	20512	20543	18186	19890	20010	20246	1.2%	0.7%	19.6%
Total North America	23609	23660	24062	24277	24467	24978	24920	21977	23950	24337	24654	1.3%	0.4%	23.8%
Argentina	711	709	729	713	713	684	608	527	638	757	721	-4.8%	0.1%	0.7%
Brazil	3127	3267	3192	3004	3045	3013	3076	2873	3039	3158	3271	3.6%	0.5%	3.2%
Chile	348	347	340	359	366	379	378	346	380	411	416	1.3%	1.8%	0.4%
Colombia	352	373	341	410	406	413	416	350	449	500	513	2.5%	3.8%	0.5%
Ecuador	247	260	254	240	237	255	249	203	249	271	288	6.2%	1.5%	0.3%
Peru	224	221	236	251	257	264	272	211	260	272	280	2.9%	2.2%	0.3%
Trinidad & Tobago	43	40	44	45	40	34	35	30	30	32	33	3.1%	-2.6%	†
Venezuela	869	809	711	628	548	425	411	230	247	310	396	27.8%	-7.5%	0.4%
Central America	371	384	422	438	454	450	487	387	447	472	500	6.1%	3.0%	0.5%
Other Caribbean	609	618	650	667	662	667	621	536	539	538	564	4.8%	-0.8%	0.5%
Other South America	201	202	208	219	223	232	239	214	249	253	255	0.8%	2.4%	0.2%
Total S. & Cent. America	7102	7232	7126	6973	6950	6819	6794	5908	6527	6973	7237	3.8%	0.2%	7.0%
Austria	262	255	258	264	265	270	276	239	253	243	243	†	-0.7%	0.2%
Belgium	612	606	619	625	632	679	639	557	618	601	574	-4.4%	-0.6%	0.6%
Bulgaria	81	88	98	101	105	105	109	99	104	111	111	0.3%	3.2%	0.1%
Croatia	64	66	68	68	73	71	71	60	65	69	70	2.2%	1.0%	0.1%
Cyprus	46	46	47	51	53	52	52	44	46	49	49	-0.1%	0.5%	†
Czech Republic	188	199	191	179	213	214	218	190	209	213	213	†	1.3%	0.2%
Denmark	156	155	158	158	158	160	160	137	139	158	159	0.6%	0.2%	0.2%
Estonia	31	29	29	29	30	30	27	28	28	28	27	-3.6%	-1.4%	†
Finland	213	207	207	210	208	208	208	187	183	192	173	-9.8%	-2.0%	0.2%
France	1667	1619	1646	1614	1644	1605	1600	1340	1447	1447	1430	-1.2%	-1.5%	1.4%
Germany	2404	2344	2336	2377	2440	2318	2340	2129	2113	2147	2032	-5.4%	-1.7%	2.0%
Greece	285	284	297	297	301	298	308	251	266	303	303	†	0.6%	0.3%
Hungary	131	147	157	155	168	180	181	168	182	180	175	-2.7%	3.0%	0.2%
Iceland	15	16	17	19	21	23	20	13	15	18	17	-5.5%	1.6%	†
Ireland	141	141	146	152	153	158	159	134	145	154	155	0.9%	0.9%	0.1%
Italy	1289	1220	1293	1284	1304	1331	1277	1064	1182	1260	1248	-0.9%	-0.3%	1.2%
Latvia	34	34	36	37	38	34	39	35	36	35	35	0.5%	0.3%	†
Lithuania	53	53	57	62	65	69	69	65	66	67	68	2.0%	2.5%	0.1%
Luxembourg	58	57	56	56	59	63	64	52	56	51	50	-2.3%	-1.5%	†
Netherlands	953	944	923	939	948	933	907	869	866	852	880	3.2%	-0.8%	0.9%
North Macedonia	19	19	20	23	22	23	23	21	22	24	24	1.2%	2.7%	†
Norway	224	219	225	222	228	234	226	210	215	217	226	4.4%	0.1%	0.2%
Poland	518	518	544	588	666	689	707	668	699	726	728	0.3%	3.5%	0.7%
Portugal	238	238	244	245	246	245	253	208	216	234	224	-4.4%	-0.6%	0.2%
Romania	181	185	189	200	211	212	224	216	231	235	234	-0.6%	2.6%	0.2%
Slovakia	75	71	78	80	90	91	86	86	91	92	92	0.5%	2.1%	0.1%
Slovenia	51	50	49	52	54	56	54	46	49	51	46	-10.3%	-1.1%	†
Spain	1181	1188	1232	1266	1281	1312	1314	1059	1167	1287	1267	-1.6%	0.7%	1.2%
Sweden	300	298	295	310	315	286	291	262	294	275	275	-0.1%	-0.9%	0.3%
Switzerland	248	225	228	216	223	215	221	183	184	189	193	1.9%	-2.5%	0.2%
Türkiye	742	758	887	943	1017	1022	1029	973	1036	1075	1139	6.0%	4.4%	1.1%
Ukraine	275	245	216	229	231	241	242	229	232	202	205	1.6%	-2.9%	0.2%
United Kingdom	1508	1515	1555	1588	1612	1597	1568	1221	1257	1361	1381	1.5%	-0.9%	1.3%
Other Europe	299	294	305	325	341	338	350	326	341	355	361	1.7%	1.9%	0.3%
Total Europe	14543	14331	14704	14965	15414	15362	15311	13368	14055	14502	14411	-0.6%	-0.1%	13.9%
Azerbaijan	101	100	100	99	100	114	115	105	120	126	130	3.1%	2.5%	0.1%
Belarus	160	164	138	147	147	171	175	166	159	147	148	1.2%	-0.7%	0.1%
Kazakhstan	285	294	274	279	283	304	307	264	327	323	349	8.1%	2.0%	0.3%
Russian Federation	3218	3365	3277	3329	3336	3363	3429	3308	3530	3624	3647	0.6%	1.3%	3.5%
Turkmenistan	138	154	128	178	143	153	137	180	142	147	146	-0.5%	0.6%	0.1%
Uzbekistan	87	93	88	111	103	118	121	128	126	126	126	0.2%	3.8%	0.1%
Other CIS	77	76	81	88	85	97	90	88	97	101	102	0.5%	2.9%	0.1%
Total CIS	4066	4247	4085	4231	4197	4320	4373	4240	4501	4593	4648	1.2%	1.3%	4.5%
Iran	1890	1772	1552	1590	1652	1722	1796	1722	1794	1853	1817	-2.0%	-0.4%	1.8%
Iraq	682	654	645	657	778	762	753	656	735	825	875	6.0%	2.5%	0.8%
Israel	213	200	211	217	227	230	232	201	210	228	225	-1.1%	0.6%	0.2%
Kuwait	467	451	459	438	449	470	451	425	437	420	411	-2.0%	-1.3%	0.4%
Oman	176	182	186	189	211	224	217	180	199	226	233	2.8%	2.8%	0.2%
Qatar	305	315	357	375	341	351	372	294	319	360	370	2.7%	2.0%	0.4%
Saudi Arabia	3468	3789	3964	4100	4052	3871	3632	3437	3600	3854	4052	5.1%	1.6%	3.9%
United Arab Emirates	847	881	919	1002	993	992	963	909	966	1110	1139	2.7%	3.0%	1.1%
Other Middle East	645	654	568	532	548	567	544	500	528	524	525	0.1%	-2.0%	0.5%
Total Middle East	8693	8897	8862	9099	9250	9188	8962	8324	8788	9401	9647	2.6%	1.0%	9.3%
Algeria	387	401	425	412	408	413	430	385	405	418	440	5.2%	1.3%	0.4%
Egypt	767	801	817	843	809	727	692	607	654	756	742	-1.8%	-0.3%	0.7%
Morocco	282	272	268	275	291	287	293	259	291	299	300	0.4%	0.6%	0.3%
South Africa	556	548	605	582	583	583	578	467	504	514	524	2.0%	-0.6%	0.5%
Eastern Africa	498	520	566	582	622	655	654	602	645	597	598	0.2%	1.8%	0.6%
Middle Africa	272	286	281	258	247	252	269	220	257	295	307	4.2%	1.2%	0.3%
Western Africa	590	548	561	624	686	803	816	800	879	916	884	-3.4%	4.1%	0.9%
Other Northern Africa	347	357	318	298	330	335	327	305	346	382	380	-0.4%	0.9%	0.4%
Other Southern Africa	54	56	57	56	56	59	58	53	54	58	60	3.1%	1.0%	0.1%
Total Africa	3755	3789	3898	3930	4032	4114	4116	3697	4035	4234	4235	†	1.2%	4.1%
Australia	1038	1032	1021	1021	1068	1080	1069	919	944	1002	1060	5.7%	0.2%	1.0%
Bangladesh	117	128	155	160	181	208	204	171	233	283	240	-15.3%	7.5%	0.2%
China	10648	11106	11962	12370	13070	13727	14410	14479	14966	15048	16658	10.7%	4.6%	16.1%
China Hong Kong SAR	352	335	368	380	428	435	408							

Oil Consumption in thousands of barrels per day*

Thousand barrels daily												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Canada	2413	2408	2431	2439	2408	2476	2486	2121	2219	2312	2351	1.7%	-0.3%	2.3%
Mexico	2168	2087	2038	2085	2038	1918	1818	1602	1770	1931	1962	1.6%	-1.0%	2.0%
US	17992	18111	18499	18593	18845	19417	19424	17183	18785	18862	18984	0.6%	0.5%	18.9%
Total North America	22573	22606	22968	23117	23291	23811	23727	20907	22774	23106	23296	0.8%	0.3%	23.2%
Argentina	685	678	695	677	672	645	567	504	613	723	690	-4.7%	0.1%	0.7%
Brazil	2651	2747	2583	2453	2485	2368	2361	2218	2394	2512	2567	2.2%	-0.3%	2.6%
Chile	348	347	340	359	366	379	378	346	380	411	416	1.3%	1.8%	0.4%
Colombia	335	356	323	393	389	392	394	331	429	478	484	1.3%	3.7%	0.5%
Ecuador	247	260	254	239	236	255	249	203	248	271	287	6.2%	1.5%	0.3%
Peru	215	213	227	241	246	254	262	201	248	261	269	2.9%	2.2%	0.3%
Trinidad & Tobago	43	40	44	45	40	34	35	30	30	32	33	3.1%	-2.6%	†
Venezuela	869	809	711	628	548	425	411	230	247	310	396	27.8%	-7.5%	0.4%
Central America	370	383	421	437	452	449	486	387	446	471	499	6.1%	3.0%	0.5%
Other Caribbean	600	609	640	657	652	658	612	527	531	529	556	5.0%	-0.8%	0.6%
Other South America	197	197	202	212	216	225	230	206	240	245	247	0.7%	2.3%	0.2%
Total S. & Cent. America	6561	6640	6440	6342	6302	6084	5986	5184	5805	6244	6445	3.2%	-0.2%	6.4%
Austria	251	244	247	253	254	259	265	230	244	234	234	0.1%	-0.7%	0.2%
Belgium	603	597	613	615	620	668	628	541	600	583	556	-4.5%	-0.8%	0.6%
Bulgaria	79	85	95	97	102	101	105	95	100	107	106	-0.8%	3.0%	0.1%
Croatia	63	65	68	68	73	71	69	59	63	68	70	2.3%	1.0%	0.1%
Cyprus	46	45	46	51	52	52	52	44	45	48	48	-0.2%	0.5%	†
Czech Republic	181	192	184	172	205	207	209	181	201	205	206	0.2%	1.3%	0.2%
Denmark	150	150	153	153	153	154	154	130	133	152	153	0.7%	0.2%	0.2%
Estonia	31	29	29	29	30	30	27	27	27	28	27	-4.0%	-1.6%	†
Finland	208	197	196	206	200	200	199	178	168	179	164	-8.4%	-2.3%	0.2%
France	1606	1553	1579	1547	1577	1538	1528	1275	1373	1360	1348	-0.9%	-1.7%	1.3%
Germany	2336	2273	2269	2310	2372	2247	2270	2047	2038	2072	1955	-5.7%	-1.8%	2.0%
Greece	282	281	294	293	298	294	304	246	261	297	297	†	0.5%	0.3%
Hungary	128	142	153	150	164	175	176	161	175	172	167	-3.0%	2.7%	0.2%
Iceland	15	16	17	19	21	23	19	13	14	18	17	-5.8%	1.3%	†
Ireland	139	138	143	150	149	155	154	130	141	149	148	-0.7%	0.6%	0.1%
Italy	1261	1196	1264	1255	1274	1300	1259	1039	1156	1236	1221	-1.2%	-0.3%	1.2%
Latvia	33	34	35	36	37	34	38	33	35	34	35	0.8%	0.3%	†
Lithuania	52	51	56	61	63	67	62	63	64	65	65	2.0%	2.3%	0.1%
Luxembourg	57	55	54	54	57	60	61	49	53	48	47	-2.8%	-1.9%	†
Netherlands	944	934	914	932	939	919	889	849	846	827	850	2.8%	-1.0%	0.8%
North Macedonia	19	19	20	23	22	23	23	21	22	24	24	1.2%	2.7%	†
Norway	221	216	221	215	217	226	215	201	206	209	213	2.2%	-0.4%	0.2%
Poland	500	501	528	576	650	667	683	644	674	698	700	0.2%	3.4%	0.7%
Portugal	232	232	236	239	240	239	247	203	209	228	216	-5.1%	-0.7%	0.2%
Romania	177	181	184	193	204	204	215	206	221	224	223	-0.3%	2.4%	0.2%
Slovakia	73	68	74	77	86	87	83	83	87	88	88	0.5%	2.0%	0.1%
Slovenia	50	49	49	52	53	54	52	43	47	49	44	-11.1%	-1.3%	†
Spain	1153	1159	1202	1233	1243	1262	1265	1016	1123	1245	1228	-1.4%	0.6%	1.2%
Sweden	286	282	277	288	294	261	266	237	266	240	240	†	-1.7%	0.2%
Switzerland	747	725	727	714	720	711	716	617	618	615	615	1.7%	-2.7%	0.2%
Türkiye	404	404	404	404	404	404	404	404	404	404	404	6.0%	4.5%	1.1%
Ukraine	274	244	215	228	230	240	239	227	230	201	204	1.6%	-2.9%	0.2%
United Kingdom	1481	1484	1529	1563	1587	1564	1528	1183	1217	1309	1325	1.2%	-1.1%	1.3%
Other Europe	299	294	305	324	341	338	350	325	341	355	360	1.7%	1.9%	0.4%
Total Europe	14211	13984	14358	14616	15040	14947	14882	12926	13591	14009	13904	-0.8%	-0.2%	13.9%
Azerbaijan	101	100	100	99	100	114	115	105	120	126	130	3.1%	2.5%	0.1%
Belarus	159	163	137	147	147	171	174	166	159	147	148	1.2%	-0.7%	0.1%
Kazakhstan	285	294	274	279	283	304	307	264	327	323	349	8.1%	2.0%	0.3%
Russian Federation	3218	3365	3277	3328	3334	3360	3425	3304	3523	3615	3635	0.6%	1.2%	3.6%
Turkmenistan	138	154	128	178	143	153	137	180	142	147	146	-0.5%	0.6%	0.1%
Uzbekistan	87	93	88	111	103	118	121	128	126	126	126	0.2%	3.8%	0.1%
Other CIS	77	76	81	88	85	97	90	88	97	101	102	0.5%	2.9%	0.1%
Total CIS	4066	4246	4085	4229	4195	4317	4369	4235	4494	4584	4636	1.1%	1.3%	4.6%
Iran	1890	1772	1552	1590	1652	1722	1796	1722	1794	1853	1817	-2.0%	-0.4%	1.8%
Iraq	682	654	645	657	778	762	753	656	735	825	875	6.0%	2.5%	0.9%
Israel	212	199	211	216	226	229	231	199	209	226	223	-1.2%	0.5%	0.2%
Kuwait	467	451	459	438	449	470	451	425	437	420	411	-2.0%	-1.3%	0.4%
Oman	176	182	186	189	211	224	217	180	199	226	233	2.8%	2.8%	0.2%
Qatar	305	315	357	375	341	351	372	294	319	360	370	2.7%	2.0%	0.4%
Saudi Arabia	3468	3789	3964	4100	4052	3871	3632	3437	3600	3854	4052	5.1%	1.6%	4.0%
United Arab Emirates	847	881	919	1002	993	992	963	909	966	1110	1139	2.7%	3.0%	1.1%
Other Middle East	645	654	568	532	548	567	544	500	528	524	525	0.1%	-2.0%	0.5%
Total Middle East	8693	8896	8861	9099	9249	9187	8961	8323	8786	9399	9646	2.6%	1.0%	9.6%
Algeria	387	401	425	412	408	413	430	385	405	418	440	5.2%	1.3%	0.4%
Egypt	767	801	817	843	809	727	692	607	654	756	742	-1.8%	-0.3%	0.7%
Morocco	282	272	268	275	291	287	293	259	291	299	300	0.4%	0.6%	0.3%
South Africa	555	547	603	581	582	580	576	465	502	512	522	2.0%	-0.6%	0.5%
Eastern Africa	498	520	565	581	622	655	653	601	645	597	597	0.2%	1.8%	0.6%
Middle Africa	272	286	281	258	247	252	269	220	257	295	307	4.2%	1.2%	0.3%
Western Africa	590	548	561	624	686	803	816	800	879	916	884	-3.4%	4.1%	0.9%
Other Northern Africa	347	357	318	298	330	335	327	305	346	382	380	-0.4%	0.9%	0.4%
Other Southern Africa	54	56	57	56	56	59	58	53	54	58	60	3.1%	1.0%	0.1%
Total Africa	3753	3787	3896	3928	4030	4111	4113	3694	4032	4231	4233	†	1.2%	4.2%
Australia	1031	1025	1015	1016	1062	1075	1064	915	941	999	1056	5.8%	0.2%	1.1%
Bangladesh	117	128	155	160	181	208	204	171	233	283	240	-15.3%	7.5%	0.2%
China	10563	11018	11890	12297	13003	13641	14316	14404	14888	14970	16577	10.7%	4.6%	16.5%
China Hong Kong SAR	351	335	367	379	427	433	407	283						

Exajoules	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		Share
												2023	2013-23	2023
Canada	4.60	4.59	4.60	4.58	4.54	4.68	4.67	3.97	4.13	4.31	4.35	1.1%	-0.6%	2.2%
Mexico	4.23	4.04	3.92	4.02	3.93	3.68	3.51	3.02	3.44	3.77	3.84	1.7%	-1.0%	2.0%
US	34.66	34.89	35.61	35.88	36.23	37.09	37.04	32.53	35.53	35.75	35.86	0.3%	0.3%	18.3%
Total North America	43.49	43.52	44.12	44.48	44.69	45.45	45.21	39.51	43.10	43.83	44.05	0.5%	0.1%	22.4%
Argentina	1.38	1.37	1.40	1.35	1.34	1.28	1.16	1.04	1.26	1.48	1.41	-4.9%	0.2%	0.7%
Brazil	5.30	5.51	5.17	4.90	4.95	4.71	4.69	4.42	4.78	5.01	5.11	2.0%	-0.4%	2.6%
Chile	0.70	0.70	0.68	0.72	0.73	0.76	0.76	0.69	0.76	0.82	0.83	1.3%	1.7%	0.4%
Colombia	0.68	0.72	0.65	0.79	0.78	0.79	0.79	0.67	0.86	0.96	0.98	1.6%	3.7%	0.5%
Ecuador	0.50	0.53	0.51	0.48	0.47	0.51	0.49	0.40	0.49	0.54	0.58	6.8%	1.4%	0.3%
Peru	0.42	0.41	0.44	0.47	0.48	0.49	0.51	0.39	0.48	0.50	0.52	2.8%	2.1%	0.3%
Trinidad & Tobago	0.09	0.09	0.09	0.09	0.08	0.07	0.07	0.06	0.06	0.07	0.07	2.5%	-2.8%	†
Venezuela	1.76	1.63	1.42	1.25	1.08	0.86	0.84	0.49	0.52	0.65	0.84	30.6%	-7.1%	0.4%
Central America	0.78	0.80	0.88	0.91	0.94	0.93	1.01	0.79	0.91	0.96	1.02	6.3%	2.8%	0.5%
Other Caribbean	1.26	1.27	1.34	1.37	1.35	1.37	1.29	1.12	1.11	1.11	1.16	4.9%	-0.8%	0.6%
Other South America	0.40	0.40	0.40	0.43	0.43	0.45	0.46	0.41	0.48	0.49	0.50	0.9%	2.3%	0.3%
Total S. & Cent. America	13.26	13.41	12.99	12.78	12.63	12.21	12.08	10.48	11.72	12.59	13.01	3.4%	-0.2%	6.6%
Austria	0.52	0.51	0.51	0.53	0.53	0.54	0.55	0.48	0.50	0.49	0.49	†	-0.8%	0.2%
Belgium	1.25	1.22	1.25	1.27	1.29	1.38	1.29	1.11	1.23	1.19	1.13	-5.0%	-0.9%	0.6%
Bulgaria	0.16	0.17	0.19	0.20	0.20	0.20	0.21	0.19	0.20	0.22	0.21	-1.2%	3.0%	0.1%
Croatia	0.13	0.14	0.14	0.14	0.15	0.15	0.14	0.12	0.13	0.14	0.15	2.3%	1.1%	0.1%
Cyprus	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.09	0.10	0.10	0.10	-0.2%	0.5%	0.1%
Czech Republic	0.37	0.39	0.38	0.35	0.42	0.42	0.42	0.37	0.41	0.42	0.42	0.4%	1.3%	0.2%
Denmark	0.32	0.31	0.32	0.32	0.32	0.32	0.32	0.27	0.28	0.31	0.32	0.9%	†	0.2%
Estonia	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	-4.3%	-1.8%	†
Finland	0.41	0.39	0.39	0.41	0.40	0.40	0.39	0.35	0.33	0.35	0.33	-7.6%	-2.3%	0.2%
France	3.31	3.20	3.25	3.20	3.25	3.17	3.14	2.62	2.82	2.80	2.76	-1.3%	-1.8%	1.4%
Germany	4.80	4.67	4.67	4.76	4.85	4.61	4.65	4.21	4.16	4.25	4.01	-5.5%	-1.8%	2.0%
Greece	0.59	0.59	0.61	0.61	0.63	0.62	0.64	0.52	0.55	0.62	0.62	-0.1%	0.4%	0.3%
Hungary	0.25	0.28	0.30	0.30	0.33	0.35	0.35	0.32	0.35	0.35	0.34	-2.9%	2.9%	0.2%
Iceland	0.03	0.03	0.04	0.04	0.04	0.05	0.04	0.03	0.03	0.04	0.04	-6.1%	1.2%	†
Ireland	0.29	0.28	0.29	0.31	0.31	0.32	0.32	0.27	0.29	0.31	0.30	-1.2%	0.6%	0.2%
Italy	2.54	2.42	2.56	2.54	2.57	2.63	2.55	2.11	2.34	2.51	2.47	-1.3%	-0.3%	1.3%
Latvia	0.07	0.07	0.07	0.08	0.08	0.07	0.08	0.07	0.07	0.07	0.07	-0.2%	0.2%	†
Lithuania	0.11	0.11	0.12	0.13	0.13	0.14	0.14	0.13	0.13	0.13	0.14	1.7%	2.3%	0.1%
Luxembourg	0.12	0.11	0.11	0.11	0.12	0.12	0.13	0.10	0.11	0.10	0.10	-3.0%	-2.0%	†
Netherlands	1.91	1.87	1.82	1.86	1.88	1.83	1.78	1.70	1.69	1.66	1.70	2.5%	-1.1%	0.9%
North Macedonia	0.04	0.04	0.04	0.05	0.04	0.05	0.05	0.04	0.05	0.05	0.05	1.0%	2.8%	†
Norway	0.42	0.41	0.42	0.41	0.40	0.42	0.40	0.37	0.38	0.39	0.38	-0.4%	-1.0%	0.2%
Poland	1.00	1.00	1.05	1.16	1.31	1.34	1.37	1.29	1.35	1.40	1.41	0.2%	3.5%	0.7%
Portugal	0.47	0.47	0.48	0.49	0.49	0.49	0.50	0.41	0.42	0.46	0.45	-4.2%	-0.6%	0.2%
Romania	0.36	0.37	0.38	0.39	0.41	0.41	0.43	0.42	0.45	0.46	0.46	0.1%	2.4%	0.2%
Slovakia	0.15	0.14	0.15	0.16	0.18	0.18	0.17	0.17	0.18	0.18	0.18	0.6%	1.9%	0.1%
Slovenia	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.09	0.10	0.10	0.09	-11.3%	-1.3%	†
Spain	2.43	2.44	2.52	2.59	2.61	2.64	2.65	2.13	2.35	2.61	2.57	-1.6%	0.5%	1.3%
Sweden	0.57	0.56	0.55	0.57	0.58	0.51	0.52	0.48	0.53	0.48	0.47	-2.4%	-2.0%	0.2%
Switzerland	0.51	0.46	0.47	0.44	0.45	0.43	0.44	0.37	0.37	0.38	0.39	1.5%	-2.7%	0.2%
Türkiye	1.48	1.52	1.80	1.92	2.08	2.09	2.08	1.97	2.09	2.18	2.30	5.4%	4.5%	1.2%
Ukraine	0.55	0.48	0.43	0.45	0.45	0.47	0.46	0.44	0.44	0.39	0.39	1.6%	-3.2%	0.2%
United Kingdom	2.98	2.99	3.07	3.13	3.18	3.14	3.07	2.37	2.45	2.65	2.69	1.4%	-1.0%	1.4%
Other Europe	0.64	0.63	0.65	0.69	0.73	0.72	0.75	0.70	0.73	0.76	0.77	1.5%	1.9%	0.4%
Total Europe	29.04	28.54	29.30	29.88	30.67	30.47	30.33	26.37	27.68	28.60	28.33	-0.9%	-0.2%	14.4%
Azerbaijan	0.20	0.20	0.20	0.20	0.20	0.23	0.23	0.21	0.24	0.25	0.26	3.0%	2.5%	0.1%
Belarus	0.33	0.34	0.28	0.30	0.30	0.35	0.36	0.34	0.33	0.30	0.30	1.2%	-0.7%	0.2%
Kazakhstan	0.59	0.60	0.56	0.57	0.57	0.61	0.62	0.54	0.66	0.65	0.69	6.3%	1.6%	0.4%
Russian Federation	6.43	6.75	6.52	6.62	6.60	6.66	6.80	6.54	6.95	7.14	7.21	1.0%	1.2%	3.7%
Turkmenistan	0.27	0.30	0.25	0.35	0.28	0.30	0.26	0.35	0.27	0.28	0.28	†	0.4%	0.1%
Uzbekistan	0.16	0.17	0.16	0.19	0.18	0.20	0.21	0.22	0.22	0.22	0.22	0.3%	3.1%	0.1%
Other CIS	0.15	0.15	0.16	0.17	0.16	0.19	0.17	0.17	0.19	0.20	0.20	0.5%	2.8%	0.1%
Total CIS	8.12	8.51	8.13	8.41	8.30	8.55	8.65	8.37	8.85	9.03	9.16	1.4%	1.2%	4.7%
Iran	3.79	3.51	3.02	3.07	3.13	3.27	3.43	3.30	3.44	3.58	3.50	-2.1%	-0.8%	1.8%
Iraq	1.39	1.34	1.32	1.36	1.61	1.58	1.55	1.35	1.51	1.70	1.80	6.1%	2.6%	0.9%
Israel	0.42	0.39	0.42	0.43	0.45	0.45	0.46	0.40	0.41	0.45	0.44	-1.4%	0.5%	0.2%
Kuwait	0.88	0.84	0.86	0.82	0.84	0.88	0.84	0.78	0.81	0.77	0.76	-1.0%	-1.4%	0.4%
Oman	0.36	0.37	0.38	0.39	0.43	0.45	0.44	0.36	0.40	0.45	0.47	2.7%	2.6%	0.2%
Qatar	0.47	0.49	0.57	0.61	0.55	0.56	0.61	0.46	0.50	0.58	0.61	5.0%	2.8%	0.3%
Saudi Arabia	6.41	7.05	7.43	7.65	7.52	7.12	6.67	6.32	6.60	7.11	7.43	4.5%	1.5%	3.8%
United Arab Emirates	1.67	1.70	1.77	1.93	1.92	1.91	1.86	1.74	1.86	2.14	2.20	2.8%	-2.8%	1.1%
Other Middle East	1.32	1.34	1.16	1.09	1.12	1.15	1.10	1.02	1.07	1.06	1.06	†	-2.2%	0.5%
Total Middle East	16.71	17.02	16.93	17.34	17.55	17.37	16.97	15.72	16.61	17.85	18.28	2.4%	0.9%	9.3%
Algeria	0.77	0.80	0.85	0.83	0.81	0.82	0.85	0.76	0.80	0.82	0.86	5.0%	1.1%	0.4%
Egypt	1.56	1.64	1.67	1.73	1.64	1.46	1.38	1.20	1.29	1.53	1.49	-2.4%	-0.4%	0.8%
Morocco	0.56	0.54	0.52	0.54	0.57	0.55	0.56	0.49	0.56	0.58	0.57	-0.8%	0.2%	0.3%
South Africa	1.15	1.13	1.25	1.20	1.20	1.20	1.19	0.96	1.04	1.06	1.09	2.2%	-0.6%	0.6%
Eastern Africa	1.02	1.07	1.16	1.20	1.28	1.34	1.34	1.23	1.32	1.22	1.22	†	1.8%	0.6%
Middle Africa	0.56	0.59	0.58	0.53	0.50	0.50	0.54	0.43	0.51	0.58	0.61	4.5%	0.8%	0.3%
Western Africa	1.19	1.11												

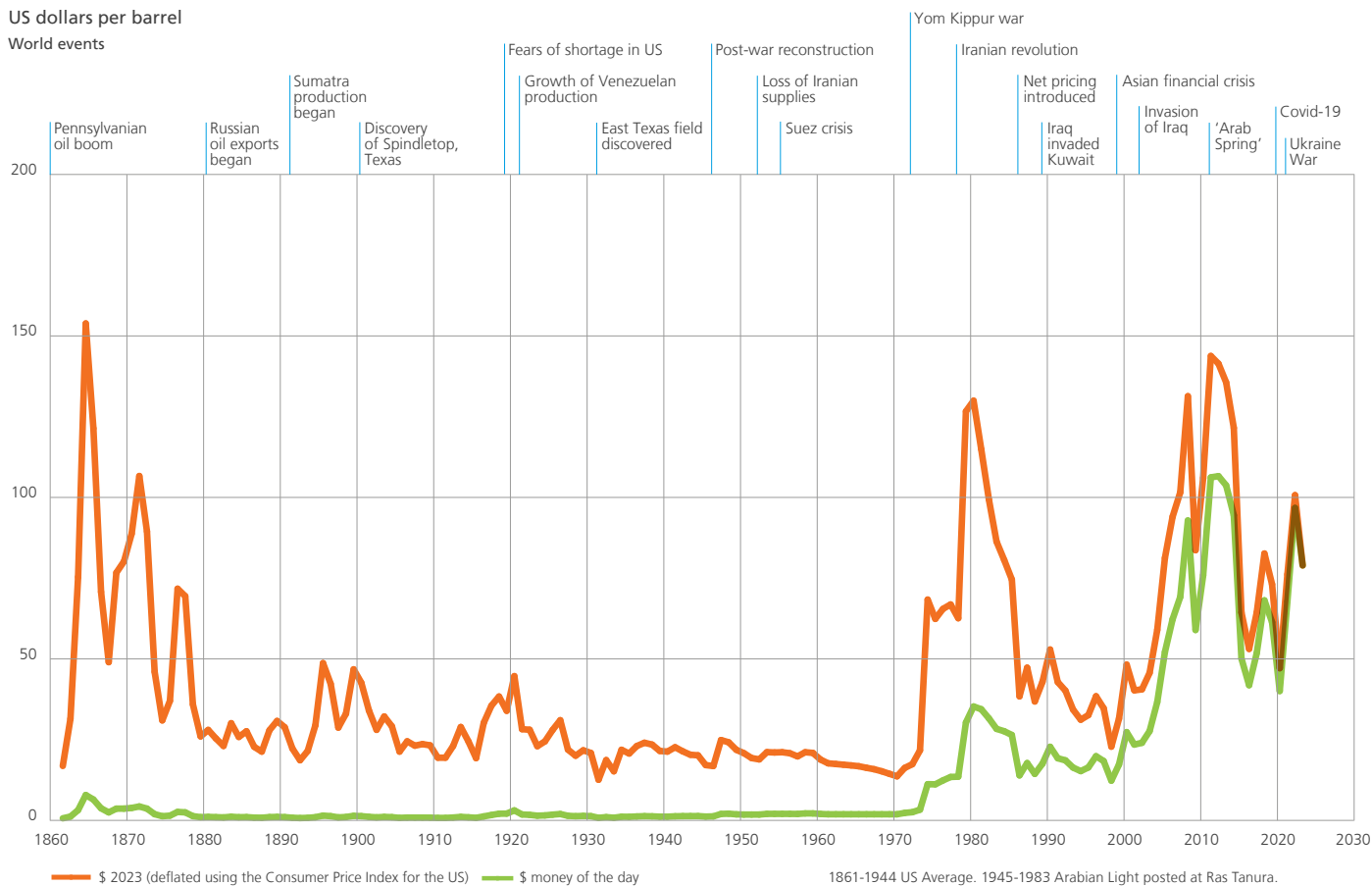
Oil Regional consumption – by product group (continued)

Thousand barrels daily	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		Share	
												2023	2013–23	2023	
Africa															
Light distillates	900	913	994	1080	1125	1229	1254	1177	1311	1357	1312	-3.3%	3.8%	1.3%	
of which: gasoline	896	907	989	1074	1118	1222	1247	1170	1304	1350	1305	-3.4%	3.8%	1.3%	
of which: naphtha	4	6	5	6	7	7	7	7	7	7	7	0.7%	6.8%	†	
Middle distillates	1833	1864	1907	1848	1885	1900	1906	1654	1819	1865	1911	2.4%	0.4%	1.9%	
of which: diesel/gasoil	1514	1565	1629	1587	1617	1637	1651	1507	1647	1653	1665	0.7%	1.0%	1.7%	
of which: jet/kerosene	320	299	278	261	267	263	255	147	172	212	246	16.0%	-2.6%	0.2%	
Fuel oil	420	423	406	400	379	321	278	201	226	321	305	-5.0%	-3.1%	0.3%	
Others	600	587	588	599	642	661	675	662	677	688	705	2.6%	1.6%	0.7%	
of which: ethane and LPG	403	396	402	414	444	467	477	470	479	492	509	3.4%	2.3%	0.5%	
Total Africa	3753	3787	3896	3928	4030	4111	4113	3694	4032	4231	4233	†	1.2%	4.2%	
Asia Pacific															
Light distillates	9254	9522	10340	10626	10994	11310	11583	11005	11829	11690	12300	5.2%	2.9%	12.3%	
of which: gasoline	5520	5632	6197	6418	6624	6886	7135	6558	7008	6912	7353	6.4%	2.9%	7.3%	
of which: naphtha	3733	3890	4143	4208	4371	4424	4449	4447	4821	4778	4948	3.6%	2.9%	4.9%	
Middle distillates	10972	11029	11333	11462	11868	12075	11910	10179	10546	10999	12151	10.5%	1.0%	12.1%	
of which: diesel/gasoil	8635	8656	8870	8851	9134	9229	9045	8281	8718	9233	9727	5.4%	1.2%	9.7%	
of which: jet/kerosene	2337	2373	2463	2611	2735	2846	2865	1898	1828	1766	2424	37.2%	0.4%	2.4%	
Fuel oil	3010	2850	2827	2874	2767	2609	2388	2352	2513	2617	2758	5.4%	-0.9%	2.8%	
Others	7009	7333	7659	8387	8986	9514	10302	10644	10362	10805	10852	0.4%	4.5%	10.8%	
of which: ethane and LPG	3179	3369	3483	3875	4148	4385	4504	4410	4614	4644	4878	5.0%	4.4%	4.9%	
Total Asia Pacific	30245	30734	32160	33349	34615	35508	36184	34180	35250	36110	38061	5.4%	2.3%	38.0%	
of which: China															
Light distillates	3057	3269	3716	3889	4060	4324	4571	4476	4944	4862	5442	11.9%	5.9%	5.4%	
of which: gasoline	2143	2236	2601	2699	2791	2978	3125	2921	3280	3021	3391	12.3%	4.7%	3.4%	
of which: naphtha	914	1032	1115	1190	1269	1346	1446	1555	1664	1841	2051	11.4%	8.4%	2.0%	
Middle distillates	4049	4094	4197	4142	4257	4284	4095	3712	3906	3837	4615	20.3%	1.3%	4.6%	
of which: diesel/gasoil	3503	3506	3538	3403	3440	3378	3128	2928	3132	3362	3787	12.7%	0.8%	3.8%	
of which: jet/kerosene	546	588	659	739	817	906	967	784	774	476	828	74.0%	4.3%	0.8%	
Fuel oil	564	584	591	558	530	532	574	602	648	676	913	35.0%	4.9%	0.9%	
Others	2894	3071	3386	3708	4157	4502	5075	5613	5390	5595	5606	0.2%	6.8%	5.6%	
of which: ethane and LPG	871	998	1120	1310	1456	1531	1539	1507	1698	1675	1867	11.5%	7.9%	1.9%	
Total China	10563	11018	11890	12297	13003	13641	14316	14404	14888	14970	16577	10.7%	4.6%	16.5%	
of which: India															
Light distillates	630	655	760	808	807	844	878	826	866	900	962	6.8%	4.3%	1.0%	
of which: gasoline	379	414	475	520	569	606	653	589	647	701	734	4.7%	6.8%	0.7%	
of which: naphtha	250	240	285	288	238	238	225	237	218	199	227	14.3%	-1.0%	0.2%	
Middle distillates	1683	1693	1772	1846	1876	1955	1964	1610	1726	1904	2010	5.6%	1.8%	2.0%	
of which: diesel/gasoil	1408	1416	1491	1571	1627	1701	1728	1478	1585	1740	1826	4.9%	2.6%	1.8%	
of which: jet/kerosene	274	276	280	274	249	254	235	132	140	164	184	12.4%	-3.9%	0.2%	
Fuel oil	117	107	113	136	122	120	114	104	111	124	121	-2.7%	0.3%	0.1%	
Others	1314	1411	1536	1785	1949	2086	2224	2198	2139	2280	2354	3.2%	6.0%	2.3%	
of which: ethane and LPG	558	613	661	749	857	971	1046	1079	1096	1098	1116	1.7%	7.2%	1.1%	
Total India	3743	3865	4181	4574	4754	5004	5179	4738	4841	5209	5446	4.6%	3.8%	5.4%	
of which: Japan															
Light distillates	1615	1553	1586	1537	1558	1485	1473	1352	1393	1319	1287	-2.4%	-2.2%	1.3%	
of which: gasoline	948	915	905	895	881	864	842	777	765	758	755	-0.3%	-2.3%	0.8%	
of which: naphtha	667	637	682	642	677	620	631	575	628	562	532	-5.3%	-2.2%	0.5%	
Middle distillates	1360	1329	1291	1298	1308	1283	1263	1102	1105	1123	1153	2.7%	-1.6%	1.2%	
of which: diesel/gasoil	825	808	789	787	783	782	772	725	733	737	718	-2.6%	-1.4%	0.7%	
of which: jet/kerosene	535	522	502	511	525	501	492	377	372	386	435	12.9%	-2.0%	0.4%	
Fuel oil	683	575	473	406	318	304	244	227	259	286	245	-14.3%	-9.7%	0.2%	
Others	947	922	885	862	899	867	865	732	728	776	680	-12.3%	-3.3%	0.7%	
of which: ethane and LPG	520	502	477	460	470	454	442	397	404	418	402	-3.8%	-2.5%	0.4%	
Total Japan	4605	4379	4235	4103	4084	3939	3846	3412	3485	3504	3366	-3.9%	-3.1%	3.4%	
World															
Light distillates	27836	28193	29200	29830	30386	30674	30799	27781	30187	30327	31151	2.7%	1.1%	31.1%	
of which: gasoline	22092	22327	23090	23645	23997	24383	24589	21608	23530	23890	24616	3.0%	1.1%	24.6%	
of which: naphtha	5744	5866	6110	6185	6389	6291	6210	6174	6657	6437	6535	1.5%	1.3%	6.5%	
Middle distillates	33343	33595	34186	34182	34937	35505	35391	30043	32195	34047	35301	3.7%	0.6%	35.2%	
of which: diesel/gasoil	26681	26879	27171	26818	27266	27635	27425	25253	26861	27801	27960	0.6%	0.5%	27.9%	
of which: jet/kerosene	6662	6716	7016	7364	7670	7870	7966	4790	5335	6245	7341	17.5%	1.0%	7.3%	
Fuel oil	8276	8089	7846	7901	7804	7384	7021	6556	6981	7284	7365	1.1%	-1.2%	7.3%	
Others	20647	21017	21535	22768	23597	24401	25012	25067	25368	26025	26404	1.5%	2.5%	26.3%	
of which: ethane and LPG	11468	11739	11995	12726	13157	13777	13825	13758	14177	14249	14703	3.2%	2.5%	14.7%	
Total World	90101	90893	92767	94680	96723	97964	98223	89448	94732	97683	100221	2.6%	1.1%	100.0%	
OECD															
Light distillates	16208	16178	16442	16648	16758	16602	16449	14472	15627	15567	15644	0.5%	-0.4%	15.6%	
of which: gasoline	13079	13108	13307	13485	13481	13531	13480	11622	12565	12792	12997	1.6%	-0.1%	13.0%	
of which: naphtha	3129	3070	3136	3163	3277	3071	2969	2850	3062	2775	2647	-4.6%	-1.7%	2.6%	
Middle distillates	16440	16637	17076	17186	17655	17952	17836	14847	15998	16847	16794	-0.3%	0.2%	16.8%	
of which: diesel/gasoil	12647	12774	13059	13015	13297	13493	13319	12263	12983	13032	12579	-3.5%	-0.1%	12.6%	
of which: jet/kerosene	3792	3863	4017	4171	4357	4459	4517	2584	3015	3815	4215	10.5%	1.1%	4.2%	
Fuel oil	2524	2181	1988	2031	1984	1914	1716	1436	1632	1711	1568	-8.4%	-4.7%	1.6%	
Others	9852	9626	9789	9984	10060	10292	10473	10132	10550	10645	10725	0.8%	0.9%	10.7%	
of which: ethane and LPG	5502	5425	5510	5652	5702	6041	6109	6086	6220	6176	6292	1.9%	1.4%	6.3%	
Total OECD	45024	44623	45296	45849	46456	46759	46475	40887	43807	44770	44731	-0			

US dollars per barrel	Dubai \$/bbl ¹	Brent \$/bbl ²	Nigerian Forcados \$/bbl ³	West Texas Intermediate \$/bbl ⁴
1972	1.90	-	-	-
1973	2.83	-	-	-
1974	10.41	-	-	-
1975	10.70	-	-	-
1976	11.63	12.80	12.87	12.23
1977	12.38	13.92	14.21	14.22
1978	13.03	14.02	13.65	14.55
1979	29.75	31.61	29.25	25.08
1980	35.69	36.83	36.98	37.96
1981	34.32	35.93	36.18	36.08
1982	31.80	32.97	33.29	33.65
1983	28.78	29.55	29.54	30.30
1984	28.06	28.78	28.14	29.39
1985	27.53	27.56	27.75	27.98
1986	13.10	14.43	14.46	15.05
1987	16.95	18.44	18.39	19.19
1988	13.18	14.92	15.00	15.98
1989	15.59	18.23	18.30	19.67
1990	20.21	23.73	23.85	24.46
1991	16.70	20.00	20.11	21.53
1992	17.18	19.32	19.61	20.57
1993	14.99	16.97	17.41	18.45
1994	14.69	15.82	16.25	17.21
1995	16.08	17.02	17.26	18.42
1996	19.26	20.67	21.16	22.16
1997	18.31	19.09	19.33	20.61
1998	12.30	12.72	12.63	14.39
1999	16.90	17.97	17.98	19.31
2000	26.27	28.50	28.42	30.37
2001	22.78	24.44	24.23	25.93
2002	23.60	25.02	25.04	26.16
2003	26.75	28.83	28.68	31.06
2004	33.51	38.27	38.13	41.49
2005	46.78	54.52	55.69	56.59
2006	61.48	65.14	67.07	66.04
2007	67.92	72.39	74.48	72.20
2008	94.28	97.26	101.43	100.06
2009	61.14	61.67	63.35	61.92
2010	77.78	79.50	81.05	79.45
2011	105.93	111.26	113.65	95.04
2012	109.06	111.67	114.21	94.13
2013	105.47	108.66	111.95	97.99
2014	97.02	98.95	101.35	93.28
2015	51.22	52.39	54.41	48.71
2016	41.02	43.73	44.54	43.34
2017	53.02	54.19	54.31	50.79
2018	70.15	71.31	72.47	65.20
2019	63.71	64.21	64.95	57.03
2020	42.41	41.84	42.31	39.25
2021	68.91	70.91	69.76	68.10
2022	96.38	101.32	101.40	94.58
2023	82.09	82.64	83.60	78.88

Source: S&P Global Commodity Insights, ©2024 by S&P Global Inc
¹ 1972-1985 Arabian Light, 1986-2023 Dubai dated.
² 1976-1983 Forties, 1984-2023 Brent dated.
³ Forcados FOB Nigeria.
⁴ 1976-1983 Posted WTI prices, 1984-2023 Spot WTI (Cushing) prices.

Crude oil prices 1861–2023



Thousand barrels daily												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Imports														
US	9859	9241	9451	10056	10147	9927	9142	7865	8474	8341	8539	2.4%	-1.4%	12.5%
Europe	12920	12957	14005	14337	14966	14338	14322	12836	12969	14128	12811	-9.3%	-0.1%	18.8%
China	6978	7398	8333	9215	10241	11028	11865	12598	12501	12143	13717	13.0%	7.0%	20.1%
India	4370	4155	4396	4945	4920	5196	5376	4898	5302	5753	5770	0.3%	2.8%	8.5%
Japan	4637	4383	4332	4180	4142	3940	3780	3310	3350	3465	3332	-3.8%	-3.2%	4.9%
Rest of World	20012	21193	22915	28418	25623	25580	25617	27867	23903	24567	23955	-2.5%	1.8%	35.2%
Total World	58776	59328	63431	71151	70039	70009	70101	69374	66500	68397	68124	-0.4%	1.5%	100.0%
Exports														
Canada	3296	3536	3837	3889	4233	4498	4667	4398	4656	4679	4836	3.4%	3.9%	7.1%
Mexico	1347	1293	1321	1405	1283	1302	1252	1247	1216	1173	1271	8.4%	-0.6%	1.9%
US	3563	4033	4562	5082	5881	7039	8010	8136	7959	8549	9108	6.5%	9.8%	13.4%
S. & Cent. America	3790	3939	4103	5736	3989	3711	3424	3567	3034	2843	3417	20.2%	-1.0%	5.0%
Europe	2545	2467	3065	4834	3384	3349	3240	3650	2848	2640	2340	-11.3%	-0.8%	3.4%
Russian Federation	7948	7792	8434	8811	8981	8026	8090	7397	7816	7821	6736	-13.9%	-1.6%	9.9%
Other CIS	2166	2092	2045	2097	2232	2051	2080	2069	2090	2069	2170	4.8%	0.0%	3.2%
Saudi Arabia	8365	7911	8008	8729	8352	8462	8349	8012	7778	8767	8282	-5.5%	-0.1%	12.2%
Middle East (ex Saudi Arabia)	12242	12699	13977	15902	16208	16038	14915	13693	14228	15346	15018	-2.1%	2.1%	22.0%
North Africa	2127	1743	1747	1736	2594	2765	2794	1836	2361	2061	2025	-1.8%	-0.5%	3.0%
West Africa	4590	4849	4889	4458	4490	4516	4728	4268	3953	3580	3285	-8.2%	-3.3%	4.8%
Asia Pacific (ex Japan)	6307	6450	5895	6348	6549	6440	6591	5705	6414	6575	7294	10.9%	1.5%	10.7%
Rest of World	491	524	1549	2124	1863	1811	1959	5398	2148	2295	2341	2.0%	16.9%	3.4%
Total World	58776	59328	63431	71151	70039	70009	70101	69374	66500	68397	68124	-0.4%	1.5%	100.0%

Notes: Unless otherwise stated, this table shows inter-regional trade based on the regional classification in the table 'Oil trade in 2022 and 2023'. Does not include biofuels trade. Bunker fuel use is not included as exports. Intra-area movements (for example, between countries within Europe) are excluded. Annual changes and shares of total are calculated using thousand barrels daily figures.


Oil Trade in 2022 and 2023

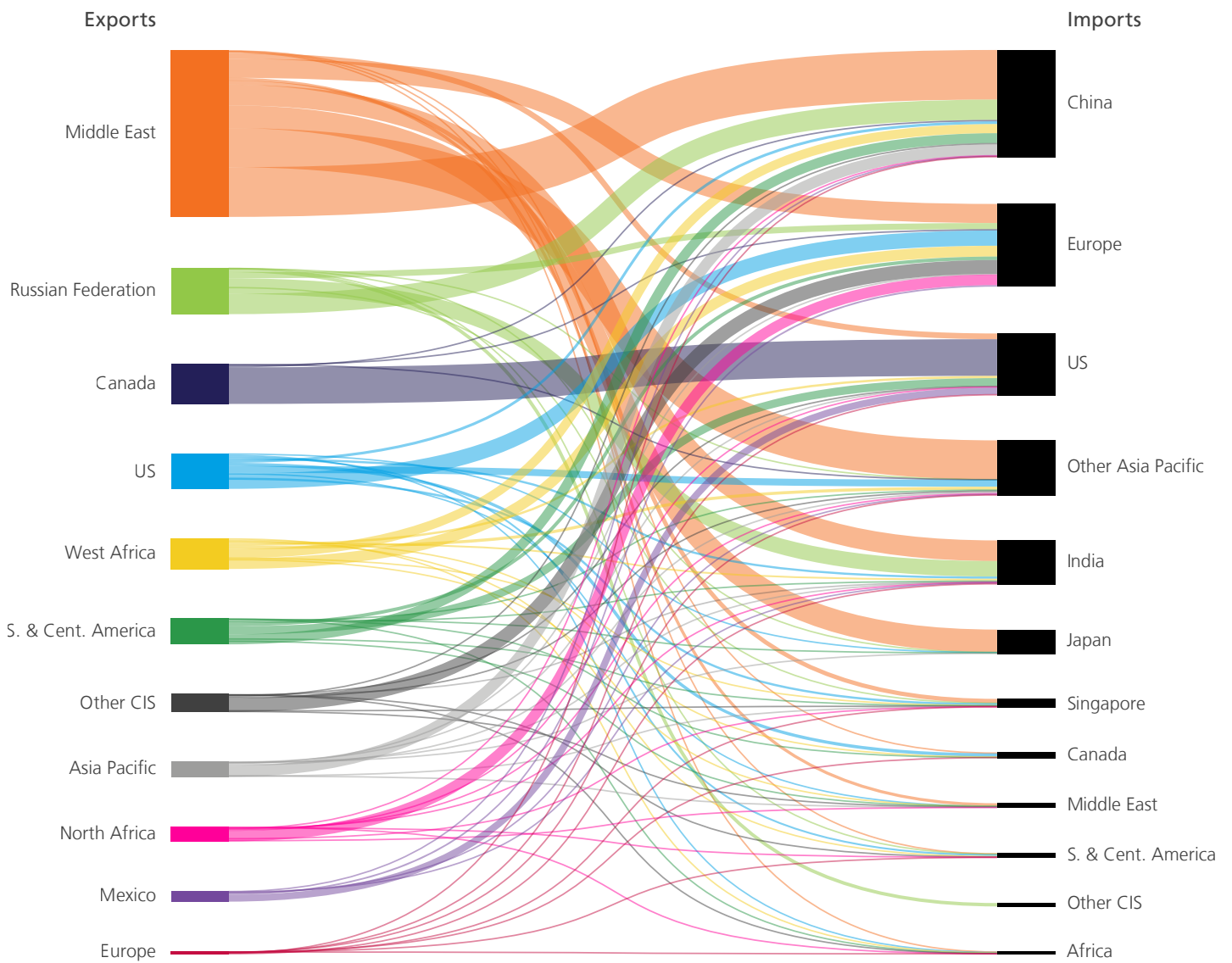
Million tonnes	2022				2023			
	Crude imports	Product imports	Crude exports	Product exports	Crude imports	Product imports	Crude exports	Product exports
Canada	25.8	29.7	198.9	32.8	25.0	27.3	207.2	32.3
Mexico	†	58.9	49.4	8.7	†	58.8	53.8	9.2
US	312.8	98.5	161.3	253.9	323.8	97.5	185.0	258.0
S. & Cent. America	23.9	113.7	111.8	28.6	20.7	105.9	141.2	27.9
Europe	488.8	206.2	19.7	107.3	436.6	193.4	12.1	100.3
Russian Federation	1.8	1.7	262.7	121.8	7.7	1.3	240.8	90.9
Other CIS	16.2	7.6	90.2	12.3	18.0	9.0	91.4	15.9
Iraq	†	10.8	191.1	16.6	†	9.5	184.2	19.8
Kuwait	0.3	0.3	96.0	28.4	0.4	0.3	81.1	37.4
Saudi Arabia	1.7	7.9	367.8	66.0	2.8	6.3	349.1	60.8
United Arab Emirates	7.5	29.9	178.4	90.1	5.3	30.1	170.7	92.5
Other Middle East	15.1	25.2	93.3	62.0	14.6	23.5	90.0	63.3
North Africa	8.9	35.0	76.5	25.1	3.6	35.1	75.6	24.2
West Africa	1.3	50.1	171.3	6.7	1.4	46.7	158.6	4.8
East & S. Africa	6.8	54.8	1.7	2.0	7.3	51.3	3.2	1.3
Australasia	10.4	45.0	11.2	4.5	8.4	54.9	10.0	4.9
China	508.2	92.7	1.7	54.3	563.9	114.4	1.2	61.5
India	231.2	53.1	2.2	87.3	231.0	54.0	1.9	93.3
Japan	132.5	38.5	0.4	16.3	125.5	38.8	†	12.5
Singapore	44.2	72.4	0.3	72.9	42.3	72.2	2.0	78.0
Other Asia Pacific	297.6	188.6	49.2	123.0	288.5	185.2	67.9	126.6
Total World	2135.2	1220.7	2135.2	1220.7	2127.1	1215.5	2127.1	1215.5

Thousand barrels daily	2022				2023			
	Crude imports	Product imports	Crude exports	Product exports	Crude imports	Product imports	Crude exports	Product exports
Canada	518	622	3994	685	503	571	4161	675
Mexico	1	1230	992	182	†	1229	1080	192
US	6281	2060	3240	5308	6502	2038	3716	5393
S. & Cent. America	480	2377	2245	599	416	2213	2835	582
Europe	9817	4311	396	2243	8768	4043	243	2097
Russian Federation	37	36	5275	2546	154	28	4835	1901
Other CIS	325	160	1812	257	361	189	1836	333
Iraq	†	225	3838	348	†	198	3699	414
Kuwait	6	7	1928	595	9	6	1629	783
Saudi Arabia	35	166	7386	1381	56	131	7012	1270
United Arab Emirates	150	625	3584	1884	106	630	3429	1934
Other Middle East	304	527	1874	1296	294	490	1806	1324
North Africa	180	732	1537	525	73	734	1519	507
West Africa	25	1048	3440	139	29	975	3184	100
East & S. Africa	137	1146	35	41	147	1072	65	27
Australasia	209	941	225	93	168	1148	202	103
China	10206	1937	33	1135	11325	2391	24	1285
India	4642	1111	43	1826	4640	1130	38	1951
Japan	2661	804	9	340	2521	811	†	261
Singapore	888	1514	6	1523	849	1509	40	1631
Other Asia Pacific	5977	3942	988	2571	5794	3872	1365	2646
Total World	42879	25518	42879	25518	42716	25408	42716	25408

† Less than 0.05.

‡ Less than 0.5.

Notes: Does not include biofuels trade. Bunker fuel use is not included as exports. Intra-area movements (for example, between countries within Europe) are excluded. Crude imports and exports include condensates.



International trade of crude oil was 2.1 billion tonnes in 2023, similar to 2022. The Middle East dominated exports accounting for 41% of the total. Although the Russian Federation’s share dropped by 22 million tonnes, its share of the total remained the second highest at 11%. The US increased its share of total exports by 1%, rising to 9%

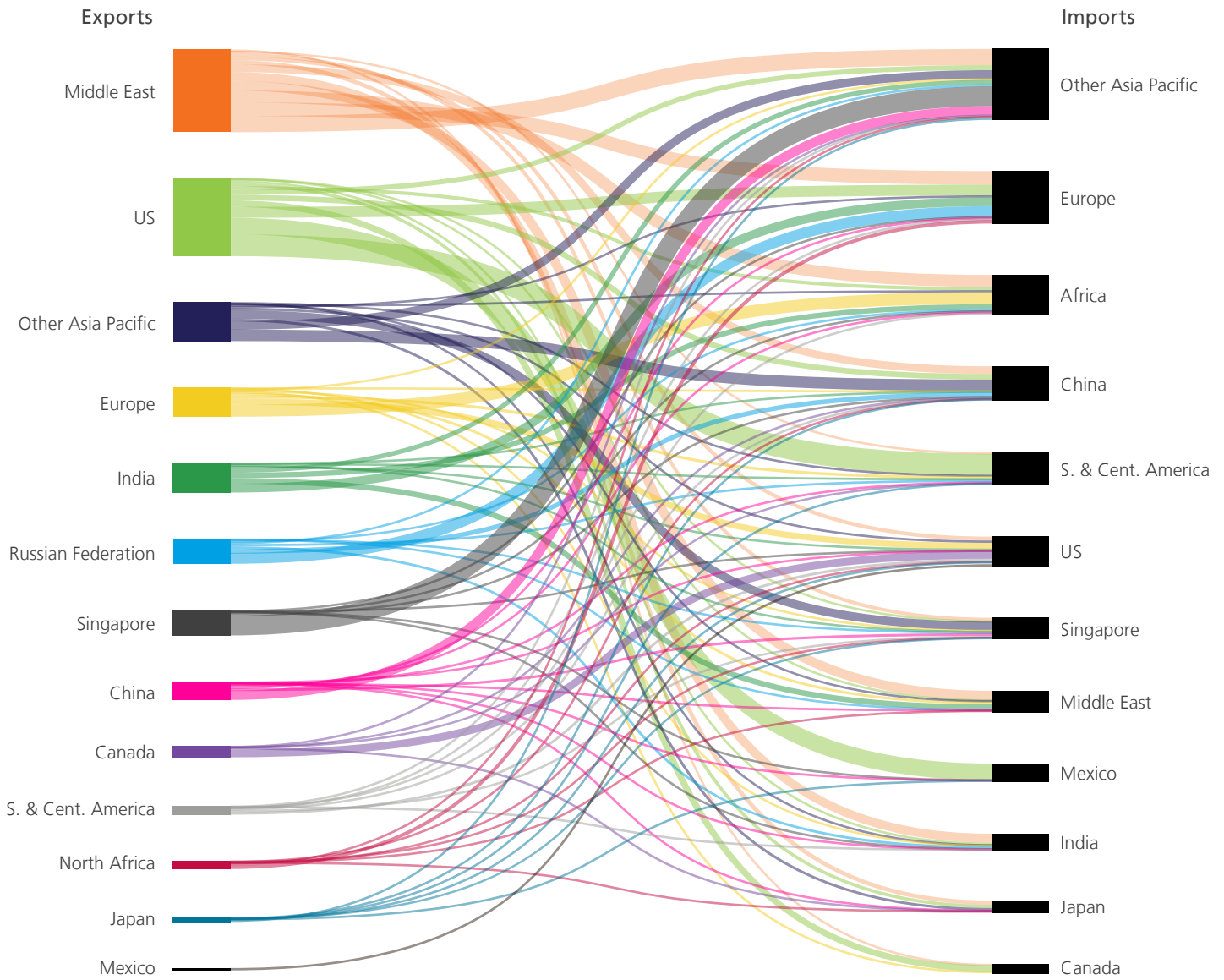
in 2023. On the import side, China was the single largest importer at 0.6 billion tonnes, 27% of the global total. Europe had the second highest share at 21%, followed by the US at 15%. Collectively, China and India increased their imports of Russian Federation crude oil by 53% whilst European reduced its imports by 72%.

Oil Inter-area movements 2023 crude trade

From	To															Total
	Canada	Mexico	US	S. & Cent. America	Europe	Russian Federation	Other CIS	Middle East	Africa	Australasia	China	India	Japan	Singapore	Other Asia Pacific	
Canada	-	-	192.9	-	6.7	-	-	-	-	-	7.5	-	-	-	0.1	207.2
Mexico	-	-	36.5	†	8.0	-	-	-	-	-	1.6	3.4	-	-	4.3	53.8
US	16.9	-	-	9.6	80.4	-	-	0.1	0.7	1.4	14.3	11.3	2.4	11.6	36.5	185.0
S. & Cent. America	0.6	†	42.9	-	18.2	7.6	†	2.9	1.0	†	52.1	7.0	1.9	2.5	4.5	141.2
Europe	0.2	-	2.3	0.1	-	-	†	†	0.3	†	3.1	5.1	-	0.2	0.8	12.1
Russian Federation	-	-	†	0.3	32.4	-	18.0	-	†	-	107.0	81.8	0.1	0.3	0.9	240.8
Other CIS	-	-	1.6	0.1	72.7	†	-	2.4	0.8	†	6.4	0.4	-	0.1	6.7	91.4
Iraq	†	-	10.6	-	49.2	-	-	0.3	0.3	-	59.3	48.8	-	0.9	14.8	184.2
Kuwait	-	-	1.1	-	3.4	-	-	†	1.7	-	24.5	8.1	11.5	0.1	30.8	81.1
Saudi Arabia	2.5	-	17.4	3.2	40.7	-	-	11.7	2.9	-	85.9	35.3	51.4	4.9	93.3	349.1
UAE	†	-	0.8	†	5.4	-	†	†	0.1	†	41.8	13.2	48.6	11.1	49.7	170.7
Other Middle East	-	-	0.4	-	1.8	-	-	3.6	†	-	49.6	3.2	8.2	5.5	17.6	90.0
North Africa	†	-	5.1	1.9	56.5	-	-	1.6	0.3	0.6	3.5	2.2	-	0.2	3.7	75.6
West Africa	4.8	-	11.9	5.4	56.9	-	-	0.3	4.5	0.2	48.1	9.3	-	1.2	16.0	158.6
East & S. Africa	-	-	-	†	1.1	-	-	†	†	-	0.7	0.1	†	0.5	0.8	3.2
Australasia	-	-	0.1	-	0.1	-	-	0.2	-	-	2.0	-	0.5	1.5	5.6	10.0
China	-	-	-	-	0.4	-	-	-	-	-	-	-	-	†	0.8	1.2
India	†	-	-	†	1.9	-	-	-	†	-	-	-	-	†	1.9	†
Japan	-	-	-	†	†	-	-	†	-	-	-	-	-	†	-	†
Singapore	†	-	-	-	0.1	-	-	-	†	-	0.3	-	-	-	1.6	2.0
Other Asia Pacific	-	-	†	†	0.7	†	-	†	†	6.1	56.2	2.0	1.0	1.9	-	67.9
Total imports	25.0	†	323.8	20.7	436.6	7.7	18.0	23.2	12.4	8.4	563.9	231.0	125.5	42.3	288.5	2127.1

† Less than 0.05. Notes: Does not include biofuels trade. Bunker fuel use is not included as exports. Intra-area movements (for example, between countries within Europe) are excluded. Crude imports and exports include condensates.

Oil Inter-area movements 2023 – Refined product



At 1.2 billion tonnes, international trade of refined product was around 57% that of crude oil trade in terms of volume and similar to 2022 levels. Between them, the Middle East and the US accounted for 44% of the total exports at 0.27 and 0.26 billion tonnes respectively. At 0.5 billion tonnes,

Asia Pacific region accounted for around 43% of total imports. Europe was the second-largest importer of refined products at 0.2 billion tonnes, 16% of the total. It reduced its imports from the Russian Federation by 51%.

Oil Inter-area movements 2023 refined product

Product (million tonnes)	To															
	Canada	Mexico	US	S. & Cent. America	Europe	Russian Federation	Other CIS	Middle East	Africa	Australasia	China	India	Japan	Singapore	Other Asia Pacific	Total
Canada	–	0.1	26.3	1.7	0.5	–	†	†	†	†	0.6	0.2	2.2	†	0.9	32.3
Mexico	†	–	8.5	0.1	0.2	–	–	†	0.1	†	†	†	†	0.4	†	9.2
US	22.0	55.7	–	73.5	37.0	†	†	1.7	12.2	1.2	19.1	8.1	10.7	1.3	15.5	258.0
S. & Cent. America	0.1	0.1	9.2	–	3.1	†	†	0.5	2.3	†	4.4	0.8	0.4	5.9	1.0	27.9
Europe	4.2	0.3	21.1	10.0	–	0.2	2.0	9.4	40.6	†	1.9	2.0	0.5	4.4	3.8	100.3
Russian Federation	†	–	–	7.6	37.5	–	6.7	1.1	4.7	–	16.2	8.7	–	2.8	5.6	90.9
Other CIS	†	–	0.3	0.1	12.8	0.8	–	0.1	0.7	–	0.7	–	†	0.3	0.2	15.9
Iraq	–	–	4.9	†	5.0	–	†	5.1	0.1	–	0.5	1.4	†	0.3	2.5	19.8
Kuwait	0.4	–	1.2	0.5	11.0	–	–	3.9	3.0	†	2.2	3.4	2.9	2.6	6.4	37.4
Saudi Arabia	†	–	4.3	1.5	13.3	–	†	8.4	12.9	0.2	2.7	6.7	1.1	2.3	7.3	60.8
UAE	†	†	0.7	1.5	9.0	†	0.1	8.3	16.3	0.2	11.7	10.8	4.9	5.3	23.6	92.5
Other Middle East	0.1	†	1.7	0.6	7.5	–	0.1	6.3	9.0	0.1	9.2	7.9	4.7	1.3	14.9	63.3
North Africa	†	–	2.6	0.2	11.9	†	†	0.8	0.4	†	0.8	0.1	0.6	1.1	5.6	24.2
West Africa	†	–	1.2	0.3	1.0	†	†	0.1	0.3	†	0.9	†	–	0.2	0.7	4.8
East & S. Africa	†	†	†	†	0.1	†	†	0.2	0.4	†	†	†	†	0.5	†	1.3
Australasia	†	†	0.1	†	0.8	–	†	†	†	–	0.6	†	1.7	0.3	1.4	4.9
China	0.1	1.2	0.5	3.9	6.5	0.2	0.1	1.8	4.7	2.7	–	0.5	1.2	9.0	29.1	61.5
India	†	†	5.2	1.7	29.8	†	†	19.0	17.8	4.8	0.9	–	0.2	2.9	11.2	93.3
Japan	0.2	0.7	0.7	0.9	0.1	†	†	†	†	2.5	1.1	†	–	2.4	3.7	12.5
Singapore	†	0.5	1.3	0.3	1.4	†	†	0.4	2.6	15.1	2.8	1.5	0.2	–	51.8	78.0
Other Asia Pacific	0.1	0.2	7.7	1.4	4.9	0.1	†	2.6	5.1	28.1	38.2	1.9	7.5	28.8	–	126.6
Total imports	27.3	58.8	97.5	105.9	193.4	1.3	9.0	69.7	133.0	54.9	114.4	54.0	38.8	72.2	185.2	1215.5

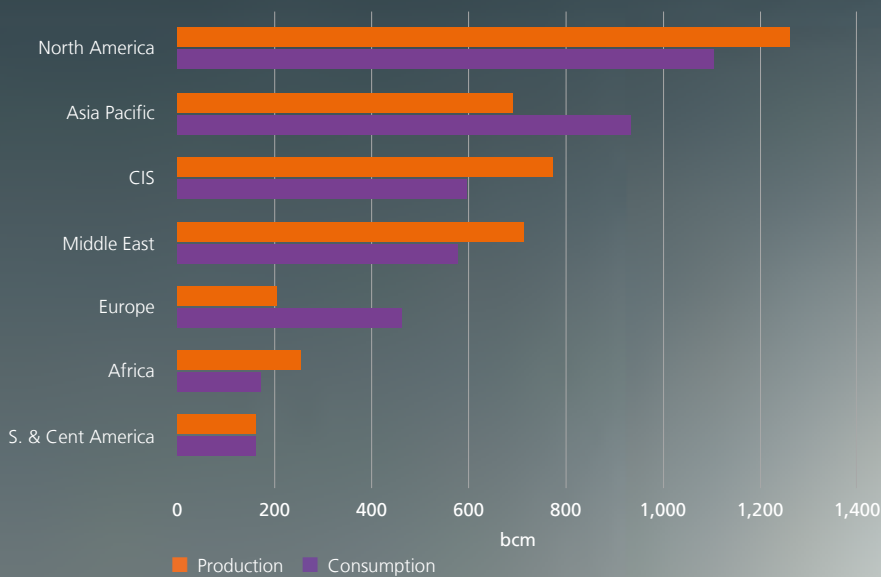
† Less than 0.05.

Notes: Does not include biofuels trade. Bunker fuel use is not included as exports. Intra-area movements (for example, between countries within Europe) are excluded. Crude imports and exports include condensates.

Natural gas

Global gas demand remained stable in 2023 rising by just 1 bcm. This was not sufficient to recover the losses seen in 2022 when overall demand dropped by 0.4% (15 bcm). In Europe, natural gas demand fell by 7% (34 bcm) in 2023, down to its lowest level since 1994. Similarly, gas production in the region declined by around 7% driven by decreases in its top producing countries, Norway, UK, and the Netherlands. Gas demand in the Asia Pacific region grew nearly 2%, driven by

China and India's 7% growth increases. When combining all trade routes, whether by sea or pipeline, the Russian Federation's share of EU gas imports fell from 43% in 2021 to 23% in 2022, and then a further 14% in 2023 to sit behind Norway and the US. In just ten years, LNG exports from the US rocketed from just 0.2 bcm in 2013 to 114 bcm in 2023, making it the world's leading LNG supplier, moving ahead of Qatar and Australia in 2023.



The US alone accounts for 25% of global natural gas production and 22% of its consumption

Natural gas Production in exajoules*

Exajoules												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Canada	5.47	5.72	5.79	5.94	6.17	6.36	6.11	5.96	6.20	6.65	6.85	2.9%	2.3%	4.7%
Mexico	1.89	1.85	1.73	1.57	1.38	1.36	1.32	1.28	1.15	1.21	1.28	5.5%	-3.8%	0.9%
US	23.60	25.37	26.65	26.18	26.86	30.27	33.41	33.29	34.00	35.76	37.27	4.2%	4.7%	25.5%
Total North America	30.96	32.94	34.16	33.70	34.41	38.00	40.84	40.53	41.36	43.63	45.40	4.1%	3.9%	31.1%
Argentina	1.24	1.24	1.28	1.34	1.34	1.42	1.50	1.38	1.39	1.50	1.50	-0.2%	1.9%	1.0%
Bolivia	0.70	0.74	0.72	0.68	0.67	0.62	0.54	0.53	0.55	0.49	0.43	-12.9%	-4.8%	0.3%
Brazil	0.79	0.84	0.86	0.87	0.98	0.91	0.93	0.87	0.88	0.83	0.84	1.8%	0.7%	0.6%
Colombia	0.48	0.44	0.42	0.43	0.42	0.45	0.45	0.45	0.45	0.45	0.43	-3.0%	-0.9%	0.3%
Peru	0.45	0.47	0.46	0.50	0.47	0.46	0.49	0.48	0.45	0.54	0.56	3.1%	2.2%	0.4%
Trinidad & Tobago	1.39	1.37	1.29	1.13	1.15	1.22	1.24	1.06	0.89	0.94	0.90	-3.8%	-4.3%	0.6%
Venezuela	1.10	1.14	1.30	1.34	1.39	1.14	0.92	0.78	1.01	1.05	1.07	2.2%	-0.3%	0.7%
Other S. & Cent. America	0.10	0.09	0.10	0.11	0.11	0.11	0.12	0.10	0.09	0.10	0.10	3.0%	0.6%	0.1%
Total S. & Cent. America	6.26	6.34	6.43	6.41	6.53	6.33	6.19	5.64	5.71	5.89	5.83	-1.0%	-0.7%	4.0%
Denmark	0.18	0.17	0.17	0.17	0.18	0.15	0.12	0.05	0.05	0.05	0.05	-3.3%	-11.9%	†
Germany	0.31	0.29	0.27	0.25	0.23	0.20	0.19	0.16	0.16	0.15	0.14	-10.6%	-7.8%	0.1%
Italy	0.27	0.25	0.23	0.20	0.19	0.19	0.17	0.14	0.11	0.11	0.10	-9.9%	-9.1%	0.1%
Netherlands	2.61	2.17	1.65	1.59	1.37	1.17	1.00	0.72	0.65	0.54	0.35	-34.2%	-18.1%	0.2%
Norway	3.90	3.88	4.19	4.17	4.46	4.37	4.12	4.02	4.12	4.43	4.20	-5.2%	0.7%	2.9%
Poland	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.13	-5.5%	-2.1%	0.1%
Romania	0.36	0.37	0.37	0.33	0.36	0.36	0.35	0.31	0.31	0.32	0.32	1.4%	-1.2%	0.2%
Ukraine	0.73	0.73	0.68	0.68	0.70	0.71	0.70	0.69	0.67	0.63	0.64	0.9%	-1.3%	0.4%
United Kingdom	1.33	1.35	1.46	1.50	1.51	1.46	1.41	1.42	1.18	1.37	1.24	-9.6%	-0.7%	0.8%
Other Europe	0.26	0.23	0.22	0.31	0.32	0.30	0.27	0.23	0.19	0.18	0.19	0.2%	-3.2%	0.1%
Total Europe	10.10	9.59	9.40	9.36	9.46	9.05	8.46	7.89	7.60	7.93	7.36	-7.2%	-3.1%	5.0%
Azerbaijan	0.63	0.66	0.68	0.66	0.64	0.68	0.86	0.93	1.15	1.23	1.28	4.2%	7.4%	0.9%
Kazakhstan	1.10	1.18	0.98	1.11	1.31	1.41	1.21	1.10	0.96	0.99	1.11	11.7%	0.1%	0.8%
Russian Federation	22.12	21.28	21.04	21.21	22.88	24.09	24.44	22.98	25.28	22.26	21.11	-5.2%	-0.5%	14.4%
Turkmenistan	2.12	2.29	2.37	2.28	2.11	2.21	2.27	2.38	2.85	2.82	2.75	-2.5%	2.6%	1.9%
Uzbekistan	2.01	2.03	1.93	1.91	1.93	2.10	2.07	1.70	1.83	1.76	1.59	-9.6%	-2.3%	1.1%
Other CIS	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	-3.4%	-1.8%	†
Total CIS	27.99	27.45	27.01	27.19	28.88	30.50	30.87	29.10	32.08	29.07	27.85	-4.2%	-0.1%	19.1%
Bahrain	0.50	0.53	0.53	0.52	0.52	0.53	0.59	0.59	0.60	0.57	0.60	5.9%	1.8%	0.4%
Iran	5.67	6.32	6.61	7.18	7.70	7.92	8.22	8.49	8.74	8.92	9.06	1.6%	4.8%	6.2%
Iraq	0.25	0.27	0.26	0.36	0.36	0.38	0.39	0.25	0.33	0.33	0.36	6.9%	3.5%	0.2%
Israel	0.22	0.26	0.28	0.32	0.34	0.36	0.36	0.53	0.66	0.75	0.85	12.8%	14.5%	0.6%
Kuwait	0.56	0.51	0.58	0.59	0.58	0.61	0.48	0.44	0.44	0.47	0.49	2.6%	-1.3%	0.3%
Oman	1.11	1.06	1.11	1.13	1.16	1.31	1.32	1.33	1.45	1.52	1.55	2.5%	3.4%	1.1%
Qatar	6.04	6.10	6.33	6.29	6.14	6.31	6.38	6.30	6.37	6.43	6.52	1.4%	0.8%	4.5%
Saudi Arabia	3.42	3.50	3.57	3.79	3.93	4.04	4.00	4.07	4.12	4.20	4.11	-2.2%	1.8%	2.8%
Syria	0.18	0.17	0.15	0.13	0.13	0.12	0.12	0.11	0.11	0.10	0.11	2.1%	-5.1%	0.1%
United Arab Emirates	1.92	1.90	2.11	2.14	1.90	1.67	1.93	1.93	1.91	1.95	2.00	2.5%	0.4%	1.4%
Other Middle East	0.38	0.36	0.11	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.02	22.5%	-25.1%	†
Total Middle East	20.25	20.97	21.63	22.47	22.78	23.25	23.80	24.05	24.74	25.26	25.66	1.6%	2.4%	17.6%
Algeria	2.86	2.89	2.93	3.29	3.35	3.38	3.13	2.93	3.64	3.51	3.66	4.0%	2.5%	2.5%
Egypt	1.94	1.69	1.53	1.45	1.76	2.11	2.34	2.10	2.44	2.32	2.06	-11.5%	0.6%	1.4%
Libya	0.44	0.43	0.46	0.46	0.51	0.50	0.58	0.46	0.55	0.52	0.59	12.0%	3.0%	0.4%
Nigeria	1.19	1.44	1.71	1.53	1.70	1.74	1.77	1.78	1.89	1.70	1.57	-7.3%	2.8%	1.1%
Other Africa	0.74	0.74	0.78	0.82	0.97	1.01	1.02	1.08	1.08	1.15	1.26	9.5%	5.5%	0.9%
Total Africa	7.16	7.18	7.42	7.55	8.28	8.73	8.84	8.35	9.60	9.21	9.13	-0.8%	2.5%	6.2%
Australia	2.18	2.35	2.67	3.39	3.97	4.59	5.26	5.25	5.33	5.55	5.46	-1.6%	9.6%	3.7%
Bangladesh	0.79	0.83	0.93	0.95	0.96	0.96	0.91	0.85	0.85	0.81	0.76	-6.3%	-0.4%	0.5%
Brunei	0.43	0.46	0.48	0.47	0.46	0.45	0.47	0.46	0.42	0.38	0.36	-5.8%	-1.7%	0.2%
China	4.39	4.72	4.88	4.97	5.37	5.81	6.36	6.98	7.53	7.99	8.43	5.6%	6.8%	5.8%
India	1.12	1.06	1.01	0.96	1.00	0.99	0.97	0.86	1.03	1.07	1.14	6.0%	0.2%	0.8%
Indonesia	2.79	2.75	2.74	2.70	2.62	2.62	2.43	2.33	2.32	2.26	2.31	2.3%	-1.9%	1.6%
Malaysia	2.61	2.60	2.77	2.76	2.86	2.74	2.79	2.63	2.84	2.99	2.92	-2.3%	1.1%	2.0%
Myanmar	0.46	0.60	0.69	0.66	0.64	0.61	0.67	0.63	0.62	0.61	0.55	-10.1%	1.7%	0.4%
Pakistan	1.28	1.26	1.26	-	1.25	1.23	1.18	1.10	1.18	1.03	1.00	-3.1%	-2.4%	0.7%
Thailand	1.40	1.41	1.35	1.34	1.29	1.25	1.29	1.18	1.13	0.92	0.92	0.1%	-4.1%	0.6%
Vietnam	0.34	0.35	0.37	0.37	0.34	0.35	0.35	0.32	0.26	0.28	0.26	-7.4%	-2.6%	0.2%
Other Asia Pacific	0.66	0.83	1.01	1.04	1.05	0.97	1.03	1.04	0.98	0.86	0.79	-8.2%	1.9%	0.5%
Total Asia Pacific	18.45	19.21	20.17	19.60	21.82	22.57	23.71	23.63	24.48	24.76	24.91	0.6%	3.0%	17.0%
Total World	121.18	123.68	126.22	126.28	132.15	138.43	142.71	139.18	145.57	145.75	146.13	0.3%	1.9%	100.0%
of which: OECD	43.10	44.73	46.12	46.43	47.81	51.64	54.61	53.90	54.65	57.59	58.77	2.1%	3.1%	40.2%
Non-OECD	78.08	78.95	80.09	79.84	84.34	86.79	88.09	85.28	90.93	88.16	87.36	-0.9%	1.1%	59.8%
European Union	4.10	3.60	3.03	2.96	2.76	2.48	2.19	1.72	1.60	1.47	1.24	-15.7%	-11.3%	0.8%

Source: Includes data from Cedigaz. FGE MENA gas service.

* Excludes gas flared or recycled. Includes natural gas produced for Gas-to-Liquids transformation.

† Less than 0.05%.

Note: Annual changes and shares of total are calculated using exajoules figures.

Natural gas LNG imports

Billion cubic metres	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		Share
												2023	2013–23	2023
Canada	1.0	0.5	0.6	0.3	0.4	0.6	0.5	0.8	0.7	0.3	0.2	-19.4%	-13.6%	†
Mexico	7.8	9.3	6.8	5.6	6.6	6.9	6.6	2.5	0.9	0.6	0.9	54.9%	-19.2%	0.2%
US	2.7	1.7	2.5	2.4	2.2	2.1	1.5	1.3	0.6	0.7	0.5	-33.4%	-16.1%	0.1%
Total North America	11.4	11.5	10.0	8.3	9.2	9.6	8.6	4.6	2.2	1.6	1.6	2.3%	-17.8%	0.3%
Argentina	6.3	6.2	5.6	5.1	4.6	3.6	1.8	1.8	3.7	2.4	2.7	14.5%	-8.1%	0.5%
Brazil	5.2	7.1	6.8	2.6	1.7	2.9	3.2	3.3	10.1	2.3	1.3	-42.5%	-13.0%	0.2%
Chile	3.8	3.5	3.7	4.5	4.4	4.3	3.3	3.7	4.5	3.3	3.6	6.8%	-0.6%	0.7%
Other S. & Cent. America	2.8	2.8	2.8	3.0	2.8	3.7	4.8	5.1	6.0	6.2	8.2	33.2%	11.4%	1.5%
Total S. & Cent. America	18.1	19.6	18.9	15.2	13.5	14.5	13.1	13.9	24.3	14.2	15.8	11.7%	-1.4%	2.9%
Belgium	3.1	2.9	3.6	2.4	1.3	3.3	7.3	6.4	5.4	12.5	11.8	-5.5%	14.2%	2.1%
France	8.3	6.9	6.4	9.1	10.9	12.7	23.2	19.1	17.6	35.5	30.7	-13.5%	14.0%	5.6%
Italy	5.8	4.5	5.9	5.9	8.3	8.2	13.5	12.5	9.5	14.7	16.3	11.4%	10.9%	3.0%
Spain	15.7	16.2	13.7	13.8	16.6	15.0	22.0	20.9	20.4	28.8	24.9	-13.5%	4.8%	4.5%
Türkiye	5.9	7.1	7.5	7.6	10.9	11.4	12.9	14.8	13.9	15.1	14.8	-2.3%	9.6%	2.7%
United Kingdom	9.2	11.2	13.7	10.7	6.6	7.2	17.1	18.6	15.0	26.1	19.4	-25.5%	7.7%	3.5%
Other European Union	3.7	3.3	5.2	6.9	10.2	13.4	23.5	23.8	25.5	39.4	51.0	29.5%	29.9%	9.3%
Rest of Europe	–	†	–	†	0.1	†	†	0.1	0.1	0.1	0.1	7.1%	–	†
Total Europe	51.8	52.1	56.0	56.4	64.8	71.2	119.4	116.2	107.5	172.1	169.1	-1.8%	12.6%	30.8%
Egypt	–	–	3.9	10.7	8.3	3.2	–	–	–	–	–	†	–	†
Kuwait	2.3	3.6	4.3	4.7	4.8	4.3	5.1	5.7	7.7	8.5	8.9	5.4%	14.6%	1.6%
United Arab Emirates	1.6	1.6	2.9	4.2	3.0	1.0	1.6	1.5	1.7	0.9	1.1	15.4%	-3.9%	0.2%
Other Middle East & Africa	0.5	0.1	2.7	4.8	5.3	4.0	2.7	1.9	0.2	0.1	0.2	92.4%	-9.5%	†
Total Middle East & Africa	4.3	5.3	13.7	24.5	21.4	12.5	9.4	9.1	9.6	9.5	10.2	7.2%	8.9%	1.9%
China	25.1	27.3	27.0	36.8	52.9	73.5	84.7	94.0	110.1	87.0	97.8	12.4%	14.6%	17.8%
India	18.0	19.1	20.0	24.3	26.0	30.5	32.4	36.6	33.8	28.4	31.0	9.1%	5.6%	5.6%
Japan	120.4	121.8	115.9	113.6	113.9	113.0	105.5	101.7	101.2	98.0	90.3	-7.8%	-2.8%	16.4%
Malaysia	2.0	2.2	2.2	1.5	2.0	1.8	3.3	3.6	2.3	3.9	3.2	-16.7%	4.9%	0.6%
Pakistan	–	–	1.5	4.0	6.1	9.4	11.8	10.6	12.2	9.5	10.1	5.6%	–	1.8%
Singapore	1.3	2.6	3.0	3.2	4.1	4.5	5.0	5.7	5.0	5.3	6.8	29.8%	18.3%	1.2%
South Korea	55.3	51.8	45.8	46.3	51.4	60.2	55.6	55.4	64.1	63.8	60.6	-5.0%	0.9%	11.0%
Taiwan	17.2	18.6	19.6	20.4	22.7	22.9	22.8	24.3	26.7	27.5	27.4	-0.5%	4.8%	5.0%
Thailand	2.0	1.9	3.6	3.9	5.2	6.0	6.7	7.5	9.2	11.5	16.1	39.4%	23.3%	2.9%
Other Asia Pacific	–	–	–	–	–	0.8	5.7	6.6	7.6	6.9	9.2	31.9%	–	1.7%
Total Asia Pacific	241.2	245.2	238.5	253.9	284.5	322.6	333.6	346.2	372.3	341.9	352.5	3.1%	3.9%	64.2%
Total World	326.8	333.6	337.1	358.3	393.3	430.4	484.2	490.0	515.9	539.3	549.2	1.8%	5.3%	100.0%

Source: Includes GLI/NGL, S&P Global Commodity Insights.

Gross LNG trade.

† Less than 0.05%.

Natural gas LNG exports

Billion cubic metres	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		Share
												2023	2013–23	2023
US	0.2	0.4	0.7	4.0	17.1	28.6	47.4	61.3	94.5	104.5	114.4	9.4%	93.8%	20.8%
Peru	5.7	5.7	5.0	5.5	5.5	4.8	5.3	5.0	3.5	5.1	5.3	3.9%	-0.7%	1.0%
Trinidad & Tobago	18.4	17.6	16.4	14.3	13.5	16.6	17.1	14.3	9.1	10.5	10.5	-0.2%	-5.5%	1.9%
Other Americas*	0.1	0.2	†	0.6	0.3	0.1	0.1	0.5	0.7	0.8	1.1	36.3%	31.6%	0.2%
Total Americas	24.3	23.9	22.1	24.5	36.5	50.1	69.9	81.2	107.8	121.0	131.4	8.6%	18.4%	23.9%
Russian Federation	14.5	13.6	14.6	14.6	15.4	24.9	39.1	41.8	39.5	43.4	42.7	-1.8%	11.4%	7.8%
Norway	3.8	4.6	5.6	6.1	5.4	6.8	6.9	4.3	0.2	3.7	5.5	46.8%	3.6%	1.0%
Other Europe*	5.2	8.4	5.4	4.5	2.5	5.0	1.9	2.7	4.1	4.2	3.7	-11.5%	-3.3%	0.7%
Total Europe & CIS	23.5	26.6	25.6	25.3	23.4	36.7	47.9	48.8	43.7	51.3	51.8	1.0%	8.2%	9.4%
Oman	11.5	10.6	10.2	11.0	11.4	13.6	14.1	13.2	14.1	15.3	15.3	-0.1%	2.9%	2.8%
Qatar	105.8	103.6	105.6	107.3	103.6	104.9	105.8	106.5	106.8	110.5	108.4	-2.0%	0.2%	19.7%
United Arab Emirates	7.9	8.6	7.6	7.7	7.3	7.4	7.7	7.6	8.8	7.5	7.7	2.9%	-0.3%	1.4%
Yemen	9.9	9.4	1.9	–	–	–	–	–	–	–	–	–	-100.0%	†
Total Middle East	135.2	132.2	125.4	126.0	122.3	125.9	127.5	127.3	129.6	133.3	131.4	-1.5%	-0.3%	23.9%
Algeria	15.0	17.4	16.6	15.5	16.4	13.1	16.8	14.6	15.6	14.4	19.0	31.9%	2.4%	3.5%
Angola	0.4	0.4	–	0.9	5.0	5.2	5.8	6.1	4.7	4.2	4.9	17.9%	28.2%	0.9%
Egypt	3.9	0.4	–	0.8	1.2	2.0	4.7	1.8	9.1	9.2	4.9	-46.8%	2.3%	0.9%
Nigeria	22.5	26.1	26.9	24.6	28.3	27.8	28.8	28.4	23.4	20.0	17.5	-12.1%	-2.4%	3.2%
Other Africa	5.2	5.0	5.0	4.4	4.8	5.4	5.6	5.1	5.4	6.3	9.2	45.8%	5.8%	1.7%
Total Africa	47.0	49.5	48.5	46.2	55.7	53.5	61.6	56.0	58.1	54.1	55.6	2.8%	1.7%	10.1%
Australia	30.5	32.0	39.9	60.4	76.6	91.8	104.7	106.0	108.5	107.4	107.4	†	13.4%	19.6%
Brunei	9.5	8.6	8.7	8.6	9.1	8.5	8.8	8.4	7.5	6.5	6.2	-4.8%	-4.2%	1.1%
Indonesia	23.1	21.7	21.6	22.4	21.7	20.8	16.5	16.8	14.6	15.6	16.1	3.3%	-3.5%	2.9%
Malaysia	33.6	34.0	34.3	33.6	36.1	33.0	35.2	32.5	33.6	37.3	36.3	-2.7%	0.8%	6.6%
Papua New Guinea	–	5.0	10.1	10.9	11.1	9.5	11.6	11.5	11.5	11.4	11.5	1.0%	–	2.1%
Other Asia Pacific*	0.1	0.2	0.8	0.5	0.8	0.6	0.5	1.4	1.0	1.3	1.5	18.3%	32.1%	0.3%
Total Asia Pacific	96.8	101.5	115.5	136.4	155.4	164.3	177.3	176.8	176.7	179.5	179.0	-0.3%	6.3%	32.6%
Total LNG exports	326.8	333.6	337.1	358.3	393.3	430.4	484.2	490.0	515.9	539.3	549.2	1.8%	5.3%	100.0%

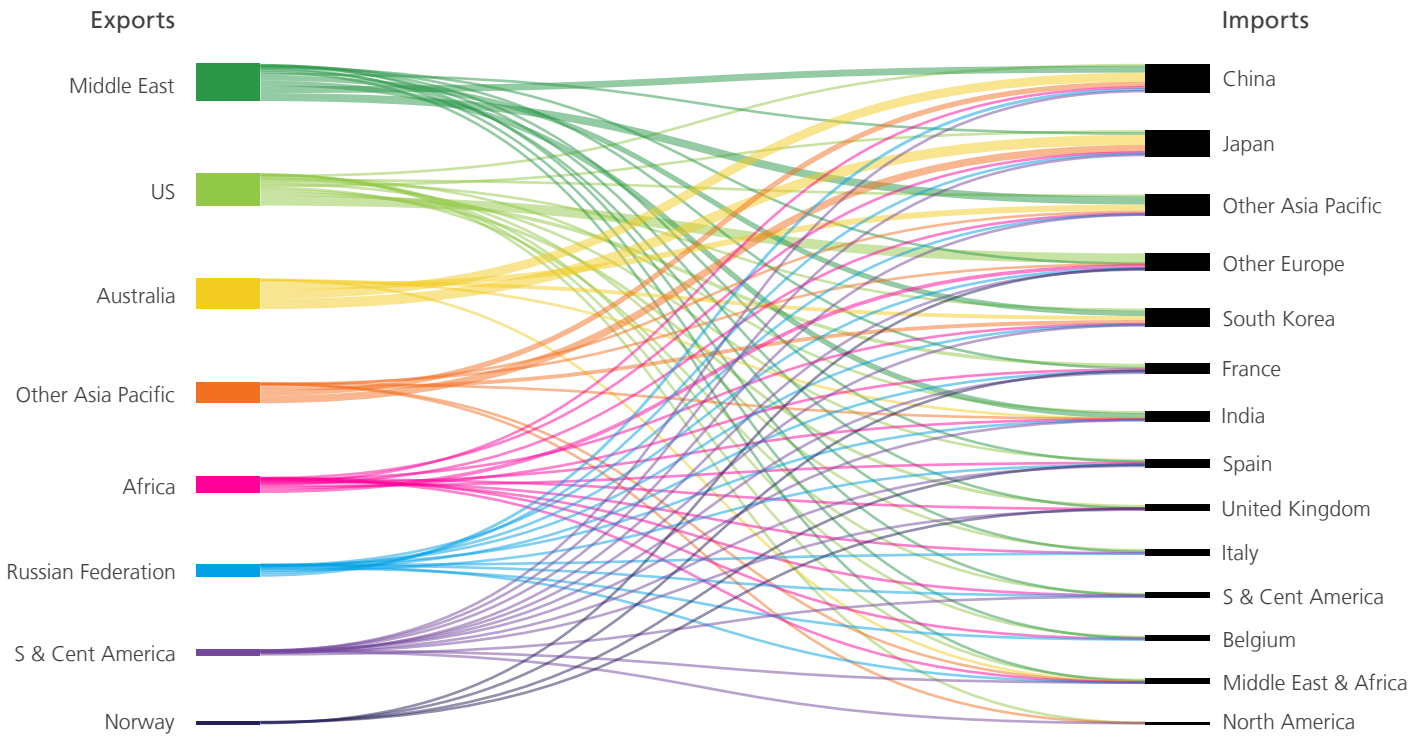
Source: Includes GLI/NGL, S&P Global Commodity Insights.

Gross LNG trade.

* Largely consists of re-exports.

† Less than 0.05%.

Natural gas Major trade movements 2023 – LNG



Notes: As far as possible, the data above represents standard cubic metres (measured at 15°C and 1013 mbar) and has been standardised using a gross calorific value (GCV) of 40 MJ/m³.

International gas trade has been fluctuating between 900-1,000 bcm since 2017, with an overall fall of 2.7% to 936 bcm in 2023. LNG exports rose 1.8% to 549 bcm. LNG now accounts for nearly 59% of all globally traded gas. The US overtook both Australia and Qatar to become the world's largest exporter of LNG. Collectively they represented 64% of total LNG exports. China overtook

Japan to become the largest importer of LNG with one-third of its imports coming from Australia. Collectively, the Asia Pacific region accounted for 64% of all LNG imports. Europe increased its imports from the US by 6% whilst its LNG imports from the Russian Federation remained relatively stable at around 19 bcm.

Natural gas Trade movements 2023 as LNG*

Billion cubic metres To	From																			Total imports						
	US	Peru	Trinidad & Tobago	Other Americas*	Norway	Other Europe**	Russian Federation	Oman	Qatar	United Arab Emirates	Yemen	Algeria	Angola	Egypt	Nigeria	Other Africa	Australia	Brunei	Indonesia		Malaysia	Papua New Guinea	Other Asia Pacific*			
Canada	†	0.1	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2	
Mexico	0.4	0.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.9
US	–	–	0.3	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.5
North America	0.4	0.3	0.5	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.6
Argentina	2.1	–	0.2	–	–	†	–	–	0.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.7
Brazil	1.0	–	†	–	–	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.3
Chile	0.9	–	2.0	–	–	†	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3.6
Other S. & Cent. America	3.5	0.2	1.9	0.7	–	0.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8.2
S. & Cent. America	7.5	0.2	4.1	0.7	–	0.5	0.1	–	0.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	15.8
Belgium	2.6	–	–	–	†	†	3.9	–	4.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11.8
France	13.2	0.4	0.4	–	1.2	0.1	4.8	0.1	2.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	30.7
Italy	5.3	–	–	–	–	0.8	0.3	–	6.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	16.3
Spain	7.4	0.5	0.5	0.1	0.3	0.1	6.5	0.3	1.3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	24.9
Türkiye	3.8	–	0.2	0.2	0.3	0.8	1.4	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	14.8
United Kingdom	11.6	2.1	0.4	–	0.4	†	–	–	2.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	19.4
Other European Union	32.4	0.1	2.7	†	3.2	0.4	2.5	0.3	3.2	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	51.0
Rest of Europe	–	–	–	–	–	0.1	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.1
Europe	76.2	3.1	4.2	0.3	5.5	2.3	19.4	0.8	20.8	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	169.1
Egypt	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	†
Kuwait	0.9	–	0.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8.9
United Arab Emirates	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.1
Other Middle East & Africa	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.2
Middle East & Africa	1.0	–	0.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10.2
China	4.3	0.2	0.5	†	–	0.2	11.0	1.4	22.9	1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	97.8
India	4.4	–	0.4	–	–	0.6	0.6	1.1	15.0	4.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	31.0
Japan	7.5	0.3	0.1	–	–	0.1	8.4	3.0	4.0	1.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	90.3
Malaysia	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3.2
Pakistan	0.1	–	0.1	–	–	–	–	0.1	8.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10.1
Singapore	0.6	–	0.1	–	–	†	0.1	–	1.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6.8
South Korea	7.1	1.0	†	–	–	0.1	2.3	6.9	11.8	0.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	60.6
Taiwan	2.7	0.2	–	–	–	–	–	0.5	7.6	0.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	27.4
Thailand	1.6	–	0.3	–	–	–	–	0.8	3.9	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	16.1
Other Asia Pacific	0.9	–	0.1	–	–	–	–	0.2	5.3	0.1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	9.2
Asia Pacific	29.3	1.7	1.5	†	–	0.9	23.1	14.0	81.1	7.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	352.5
Total exports	114.4	5.3	10.5	1.1	5.5	3.7	42.7	15.3	108.4	7.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	549.2

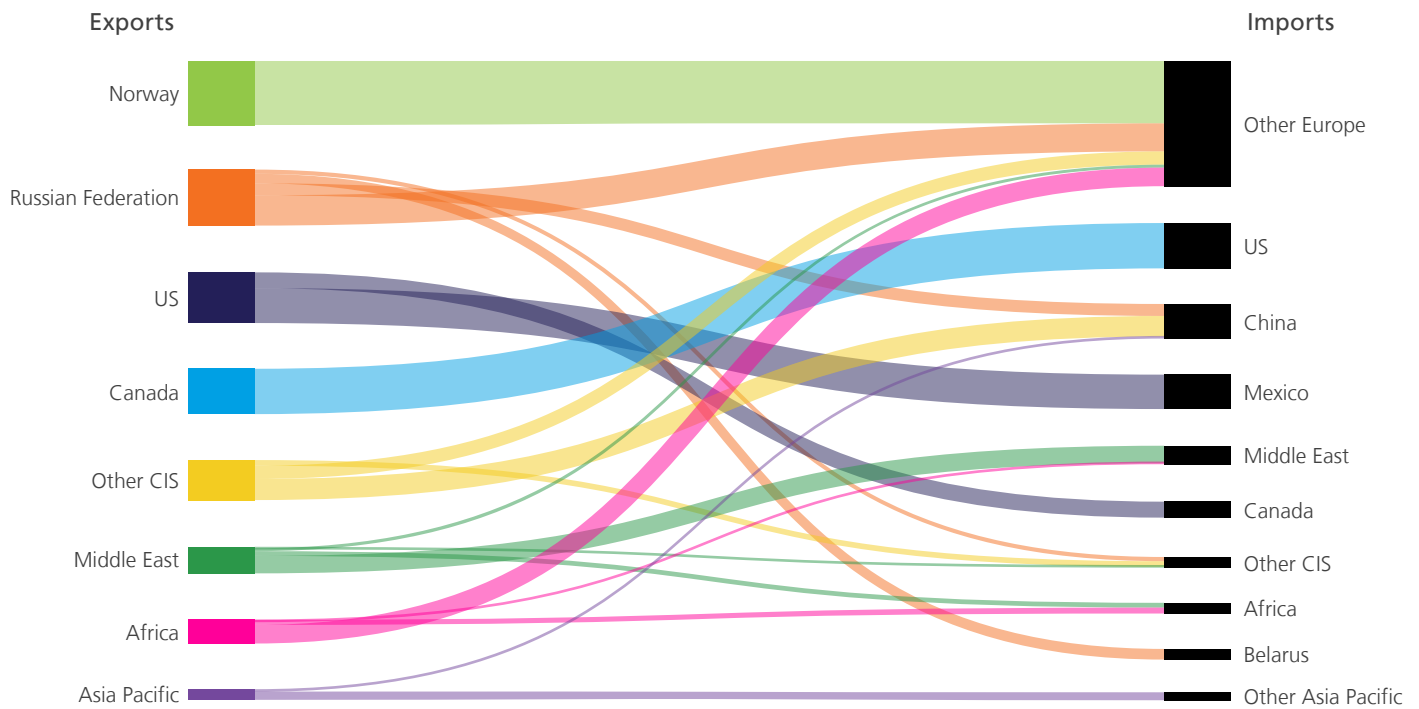
Source: Includes data from GIIGNL, S&P Global Commodity Insights.

* Includes re-exports.

† Less than 0.05.

Note: As far as possible, the data above represents standard cubic metres (measured at 15°C and 1013 mbar) and has been standardised using a gross calorific value (GCV) of 40 MJ/m³.

Natural gas Major trade movements 2023 – pipeline



Notes: As far as possible, the data above represents standard cubic metres (measured at 15°C and 1013 mbar) and has been standardised using a gross calorific value (GCV) of 40 MJ/m³.
Source: Includes data from FGE MENA gas service, IHS.

In 2023, pipeline trade of natural gas continued to decline falling 8% to 388 bcm. The fall in supply was most noticeable in the Russian Federation which saw its exports fall by 24% to 95 bcm. The global balance between LNG and pipeline trade is now almost the complete inverse of the position back in 2017 with pipeline gas now accounting for only 41% of traded gas. Norway remains the largest

supplier of pipeline gas to its European counterparts where imports from the Russian Federation fell by 42% to 50 bcm. Although Russian Federation pipeline exports experienced an overall decline, building on the 62% fall in 2022, its exports to China increased 45% to just over 21 bcm and by 53% to other CIS countries to 7 bcm.

Natural gas Trade movements 2023 by pipeline

Billion cubic metres To	From																			Total Imports					
	Canada	Mexico	US	Bolivia	Other S. & Cent. America	European Union	Norway	Other Europe	Azerbaijan	Kazakhstan	Russian Federation	Turkmenistan	Uzbekistan	Iran	Qatar	Other Middle East	Algeria	Libya	Other Africa		Indonesia	Myanmar	Other Asia Pacific		
Canada	-	-	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28.0	
Mexico	-	-	61.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	61.1
US	79.0	†	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.0
North America	79.0	†	89.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	168.1
Argentina	-	-	-	2.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2
Brazil	-	-	-	5.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4
Other S. & Cent. America	-	-	-	-	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6
S. & Cent. America	-	-	-	7.6	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.2
European Union	-	-	-	-	-	18.0	85.1	95.6	11.7	-	25.7	-	-	-	-	-	-	30.6	2.4	-	-	-	-	-	269.1
Rest of Europe	-	-	-	-	-	0.2	25.5	4.8	11.9	-	24.1	-	-	-	-	-	-	-	-	-	-	-	-	-	71.7
Europe	-	-	-	-	-	18.2	110.7	100.3	23.6	-	49.8	-	-	-	-	-	-	30.6	2.4	-	-	-	-	-	340.8
Belarus	-	-	-	-	-	-	-	-	-	-	16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	16.8
Kazakhstan	-	-	-	-	-	-	-	-	-	0.2	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6
Russian Federation	-	-	-	-	-	-	-	-	0.3	0.7	4.7	-	-	-	-	-	-	-	-	-	-	-	-	-	5.7
Other CIS	-	-	-	-	-	-	-	0.2	-	-	7.3	3.9	†	0.4	-	-	-	-	-	-	-	-	-	-	11.9
CIS	-	-	-	-	-	-	-	0.2	0.3	0.7	24.3	9.0	†	0.4	-	-	-	-	-	-	-	-	-	-	34.9
United Arab Emirates	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.0	-	-	-	-	-	-	-	-	-	18.0
Other Middle East	-	-	-	-	-	-	-	-	†	-	-	-	-	8.8	1.5	2.8	-	-	0.6	-	-	-	-	-	13.6
Middle East	-	-	-	-	-	-	-	-	†	-	-	-	-	8.8	19.5	2.8	-	-	0.6	-	-	-	-	-	31.6
South Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	-	-	-	-	4.1
Other Africa	-	-	-	-	-	-	-	0.9	-	-	-	-	-	-	-	8.4	3.9	-	1.0	-	-	-	-	-	14.2
Africa	-	-	-	-	-	-	-	0.9	-	-	-	-	-	-	-	8.4	3.9	-	5.1	-	-	-	-	-	18.2
Australia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9	0.9	0.9
China	-	-	-	-	-	-	-	-	-	4.6	21.3	30.5	1.2	-	-	-	-	-	-	-	-	-	3.7	-	61.3
Malaysia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4	-	-	-	-	0.4
Singapore	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	-	-	2.1	-	6.2
Thailand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	-	-	-	5.4
Asia Pacific	-	-	-	-	-	-	-	-	-	4.6	21.3	30.5	1.2	-	-	-	-	-	-	4.5	9.0	3.0	3.0	3.0	74.2
Total exports	79.0	†	89.1	7.6	1.6	18.2	110.7	101.4	23.9	5.3	95.4	39.5	1.2	14.3	19.5	11.1	34.5	2.4	5.7	4.5	9.0	3.0	3.0	3.0	677.0

Source: Includes data from FGE MENA gas service, S&P Global Commodity Insights.

Note: As far as possible, the data above represents standard cubic metres (measured at 15°C and 1013 mbar) and has been standardized using a gross calorific value (GCV) of 40 MJ/m³.

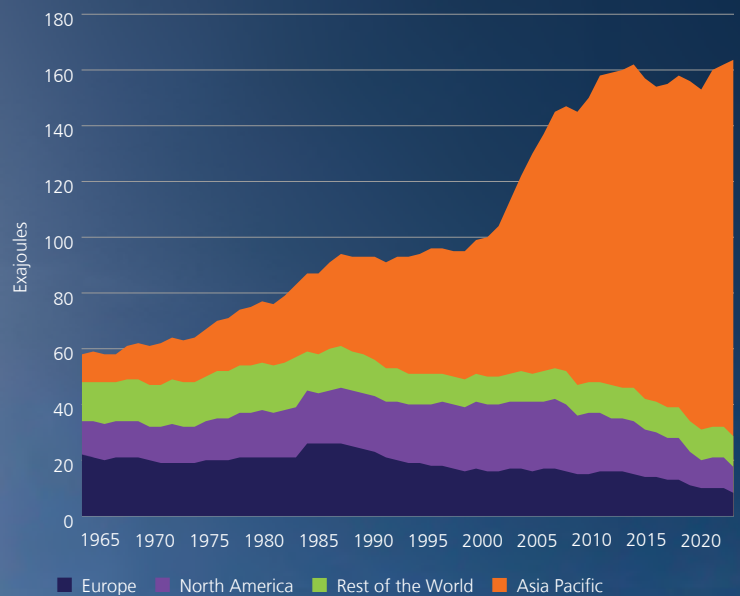
† Less than 0.05.

Coal

In 2023, global coal production reached its highest ever level (179 EJ), beating the previous high set the year before. The Asia Pacific region accounted for nearly 80% of global output with activity concentrated in just four countries: Australia, China, India, and Indonesia (jointly responsible for 97% of the region's output). China alone was responsible for just over half of total global production. North America, Southern & Central America, Europe and the Commonwealth of Independent States (CIS) all saw their production fall relative to 2022 levels.

Global coal consumption breached 164 EJ for the first time ever. An increase of 1.6% over 2022 was seven times higher than the previous ten-year average growth rate. Whilst China is by far the largest consumer of coal (56% of the world's total), in 2023 India exceeded the combined consumption of Europe and North America for the first time ever. Coal consumption in both Europe and North America each fell below 10 EJ.

Global coal consumption



Coal consumption in India exceeded the combined consumption of Europe and North America for the first time ever

Million tonnes												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Canada	68.4	68.3	62.4	62.4	60.6	55.0	53.2	46.1	47.6	46.7	48.6	4.0%	-3.3%	0.5%
Mexico	14.6	14.9	12.3	11.4	12.9	11.9	9.8	7.7	5.5	5.5	5.6	0.1%	-9.2%	0.1%
US	893.4	907.2	813.7	660.8	702.7	686.0	640.8	485.7	523.8	539.0	526.5	-2.3%	-5.1%	5.8%
Total North America	976.5	990.4	888.3	734.5	776.2	752.9	703.7	539.6	577.0	591.3	580.6	-1.8%	-5.0%	6.4%
Brazil	9.5	9.4	8.0	7.5	5.8	6.4	5.8	7.1	8.0	7.6	6.8	-10.1%	-3.2%	0.1%
Colombia	86.1	89.4	86.5	91.2	91.5	86.9	85.9	54.4	59.1	58.0	54.5	-5.9%	-4.4%	0.6%
Venezuela	1.2	0.8	0.8	0.7	0.7	0.7	0.4	0.3	0.2	0.8	0.8	-	-4.1%	†
Other S. & Cent. America	3.2	4.5	3.4	2.8	1.8	1.6	1.1	0.4	0.2	0.3	0.3	11.8%	-21.5%	†
Total S. & Cent. America	99.9	104.0	98.8	102.3	99.9	95.6	93.3	62.2	67.6	66.6	62.5	-6.2%	-4.6%	0.7%
Bulgaria	28.6	31.3	35.9	31.3	34.3	30.6	28.3	22.6	28.4	35.6	21.0	-40.9%	-3.0%	0.2%
Czech Republic	49.1	47.1	46.5	45.5	44.9	43.8	41.0	31.6	31.5	35.1	30.0	-14.7%	-4.8%	0.3%
Germany	190.6	185.8	184.3	175.4	175.1	168.8	131.3	107.4	126.3	130.8	102.3	-21.8%	-6.0%	1.1%
Greece	53.9	50.8	46.2	32.6	37.7	36.5	27.4	14.1	12.4	14.3	10.9	-23.6%	-14.8%	0.1%
Hungary	9.6	9.6	9.3	9.2	8.0	7.9	6.8	6.1	5.0	4.9	4.1	-17.4%	-8.2%	†
Poland	142.9	137.1	135.8	131.0	127.1	122.4	112.4	100.7	107.6	107.8	88.7	-17.7%	-4.6%	1.0%
Romania	24.7	23.6	25.5	23.0	25.8	23.7	21.7	15.0	17.7	18.2	14.8	-18.8%	-5.0%	0.2%
Serbia	40.3	29.8	37.8	38.5	39.8	37.6	38.9	39.7	36.4	35.1	31.9	-9.1%	-2.3%	0.4%
Spain	4.4	3.9	3.1	1.7	3.0	2.4	0.1	0.1	0.1	0.1	0.1	-	-33.7%	†
Türkiye	60.4	65.2	58.4	73.0	74.1	83.9	87.1	74.7	86.5	95.3	66.4	-30.4%	1.0%	0.7%
Ukraine	64.9	45.7	30.4	32.2	24.7	26.8	26.1	24.4	26.2	24.1	23.3	-3.3%	-9.7%	0.3%
United Kingdom	12.8	11.6	8.6	4.2	3.0	2.8	2.6	1.7	1.1	0.7	0.5	-22.3%	-27.6%	†
Other Europe	70.7	67.2	64.5	61.7	65.1	66.3	56.8	50.2	47.6	50.7	46.2	-8.9%	-4.2%	0.5%
Total Europe	752.8	708.8	686.3	659.4	662.6	653.5	580.5	488.3	526.7	552.6	440.1	-20.4%	-5.2%	4.8%
Kazakhstan	119.6	114.0	107.3	103.1	112.3	118.5	115.0	113.4	116.2	117.8	116.4	-1.2%	-0.2%	1.3%
Russian Federation	355.2	357.5	372.5	386.6	411.0	441.3	440.7	399.8	434.1	439.0	432.5	-1.5%	2.0%	4.8%
Uzbekistan	4.1	4.4	3.5	3.9	4.0	4.2	4.0	4.1	5.1	5.4	6.2	15.5%	4.3%	0.1%
Other CIS	4.2	4.1	4.0	4.6	5.7	7.7	7.9	6.2	6.6	8.6	8.4	-2.4%	7.2%	0.1%
Total CIS	483.1	480.0	487.3	498.1	533.0	571.6	567.6	523.5	561.9	570.8	563.4	-1.3%	1.6%	6.2%
Total Middle East	1.5	1.5	1.6	1.8	1.8	2.2	2.0	2.1	2.4	4.9	10.3	110.1%	21.1%	0.1%
South Africa	256.3	261.4	252.2	249.7	252.3	250.0	254.4	248.1	233.7	229.9	228.5	-0.6%	-1.1%	2.5%
Zimbabwe	3.1	5.8	4.3	2.7	2.9	3.3	2.6	2.7	3.2	3.9	5.0	26.6%	4.9%	0.1%
Other Africa	8.3	9.4	9.7	9.2	16.7	20.3	15.1	13.2	17.3	23.3	23.6	1.1%	11.1%	0.3%
Total Africa	267.7	276.6	266.2	261.7	271.9	273.7	272.2	264.0	254.3	257.2	257.1	†	-0.4%	2.8%
Australia	472.8	505.3	503.7	502.1	487.2	502.2	505.6	470.0	460.3	440.1	455.8	3.6%	-0.3%	5.0%
China	3974.3	3873.9	3746.5	3410.6	3523.6	3697.7	3846.3	3901.6	4125.8	4558.6	4710.0	3.3%	1.7%	51.8%
India	608.5	646.2	674.2	689.8	711.7	760.4	753.9	760.2	812.1	910.8	1010.9	11.0%	5.2%	11.1%
Indonesia	474.4	458.1	461.6	456.2	461.2	557.8	616.2	563.7	614.0	687.4	775.2	12.8%	5.1%	8.5%
Japan	1.2	1.3	1.2	1.3	1.4	1.0	0.8	0.8	0.7	0.7	0.6	-8.8%	-6.2%	†
Mongolia	33.3	24.4	24.1	35.1	49.5	54.6	57.1	43.1	32.3	39.3	83.2	111.6%	9.6%	0.9%
New Zealand	4.6	4.0	3.4	2.9	2.9	3.2	3.0	2.8	2.9	2.6	2.6	-1.4%	-5.6%	†
Pakistan	3.0	3.4	3.3	4.1	4.2	4.4	7.1	9.5	10.2	10.0	17.1	71.0%	19.1%	0.2%
South Korea	1.8	1.7	1.8	1.7	1.5	1.2	1.1	1.0	0.9	0.8	0.6	-21.1%	-9.8%	†
Thailand	18.1	18.0	15.2	17.0	16.3	14.9	14.1	13.3	14.2	13.6	12.8	-6.1%	-3.4%	0.1%
Vietnam	41.1	41.1	41.7	38.7	38.4	42.4	46.4	44.6	48.3	49.9	48.2	-3.4%	1.6%	0.5%
Other Asia Pacific	43.7	44.2	47.7	64.2	61.6	58.8	64.9	60.9	57.5	64.0	64.6	0.9%	4.0%	0.7%
Total Asia Pacific	5676.8	5621.7	5524.3	5223.8	5359.5	5698.5	5916.5	5871.5	6179.2	6777.9	7181.6	6.0%	2.4%	79.0%
Total World	8258.3	8183.0	7952.8	7481.6	7704.9	8048.1	8135.7	7751.2	8169.1	8821.3	9095.7	3.1%	1.0%	100.0%
of which: OECD	2111.9	2147.8	2016.5	1842.1	1872.1	1855.2	1738.4	1427.0	1491.7	1504.2	1418.0	-5.7%	-3.9%	15.6%
Non-OECD	6146.5	6035.3	5936.3	5639.5	5832.8	6192.9	6397.3	6324.2	6677.4	7317.1	7677.6	4.9%	2.3%	84.4%
European Union	543.9	527.3	521.3	481.6	492.2	473.4	397.3	318.8	348.9	368.2	291.7	-20.8%	-6.0%	3.2%

* Commercial solid fuels only, i.e. bituminous coal and anthracite (hard coal), and lignite and brown (sub-bituminous) coal, and other commercial solid fuels.

† Includes coal produced for Coal-to-Liquids and Coal-to-Gas transformations.

† Less than 0.05%.

Note: Annual changes and shares of total are calculated using million tonnes figures.

Exajoules	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		Share
												2023	2013-23	2023
Canada	1.53	1.51	1.36	1.37	1.33	1.22	1.20	1.15	1.21	1.19	1.24	4.1%	-2.0%	0.7%
Mexico	0.30	0.30	0.29	0.25	0.31	0.28	0.23	0.19	0.14	0.14	0.14	0.1%	-7.5%	0.1%
US	20.05	20.33	17.99	14.70	15.66	15.40	14.29	10.73	11.62	12.07	11.84	-1.9%	-5.1%	6.6%
Total North America	21.87	22.15	19.64	16.33	17.30	16.90	15.72	12.07	12.97	13.40	13.21	-1.4%	-4.9%	7.4%
Brazil	0.15	0.15	0.12	0.11	0.09	0.10	0.09	0.10	0.12	0.11	0.10	-11.1%	-4.4%	0.1%
Colombia	2.48	2.57	2.49	2.62	2.63	2.50	2.47	1.57	1.70	1.67	1.57	-5.9%	-4.4%	0.9%
Venezuela	0.04	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	-	-6.8%	†
Other S. & Cent. America	0.07	0.12	0.10	0.08	0.05	0.05	0.03	0.01	0.01	0.01	0.01	12.3%	-20.0%	†
Total S. & Cent. America	2.74	2.87	2.73	2.84	2.80	2.67	2.61	1.69	1.83	1.80	1.69	-6.1%	-4.7%	0.9%
Bulgaria	0.20	0.21	0.25	0.21	0.24	0.21	0.20	0.16	0.20	0.25	0.15	-40.9%	-3.1%	0.1%
Czech Republic	0.74	0.71	0.71	0.67	0.64	0.62	0.56	0.43	0.44	0.48	0.40	-15.2%	-5.9%	0.2%
Germany	1.89	1.85	1.79	1.66	1.65	1.58	1.19	0.98	1.15	1.19	0.92	-23.2%	-7.0%	0.5%
Greece	0.28	0.27	0.24	0.17	0.19	0.18	0.13	0.07	0.06	0.07	0.05	-23.6%	-15.4%	†
Hungary	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.03	0.03	0.03	-17.4%	-8.7%	†
Poland	2.39	2.26	2.22	2.18	2.08	1.98	1.87	1.68	1.76	1.71	1.48	-13.2%	-4.6%	0.8%
Romania	0.19	0.19	0.20	0.18	0.19	0.17	0.16	0.11	0.13	0.12	0.09	-18.8%	-7.0%	0.1%
Serbia	0.32	0.24	0.30	0.30	0.30	0.28	0.29	0.30	0.26	0.25	0.23	-9.1%	-3.4%	0.1%
Spain	0.07	0.07	0.05	0.03	0.05	0.04	^	^	^	^	^	-	-32.7%	†
Türkiye	0.65	0.68	0.54	0.65	0.63	0.69	0.73	0.66	0.75	0.83	0.58	-29.7%	-1.0%	0.3%
Ukraine	1.60	1.09	0.72	0.76	0.57	0.61	0.60	0.53	0.57	0.53	0.51	-3.3%	-10.8%	0.3%
United Kingdom	0.32	0.29	0.21	0.11	0.08	0.08	0.07	0.05	0.03	0.02	0.01	-22.3%	-26.8%	†
Other Europe	0.72	0.64	0.59	0.59	0.60	0.60	0.52	0.46	0.44	0.45	0.42	-8.3%	-5.2%	0.2%
Total Europe	9.45	8.57	7.88	7.58	7.28	7.08	6.36	5.47	5.82	5.92	4.88	-17.7%	-6.4%	2.7%
Kazakhstan	2.15	2.09	1.66	1.75	1.92	1.98	1.88	1.86	1.92	1.95	1.92	-1.2%	-1.1%	1.1%
Russian Federation	7.25	7.39	7.80	8.12	8.62	9.23	9.23	8.42	9.25	9.35	9.21	-1.5%	2.5%	5.1%
Uzbekistan	0.05	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.07	15.5%	4.3%	†
Other CIS	0.06	0.06	0.07	0.07	0.09	0.12	0.12	0.11	0.11	0.14	0.13	-3.6%	8.8%	0.1%
Total CIS	9.51	9.60	9.57	10.00	10.68	11.37	11.28	10.43	11.34	11.50	11.34	-1.4%	1.8%	6.3%
Total Middle East	0.03	0.03	0.03	0.04	0.04	0.05	0.04	0.04	0.04	0.06	0.09	37.4%	11.2%	†
South Africa	6.08	6.20	5.96	6.01	5.97	6.01	6.02	5.88	5.53	5.44	5.41	-0.6%	-1.1%	3.0%
Zimbabwe	0.08	0.16	0.12	0.07	0.08	0.09	0.07	0.07	0.09	0.11	0.13	26.6%	4.9%	0.1%
Other Africa	0.21	0.24	0.25	0.24	0.43	0.53	0.39	0.34	0.45	0.60	0.61	1.6%	11.0%	0.3%
Total Africa	6.38	6.59	6.33	6.32	6.49	6.63	6.48	6.29	6.06	6.15	6.15	0.1%	-0.3%	3.4%
Australia	11.97	12.81	12.80	12.83	12.50	13.10	13.18	12.09	11.75	11.24	11.66	3.8%	-0.2%	6.5%
China	79.32	78.05	76.59	70.82	73.17	76.87	79.76	80.51	83.44	91.32	93.10	2.0%	1.6%	51.9%
India	10.71	11.28	11.77	11.89	11.99	12.80	12.60	12.59	13.38	15.05	16.75	11.3%	4.6%	9.3%
Indonesia	10.44	10.15	10.19	9.87	9.69	11.44	12.84	11.78	12.68	13.95	15.73	12.8%	4.2%	8.8%
Japan	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	-5.0%	-5.8%	†
Mongolia	0.64	0.47	0.46	0.67	0.94	1.04	1.09	0.82	0.62	0.75	1.59	111.6%	9.6%	0.9%
New Zealand	0.12	0.10	0.09	0.07	0.07	0.08	0.07	0.07	0.07	0.07	0.07	-0.3%	-5.9%	†
Pakistan	0.06	0.06	0.06	0.08	0.08	0.08	0.13	0.18	0.19	0.19	0.32	71.0%	19.1%	0.2%
South Korea	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.01	-21.1%	-9.4%	†
Thailand	0.20	0.19	0.16	0.18	0.17	0.16	0.15	0.14	0.15	0.14	0.13	-6.1%	-3.8%	0.1%
Vietnam	0.96	0.96	0.98	0.91	0.90	0.99	1.09	1.05	1.13	1.17	1.13	-3.4%	1.6%	0.6%
Other Asia Pacific	1.08	1.09	1.13	1.40	1.33	1.22	1.38	1.30	1.21	1.35	1.37	1.1%	2.5%	0.8%
Total Asia Pacific	115.55	115.25	114.27	108.78	110.91	117.83	122.33	120.55	124.66	135.26	141.88	4.9%	2.1%	79.2%
Total World	165.52	165.06	160.45	151.88	155.49	162.52	164.82	156.54	162.73	174.09	179.24	3.0%	0.8%	100.0%
of which: OECD	43.40	44.41	41.32	37.85	38.33	38.21	36.37	29.95	30.95	30.93	30.21	-2.3%	-3.5%	16.9%
Non-OECD	122.12	120.65	119.13	114.03	117.16	124.31	128.45	126.59	131.78	143.16	149.04	4.1%	2.0%	83.1%
European Union	6.22	5.97	5.82	5.47	5.42	5.16	4.42	3.67	3.96	4.04	3.31	-18.2%	-6.1%	1.8%

* Commercial solid fuels only, i.e. bituminous coal and anthracite (hard coal), and lignite and brown (sub-bituminous) coal, and other commercial solid fuels. Includes coal produced for

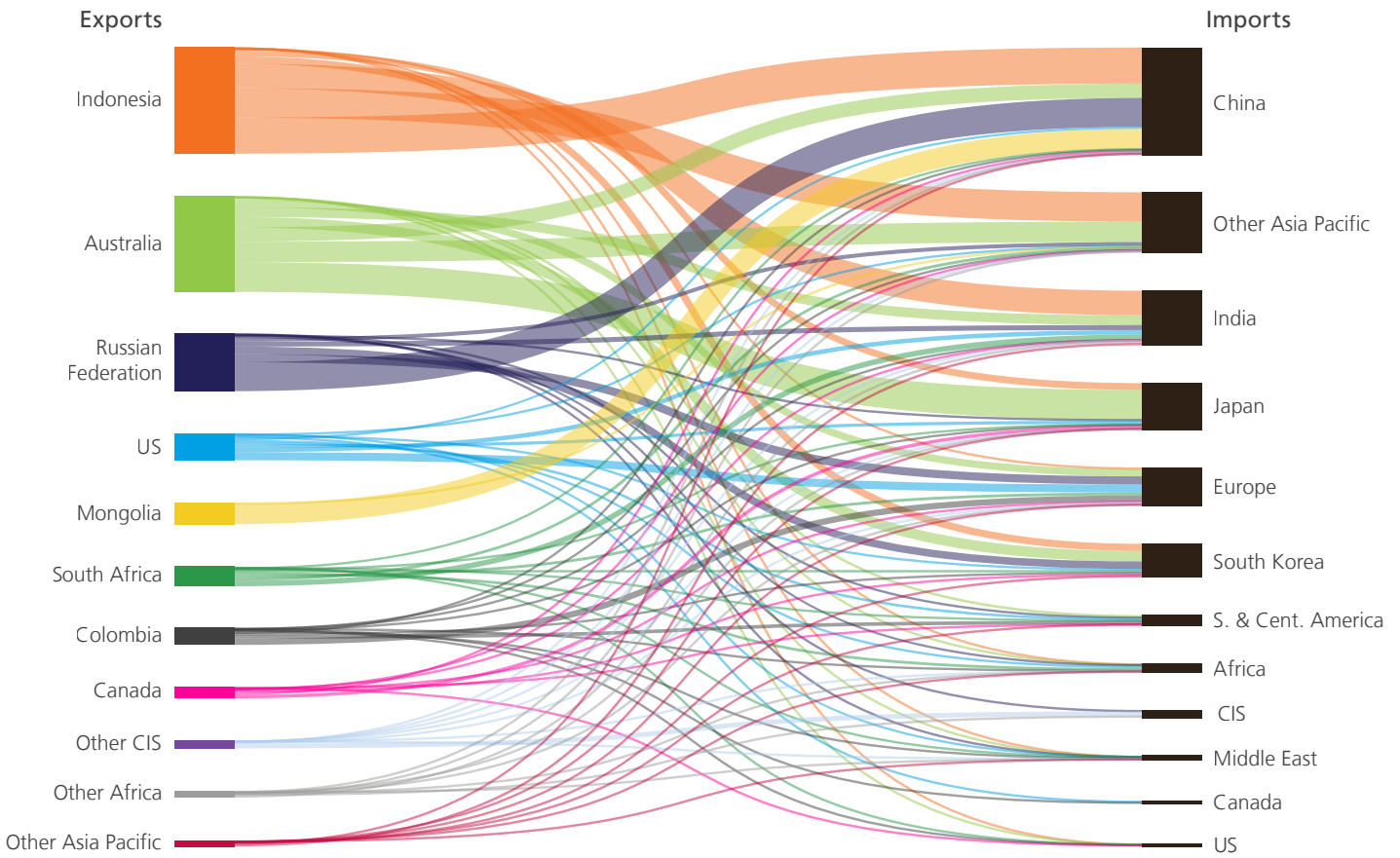
Coal-to-Liquids and Coal-to-Gas transformations.

^ Less than 0.005.

† Less than 0.05%.

Note: Annual changes and shares of total are calculated using exajoules figures.

Coal Trade movements



Notes: Commercial solid fuels only, i.e. bituminous coal and anthracite (hard coal), and lignite and brown (sub-bituminous) coal, and other commercial solid fuels. Intra-area movements (for example, between countries in Europe) are excluded.

Overall, international coal trade increased by almost 10% in 2023 reaching its highest level since 2018. Indonesia, Australia, and the Russian Federation were jointly responsible for around 70% of total global exports with Indonesia alone accounting for around 40% of that (over a quarter of total global exports). China was by far the largest importer of coal

at around 10 EJ, almost double that of India, the second-highest ranked country. Russian Federation exports increased by 1.5% with China accounting for just over half of its overseas markets. Overall, the Asia Pacific region accounted for 82% of global coal imports. Europe's imports fell to their lowest level since 2000.

Coal Inter-area movements 2023

From	To														Total
	Canada	Mexico	US	S. & Cent. America	Europe	CIS	Middle East	Africa	China	India	Japan	South Korea	Other Asia Pacific		
Canada	-	†	0.02	0.02	0.09	-	†	†	0.22	0.05	0.32	0.20	0.06	0.99	
US	0.15	0.01	-	0.25	0.76	†	0.01	0.19	0.18	0.42	0.30	0.13	0.07	2.47	
Colombia	0.04	0.06	0.07	0.34	0.59	-	0.11	0.02	0.12	0.01	0.04	0.15	0.03	1.59	
Europe	†	†	0.01	0.01	-	†	0.01	0.08	0.01	0.10	†	†	0.01	0.23	
Russian Federation	-	-	-	0.04	0.77	0.04	0.01	0.13	2.75	0.48	0.09	0.71	0.38	5.39	
Other CIS	-	-	†	-	0.16	0.46	0.01	0.01	0.01	†	†	†	0.01	0.65	
South Africa	†	-	†	0.02	0.27	-	0.07	0.26	0.05	0.52	0.09	0.18	0.28	1.74	
Other Africa	-	-	†	-	0.04	-	0.03	0.10	0.02	0.21	†	0.05	0.08	0.53	
Australia	†	†	†	0.25	0.68	-	0.01	0.02	1.36	0.92	2.83	0.99	1.94	9.00	
China	†	0.01	†	0.02	0.03	†	0.01	0.01	-	0.02	0.03	0.01	0.16	0.31	
Indonesia	†	-	†	†	0.10	-	†	†	3.43	2.33	0.65	0.68	2.79	10.00	
Mongolia	-	-	-	-	†	†	-	-	1.92	-	-	†	0.04	1.96	
Other Asia Pacific	†	†	†	0.01	0.03	†	†	†	0.08	0.23	0.02	0.08	-	0.46	
Rest of World	†	†	†	0.01	0.02	†	†	†	0.01	0.05	†	0.01	0.01	0.13	
Total imports	0.19	0.08	0.11	0.96	3.56	0.50	0.27	0.82	10.16	5.35	4.39	3.19	5.86	35.43	

Note: Commercial solid fuels only, i.e. bituminous coal and anthracite (hard coal), and lignite and brown (sub-bituminous) coal, and other commercial solid fuels. Intra-area movements (for example, between countries in Europe) are excluded.
 † Less than 0.05%.

Exajoules												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013-23	2023
Imports														
Canada	0.22	0.26	0.22	0.19	0.22	0.23	0.21	0.17	0.19	0.18	0.19	6.7%	-1.3%	0.5%
Mexico	0.20	0.22	0.23	0.21	0.32	0.32	0.25	0.13	0.05	0.05	0.08	72.5%	-8.4%	0.2%
US	0.24	0.28	0.28	0.25	0.19	0.15	0.17	0.65	0.14	0.16	0.11	-34.8%	-7.6%	0.3%
S. & Cent. America	1.08	1.08	1.03	1.08	1.20	1.18	1.12	1.04	1.25	1.05	0.96	-8.3%	-1.1%	2.7%
Europe	5.84	6.08	6.02	5.38	5.83	6.34	5.08	3.93	4.44	4.94	3.56	-27.9%	-4.8%	10.0%
CIS	0.58	0.59	0.58	0.52	0.60	0.65	0.70	0.66	0.64	0.49	0.50	1.3%	-1.6%	1.4%
Middle East	0.44	0.49	0.39	0.34	0.36	0.37	0.34	0.38	0.34	0.24	0.27	9.4%	-4.9%	0.8%
Africa	0.82	0.37	0.46	0.50	0.63	0.82	0.92	0.52	0.68	0.73	0.82	11.7%	†	2.3%
China	7.62	6.62	4.69	5.65	5.87	6.00	6.40	6.61	6.68	5.83	10.16	74.3%	2.9%	28.7%
India	3.66	4.65	4.92	10.11	5.25	5.68	4.70	4.74	4.67	4.99	5.35	7.3%	3.9%	15.1%
Japan	5.06	5.00	5.05	5.01	5.06	5.00	4.90	4.56	4.84	4.82	4.39	-9.0%	-1.4%	12.4%
South Korea	3.32	3.43	3.54	3.53	3.89	3.90	3.73	3.28	3.35	3.36	3.19	-4.9%	-0.4%	9.0%
Other Asia Pacific	3.49	3.58	3.79	4.47	4.90	5.34	5.22	6.36	6.22	5.53	5.86	6.0%	5.3%	16.5%
Total World	32.57	32.66	31.19	37.25	34.32	35.99	33.72	33.03	33.51	32.37	35.43	9.5%	0.8%	100.0%
Exports														
Canada	1.12	1.03	0.85	0.78	0.95	1.03	1.02	0.95	0.96	0.97	0.99	1.5%	-1.3%	2.8%
US	2.88	2.37	1.90	1.53	2.41	2.89	2.21	1.74	2.18	2.23	2.47	10.6%	-1.5%	7.0%
Colombia	2.05	2.27	2.19	2.33	2.48	2.42	2.09	1.82	1.67	1.59	1.59	†	-2.5%	4.5%
Europe	0.68	0.13	0.10	0.13	0.19	0.25	0.24	0.21	0.22	0.15	0.23	49.4%	-10.4%	0.6%
Russian Federation	3.54	3.91	4.10	4.45	5.09	5.76	5.79	5.66	6.03	5.31	5.39	1.4%	4.3%	15.2%
Other CIS	0.53	0.54	0.53	0.48	0.50	0.49	0.55	0.63	0.65	0.72	0.65	-8.9%	2.1%	1.8%
South Africa	2.11	2.19	2.27	2.14	2.68	2.95	1.41	1.73	1.62	1.72	1.74	1.0%	-1.9%	4.9%
Other Africa	0.11	0.18	0.28	5.68	0.66	0.24	0.28	0.74	0.37	0.47	0.53	12.5%	16.5%	1.5%
Australia	9.16	9.89	9.91	9.84	9.63	9.71	9.60	9.33	9.60	8.21	9.00	9.6%	-0.2%	25.4%
China	0.28	0.37	0.45	0.50	0.40	0.41	0.31	0.18	0.28	0.31	0.31	-0.2%	1.1%	0.9%
Indonesia	8.51	8.35	7.41	7.69	8.01	8.49	8.49	8.79	8.98	9.19	10.00	8.8%	1.6%	28.2%
Mongolia	0.49	0.53	0.41	0.73	0.95	0.99	1.04	0.83	0.49	0.90	1.96	116.8%	14.8%	5.5%
Other Asia Pacific	0.96	0.80	0.67	0.79	0.32	0.29	0.60	0.34	0.36	0.44	0.46	5.5%	-7.1%	1.3%
Rest of World	0.15	0.09	0.13	0.17	0.06	0.08	0.09	0.08	0.08	0.14	0.13	-13.0%	-1.6%	0.4%
Total World	32.57	32.66	31.19	37.25	34.32	35.99	33.72	33.03	33.51	32.37	35.43	9.5%	0.8%	100.0%

† Less than 0.05.

Note: Commercial solid fuels only, i.e. bituminous coal and anthracite (hard coal), and lignite and brown (sub-bituminous) coal, and other commercial solid fuels. Intra-area movements (for example between countries in Europe) are excluded.

Mined energy resource prices

	Coal \$/te								Uranium \$/lb
	United States ¹	Colombia ²	Northwest Europe ³	South Africa ⁴	Indonesia ⁵	South China ⁶	Japan ⁷	Australia ⁸	Canada ⁹
1987	-	-	31.30	-	-	-	-	-	-
1988	-	-	39.94	-	-	-	-	-	-
1989	-	-	42.08	-	-	-	-	-	-
1990	31.59	-	43.48	-	-	-	-	-	-
1991	29.01	-	42.80	-	-	-	-	-	-
1992	28.53	-	38.53	-	-	-	-	-	-
1993	29.85	-	33.68	-	-	-	-	-	-
1994	31.72	-	37.18	-	-	-	-	-	-
1995	27.01	-	44.50	-	-	-	-	-	-
1996	29.86	-	41.25	-	-	-	-	-	-
1997	29.76	-	38.92	-	-	-	-	-	-
1998	31.00	-	32.00	-	-	-	-	-	-
1999	31.29	-	28.79	-	-	-	-	-	-
2000	29.90	-	35.99	-	-	27.52	-	-	-
2001	50.15	-	39.03	-	-	31.78	37.69	-	-
2002	33.20	-	31.65	-	-	33.19	31.47	-	-
2003	38.52	-	43.60	-	-	31.74	39.61	-	-
2004	64.90	-	72.13	-	-	42.76	74.22	-	-
2005	70.12	-	60.54	-	-	51.34	64.62	-	-
2006	57.82	-	64.11	-	-	53.53	65.22	-	-
2007	49.73	-	88.79	-	-	61.23	95.59	-	-
2008	117.42	-	147.67	-	-	104.97	157.88	-	-
2009	60.73	-	70.39	-	-	87.86	83.59	-	-
2010	67.87	59.21	92.50	-	-	110.08	108.47	-	-
2011	84.75	79.73	121.48	-	-	127.27	126.13	-	-
2012	67.28	65.02	92.50	-	-	111.89	100.30	-	-
2013	69.72	54.18	81.69	-	-	95.42	90.07	-	-
2014	67.08	50.25	75.38	62.80	-	84.12	76.13	-	-
2015	51.57	47.31	56.79	47.48	-	67.53	60.10	-	-
2016	51.45	52.62	60.09	53.04	-	71.35	71.66	-	-
2017	63.83	68.75	84.51	71.59	-	94.72	96.02	-	-
2018	72.84	72.76	91.83	78.03	-	99.45	112.73	71.13	-
2019	57.16	51.26	60.17	55.67	50.53	35.20	73.57	54.24	-
2020	42.77	45.16	50.13	48.30	45.22	30.64	61.03	44.75	30.46
2021	68.54	100.39	122.60	96.49	95.22	124.70	114.59	83.26	35.16
2022	157.57	248.37	291.28	212.99	127.65	177.78	214.57	174.49	49.78
2023	73.59	99.87	129.54	99.66	84.61	120.65	130.25	103.59	60.37

¹Source: S&P Global Commodity Insights, ©2024 by S&P Global Inc. Prices are for CAPP 12,500 Btu, 1.2 SO₂ coal, FOB. Prices for 1996-2000 are by coal price publication date, 2001-2005 by coal price assessment date. From 2006, average daily OTC.

²Source: S&P Global Commodity Insights, ©2024 by S&P Global Inc 6,000 kcal/kg NAR FOB.

³Source: IHS Northwest Europe prices for 1990-2000 average monthly marker prices, 2001-2018 average weekly prices. From 2019, monthly average of S&P Global Commodity Insights, ©2024 by S&P Global Inc Thermal Coal CIF ARA 6,000 kcal/kg NAR.

⁴Source: S&P Global Commodity Insights, ©2024 by S&P Global Inc FOB Richards Bay 5500 kcal/kg NAR 7-45 Day \$/mt.

⁵Source: S&P Global Commodity Insights, ©2024 by S&P Global Inc FOB Kalimantan 5,000 kcal/kg GAR.

⁶South China prices are the average monthly price for 2000-2005, weekly prices 2006-2018, from 2019 monthly average of S&P Global Commodity Insights, ©2024 by S&P Global Inc CFR South China 5,500 kilocalories per kilogram NAR.

⁷Source: 2001-2018 IHS Japan prices basis = 6,000 kilocalories per kilogram NAR CIF. From 2019, monthly average of S&P Global Commodity Insights, ©2024 by S&P Global Inc NEAT 5,750 kcal/kg NAR.

⁸Source: S&P Global Commodity Insights, ©2024 by S&P Global Inc FOB Newcastle High Ash 5500 kcal/kg NAR 7-45 Day \$/mt.

⁹S&P Global Commodity Insights, ©2024 by S&P Global Inc Uranium U3O8 Spot Canada Mo01 \$/lb.

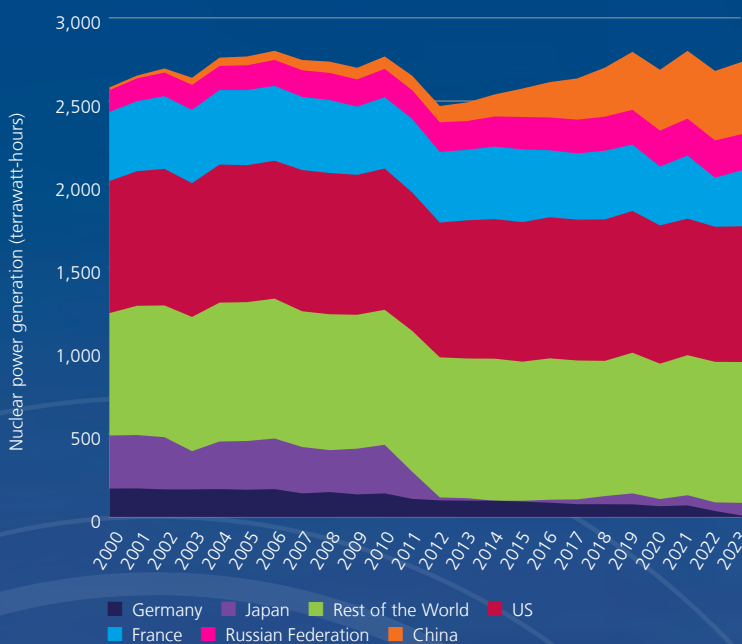
Note: CAPP = Central Appalachian, CIF = cost+insurance+freight (average prices); FOB = free on board, NAR = net as received, CFR = cost+freight.

Nuclear energy

Despite a small drop in total installed capacity, electricity generation from nuclear power plant increased in 2023 by 2%. However, it was still 58 terawatt-hours below its 2019 pre-COVID level and 2% below its peak output in 2006. Output from nuclear in Europe fell by 1% with the recovery of France's nuclear fleet from prolonged outages in 2022 offset by Germany's closure of its last three remaining units early in the year. China continues to lead the way in building new capacity. Since 2000 it has built around 60% of all new nuclear capacity additions.

In late 2023, commercial operations began at China's onshore small modular reactor (SMR) demonstration project, a world-first featuring the latest Generation IV technology and incorporating inherent safety systems. Following events in Fukushima in 2011, Japan has gradually returned units to service and, in 2023 output increased by 50%. Whilst output from nuclear in the US remained relatively flat, it was still equal to the combined outputs of China and France, operators of the second and third-largest fleets.

Before Fukushima in 2011, nuclear met 25% of Japan's electricity demand and 23% of Germany's. In 2023, it met only around 8% in Japan and just 2% in Germany



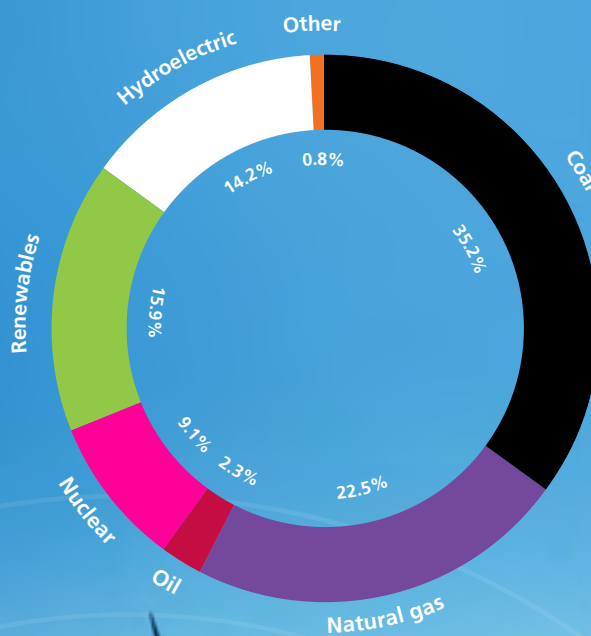
China commissioned the world's first onshore demonstration of a small modular reactor (SMR)

Electricity and renewables

Global electricity generation increased by 2.5% in 2023 to reach a record level of 29,925 TWh. Recording a growth rate that was 25% faster than total global primary energy consumption suggests that the world's energy system is increasingly electrifying. Whilst electricity demand in Asia Pacific and the Middle East increased by around 5%, demand in both Europe and North America fell by 2.4% and 1% respectively.

Coal retained its position as the dominant fuel for power generation with fossil fuels overall forming 60% of global electricity generation. Renewables share of total power generation rose from 29% to 30%. At a regional level, Southern & Central America recorded the highest contribution from renewables at 72%. The share of nuclear remained flat at around 9% with new build in China and returns to service of plant in France and Japan being offset by the closure of Germany's remaining plant. In 2023, grid-scale battery electricity storage system (BESS) capacity stood at 56 GW, nearly 50% of which was installed in China.

**Fossil fuels
contributed 60% of
total global electricity
generated in 2023**



Renewable energy Solar – Installed photovoltaic (PV) power and concentrated solar power (CSP)*

Megawatts												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada	1210	1843	2519	2665	2932	3095	3327	3609	4554	5312	5757	8.4%	16.9%	0.4%
Mexico	109	174	287	633	1126	2583	4744	6712	8180	9364	10910	16.5%	58.5%	0.8%
US	13246	18112	24237	35434	43770	51987	61587	76441	95391	114361	139205	21.7%	26.5%	9.8%
Total North America	14565	20129	27043	38731	47828	57665	69658	86762	108125	129037	155873	20.8%	26.7%	11.0%
Argentina	16	16	16	16	16	198	447	769	1080	1116	1408	26.2%	57.0%	0.1%
Brazil	12	21	46	128	1207	2453	4698	8452	14499	25520	37449	46.7%	122.8%	2.6%
Chile	12	203	545	1050	1829	2294	2673	3229	4516	6525	8475	29.9%	93.1%	0.6%
Honduras	5	5	396	412	455	515	518	525	529	529	529	-	58.9%	^
The Dominican Republic	7	13	22	70	93	188	331	382	580	732	1073	46.7%	65.7%	0.1%
Other S. & Cent. America	405	506	882	1064	1666	1885	2415	2829	3494	4039	4669	15.6%	27.7%	0.3%
Total S. & Cent. America	457	764	1907	2739	5265	7531	11083	16186	24699	38462	53603	39.4%	61.1%	3.8%
Austria	626	785	937	1096	1269	1455	1702	2043	2783	3792	6832	80.2%	27.0%	0.5%
Belgium	2902	3015	3132	3329	3621	4000	4637	5573	6012	6756	8549	26.5%	11.4%	0.6%
Bulgaria	1039	1029	1028	1030	1031	1033	1044	1100	1275	1737	2937	69.1%	11.0%	0.2%
Czech Republic	2064	2067	2075	2068	2075	2081	2111	2172	2246	2420	2499	3.3%	1.9%	0.2%
Denmark	571	607	782	851	906	998	1080	1304	1704	3070	3529	15.0%	20.0%	0.2%
France	5277	6034	7138	7702	8610	9629	10738	11926	14612	17350	20551	18.4%	14.6%	1.4%
Germany	36710	37900	39224	40679	42293	45158	48914	53671	60038	67479	81739	21.1%	8.3%	5.8%
Greece	2579	2596	2604	2604	2606	2651	2834	3288	4277	5430	7030	29.5%	10.5%	0.5%
Hungary	35	89	172	235	344	728	1400	2131	2968	4235	5835	37.8%	66.8%	0.4%
Italy	18190	18600	18907	19289	19688	20114	20871	21656	22600	24561	29795	21.3%	5.1%	2.1%
Lithuania	68	69	69	70	74	82	103	164	255	572	1165	103.7%	32.9%	0.1%
Netherlands	650	1007	1526	2135	2911	4608	7228	11110	14823	19600	23904	22.0%	43.4%	1.7%
Poland	2	27	108	187	287	562	1539	3955	7416	12170	15809	29.9%	141.0%	1.1%
Portugal	296	415	447	513	579	667	901	1100	1646	2646	3876	46.5%	29.3%	0.3%
Romania	761	1293	1326	1372	1374	1386	1398	1383	1394	1809	1917	6.0%	9.7%	0.1%
Slovakia	533	533	533	533	528	471	590	535	537	549	631	15.0%	1.7%	^
Slovenia	187	224	239	232	247	247	278	370	461	626	1034	65.2%	18.7%	0.1%
Spain	6994	7001	7008	7017	7027	7068	11111	12440	16019	25615	31016	21.1%	16.1%	2.2%
Sweden	43	60	104	153	244	428	714	1107	1606	2388	3488	46.1%	55.2%	0.2%
Switzerland	756	1061	1394	1664	1906	2173	2498	2973	3655	4340	5840	34.6%	22.7%	0.4%
Türkiye	19	41	250	834	3422	5064	5996	6668	7817	9426	11293	19.8%	89.7%	0.8%
Ukraine	748	819	841	955	1200	2003	5936	7331	8062	8062	8062	-	26.8%	0.6%
United Kingdom	2937	5528	9601	11914	12760	13060	13345	13551	13915	14651	15657	6.9%	18.2%	1.1%
Other Europe	221	331	404	500	647	817	1217	1758	2479	3713	6211	67.3%	39.6%	0.4%
Total Europe	84208	91133	99849	109662	115649	126483	148184	169308	198600	242999	299200	23.1%	13.5%	21.1%
Russian Federation	1	5	61	76	225	535	1276	1428	1661	1816	2170	19.5%	110.7%	0.2%
Kazakhstan	^	5	57	57	59	209	542	912	1038	1146	1306	13.9%	119.6%	0.1%
Other CIS	2	8	12	75	114	210	212	250	461	812	1209	49.0%	89.7%	0.1%
Total CIS	4	18	130	209	398	954	2030	2589	3160	3774	4685	24.2%	104.0%	0.3%
Israel	446	656	796	906	1006	1346	2138	2652	3591	4411	4524	2.6%	26.1%	0.3%
Jordan	^	^	57	311	418	760	971	1541	1811	1966	1990	1.2%	160.0%	0.1%
Saudi Arabia	22	24	24	24	34	84	109	109	439	440	2285	419.5%	58.8%	0.2%
United Arab Emirates	126	130	132	135	353	600	1935	2333	3002	3588	5925	65.1%	47.0%	0.4%
Other Middle East	38	72	145	245	438	744	923	1172	1417	3579	3819	6.7%	58.4%	0.3%
Total Middle East	633	883	1154	1621	2250	3535	6077	7807	10261	13983	18543	32.6%	40.2%	1.3%
Algeria	25	28	61	261	354	366	366	366	366	451	451	-	33.5%	^
Egypt	35	35	36	59	180	764	1647	1643	1663	1724	1856	7.7%	48.7%	0.1%
Morocco	35	40	200	202	204	734	734	774	854	854	934	9.4%	38.8%	0.1%
South Africa	262	1164	1353	2176	3451	4805	4908	5994	6316	6326	6164	-2.6%	37.1%	0.4%
Tunisia	10	17	28	38	47	64	80	95	95	197	506	156.8%	48.8%	^
Other Africa	307	384	493	610	870	1290	1677	1883	2342	3150	3568	13.3%	27.8%	0.3%
Total Africa	674	1668	2171	3346	5106	8023	9412	10756	11635	12702	13479	6.1%	34.9%	0.9%
Australia	4568	5287	5946	6689	7291	11365	16147	20838	25757	29958	33683	12.4%	22.1%	2.4%
China	17759	28399	43549	77819	130832	175262	204971	253864	306973	393032	609921	55.2%	42.4%	43.0%
India	1603	3776	5697	9982	18257	27485	35250	39705	49950	63390	73109	15.3%	46.5%	5.2%
Japan	13599	23339	34150	42040	49500	56162	63192	71868	78413	83057	87068	4.8%	20.4%	6.1%
Malaysia	139	205	266	344	394	545	894	1483	1787	1933	1933	-	30.1%	0.1%
Pakistan	101	165	265	589	655	680	756	855	1078	1244	1244	-	28.6%	0.1%
Philippines	3	28	172	784	908	919	982	1058	1378	1625	1675	3.0%	87.9%	0.1%
South Korea	1555	2620	3845	4882	6435	8921	12717	17323	21264	24078	27046	12.3%	33.1%	1.9%
Taiwan	410	636	884	1245	1768	2738	4150	5817	7700	9724	12418	27.7%	40.6%	0.9%
Thailand	829	1304	1425	2451	2702	2967	2988	2984	3065	3185	3186	^	14.4%	0.2%
Vietnam	5	5	5	5	8	105	4994	16661	16661	16698	17077	2.3%	127.9%	1.2%
Other Asia Pacific	303	400	600	747	1070	1301	2007	2541	3352	4255	5226	22.8%	32.9%	0.4%
Total Asia Pacific	40872	66164	96805	147578	219821	288450	349048	434998	517378	632180	873586	38.2%	35.8%	61.6%
Total World	144412	180759	229058	301186	396316	492641	595492	728405	873858	1073136	1418969	32.2%	25.9%	100.0%

Source: IRENA (2024), Renewable Capacity Statistics 2024, The International Renewable Energy Agency, Abu Dhabi.

* End of year.

^ Less than 0.05.



Renewable energy Wind – Installed wind turbine capacity*

Megawatts												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada	7801	9694	11214	11973	12250	12816	13220	13735	14259	15265	16989	11.3%	8.1%	1.7%
Mexico	2122	2569	3271	4051	4180	4180	6541	6995	7155	7318	7318	^	13.2%	0.7%
US	60198	64430	72767	81502	87831	94666	103836	118664	133019	141674	148020	4.5%	9.4%	14.6%
Total North America	70121	76693	87252	97526	104261	111662	123597	139394	154433	164257	172327	4.9%	9.4%	16.9%
Argentina	163	188	188	188	228	751	1609	2624	3292	3310	3706	12.0%	36.7%	0.4%
Brazil	2202	4888	7633	10129	12304	14843	15438	17198	21161	24163	29135	20.6%	29.5%	2.9%
Chile	295	732	907	1034	1305	1524	1620	2340	3137	3830	4510	17.8%	31.4%	0.4%
Costa Rica	148	196	278	319	378	408	411	394	390	390	408	4.5%	10.7%	^
Uruguay	59	481	857	1211	1513	1513	1516	1516	1516	1516	1516	^	38.3%	0.1%
Other S. & Cent. America	675	962	1346	1569	1635	1864	2080	2147	2275	2519	2742	8.9%	15.1%	0.3%
Total S. & Cent. America	3542	7448	11209	14451	17363	20903	22675	26220	31772	35729	42018	17.6%	28.1%	4.1%
Austria	1675	2110	2489	2730	2887	3133	3224	3226	3408	3579	3977	11.1%	9.0%	0.4%
Belgium	1769	1933	2181	2334	2779	3305	3864	4673	4948	5303	5504	3.8%	12.0%	0.5%
Bulgaria	683	699	699	699	698	699	703	703	704	702	702	-	0.3%	0.1%
Denmark	4819	4886	5077	5245	5489	6123	6111	6259	7004	7084	7482	5.6%	4.5%	0.7%
Finland	447	627	1005	1565	2044	2041	2284	2586	3257	5677	6957	22.5%	31.6%	0.7%
France	8160	9201	10298	11567	13499	14900	16427	17535	18551	20811	22196	6.7%	10.5%	2.2%
Germany	33477	38614	44580	49435	55580	58721	60742	62201	63711	66163	69459	5.0%	7.6%	6.8%
Greece	1809	1978	2091	2370	2624	2877	3589	4119	4649	4702	5220	11.0%	11.2%	0.5%
Ireland	1923	2283	2451	2802	3319	3674	4126	4307	4339	4536	4807	6.0%	9.6%	0.5%
Italy	8542	8683	9137	9384	9737	10230	10679	10871	11254	11821	12308	4.1%	3.7%	1.2%
Netherlands	2713	2865	3391	4257	4202	4393	4484	6648	7674	8755	10749	22.8%	14.8%	1.1%
Norway	818	859	867	883	1207	1710	2914	4030	5049	5062	5065	0.1%	20.0%	0.5%
Poland	3429	3836	4886	5747	5759	5766	5838	6298	6967	8150	9307	14.2%	10.5%	0.9%
Portugal	4610	4857	4937	5124	5124	5172	5223	5122	5427	5538	5617	1.4%	2.0%	0.6%
Romania	2773	3244	3130	3025	3030	3032	3038	3013	3015	3015	3087	2.4%	1.1%	0.3%
Spain	22958	22925	22943	22990	23124	23405	25590	26819	27908	30114	31028	3.0%	3.1%	3.1%
Sweden	4194	5088	5819	6435	6611	7300	8681	9976	12116	14279	16252	13.8%	14.5%	1.6%
Türkiye	2760	3630	4503	5751	6516	7005	7591	8832	10607	11396	11697	2.6%	15.5%	1.1%
Ukraine	362	514	514	526	553	621	1258	1402	1761	1761	1761	-	17.1%	0.2%
United Kingdom	11282	13074	14305	16126	19585	21606	23887	24458	25748	28762	30215	5.1%	10.4%	3.0%
Other Europe	1724	1913	2193	2442	2700	3007	3358	3560	3936	4365	5318	21.8%	11.9%	0.5%
Total Europe	120927	133819	147496	161436	177068	188721	203610	216638	232034	251575	268708	6.8%	8.3%	26.4%
Russian Federation	10	10	11	11	11	52	102	945	1955	2218	2518	13.5%	73.8%	0.2%
Other CIS	12	14	33	81	103	162	182	182	181	188	192	2.4%	31.6%	^
Total CIS	22	24	44	92	114	214	284	1127	2136	2406	2710	12.6%	61.6%	0.3%
Iran	108	149	153	191	259	282	305	308	310	342	365	6.7%	13.0%	^
Jordan	1	1	118	184	198	295	384	529	632	614	614	-	83.7%	0.1%
Other Middle East	13	14	14	34	37	47	97	97	97	608	892	46.6%	53.2%	0.1%
Total Middle East	122	165	286	409	494	623	786	934	1040	1564	1871	19.6%	31.4%	0.2%
Egypt	555	555	755	755	755	1130	1132	1380	1640	1643	1890	15.1%	13.0%	0.2%
Morocco	495	797	797	902	1022	1225	1225	1435	1471	1558	1858	19.3%	14.1%	0.2%
South Africa	257	569	1079	1473	2094	2094	2094	2516	2495	3163	3442	8.8%	29.6%	0.3%
Tunisia	200	233	240	240	240	245	245	245	245	245	245	-	2.1%	^
Other Africa	235	245	449	461	467	777	832	938	1058	1136	1219	7.2%	17.9%	0.1%
Total Africa	1742	2399	3320	3831	4578	5471	5528	6514	6909	7745	8654	11.7%	17.4%	0.9%
Australia	3221	3797	4181	4324	5407	6409	7881	10207	10555	10555	11327	7.3%	13.4%	1.1%
China	76731	96819	131048	148517	164374	184665	209582	281993	328973	365964	441895	20.7%	19.1%	43.4%
India	18420	22465	25088	28700	32848	35288	37505	38559	40067	41930	44736	6.7%	9.3%	4.4%
Japan	2646	2753	2809	3205	3483	3498	3952	4120	4262	4372	5232	19.7%	7.1%	0.5%
New Zealand	623	682	689	690	690	690	690	690	913	994	1059	6.5%	5.4%	0.1%
Pakistan	106	206	308	591	789	1186	1236	1236	1335	1845	1845	-	33.1%	0.2%
Philippines	33	337	427	427	427	427	443	443	443	443	443	-	29.7%	^
South Korea	576	612	847	1067	1215	1420	1494	1645	1724	1908	2167	13.6%	14.2%	0.2%
Taiwan	614	637	647	682	692	713	845	937	1033	1581	2674	69.1%	15.8%	0.3%
Thailand	223	225	234	507	628	1103	1507	1507	1545	1545	1545	-	21.4%	0.2%
Other Asia Pacific	245	336	450	501	611	847	1160	1556	5427	6818	7988	17.2%	41.7%	0.8%
Total Asia Pacific	103438	128868	166727	189211	211165	236246	266294	342892	396278	437956	520912	18.9%	17.5%	51.2%
Total World	299914	349417	416335	466956	515045	563840	622773	733719	824602	901231	1017199	12.9%	13.0%	100.0%

Source: IRENA (2024), Renewable Energy Statistics 2024, The International Renewable Energy Agency, Abu Dhabi.

* End of year.

^ Less than 0.05.

Note: Capacity figures in this table include both onshore and offshore wind and are on an AC basis.



Renewable energy Solar & Wind – Installed capacity by type*

Megawatts	2022			2023		
	Solar PV	CSP	Total	Solar PV	CSP	Total
Canada	5312	–	5312	5757	–	5757
Mexico	9347	17	9364	10893	17	10910
US	112881	1480	114361	137725	1480	139205
Total North America	127540	1497	129037	154376	1497	155873
Argentina	1116	–	1116	1408	–	1408
Brazil	25520	–	25520	37449	–	37449
Chile	6417	108	6525	8366	108	8475
Honduras	529	–	529	529	–	529
The Dominican Republic	732	–	732	1073	–	1073
Other S. & Cent. America	4039	–	4039	4669	–	4669
Total S. & Cent. America	38354	108	38462	53495	108	53603
Austria	3792	–	3792	6832	–	6832
Belgium	6756	–	6756	8549	–	8549
Bulgaria	1737	–	1737	2937	–	2937
Czech Republic	2420	–	2420	2499	–	2499
Denmark	3070	–	3070	3529	–	3529
France	17341	9	17350	20542	9	20551
Germany	67477	2	67479	81737	2	81739
Greece	5430	–	5430	7030	–	7030
Hungary	4235	–	4235	5835	–	5835
Italy	24555	6	24561	29789	6	29795
Lithuania	572	–	572	1165	–	1165
Netherlands	19600	–	19600	23904	–	23904
Poland	12170	–	12170	15809	–	15809
Portugal	2646	–	2646	3876	–	3876
Romania	1809	^	1809	1917	^	1917
Slovakia	549	–	549	631	–	631
Slovenia	626	–	626	1034	–	1034
Spain	23311	2304	25615	28712	2304	31016
Sweden	2388	–	2388	3488	–	3488
Switzerland	4340	–	4340	5840	–	5840
Türkiye	9425	1	9426	11292	1	11293
Ukraine	8062	–	8062	8062	–	8062
United Kingdom	14651	–	14651	15657	–	15657
Other Europe	3713	–	3713	6211	–	6211
Total Europe	240676	2322	242999	296878	2322	299200
Russian Federation	1816	–	1816	2170	–	2170
Kazakhstan	1146	–	1146	1306	–	1306
Other CIS	812	–	812	1209	–	1209
Total CIS	3774	–	3774	4685	–	4685
Israel	4169	242	4411	4282	242	4524
Jordan	1966	–	1966	1990	–	1990
Saudi Arabia	390	50	440	2235	50	2285
United Arab Emirates	3288	300	3588	5325	600	5925
Other Middle East	3527	52	3579	3767	52	3819
Total Middle East	13340	644	13983	17599	944	18543
Algeria	426	25	451	426	25	451
Egypt	1704	20	1724	1836	20	1856
Morocco	314	540	854	394	540	934
South Africa	5826	500	6326	5664	500	6164
Tunisia	197	–	197	506	–	506
Other Africa	3150	–	3150	3568	–	3568
Total Africa	11617	1085	12702	12394	1085	13479
Australia	29955	3	29958	33680	3	33683
China	392462	570	393032	609351	570	609921
India	63048	343	63390	72767	343	73109
Japan	83057	–	83057	87068	–	87068
Malaysia	1933	–	1933	1933	–	1933
Pakistan	1244	–	1244	1244	–	1244
Philippines	1625	–	1625	1675	–	1675
South Korea	24078	–	24078	27046	–	27046
Taiwan	9724	–	9724	12418	–	12418
Thailand	3180	5	3185	3181	5	3186
Vietnam	16698	–	16698	17077	–	17077
Other Asia Pacific	4255	–	4255	5226	–	5226
Total Asia Pacific	631259	921	632180	872665	921	873586
Total World	1066559	6576	1073136	1412093	6876	1418969

Megawatts	2022			2023		
	Onshore	Offshore	Total	Onshore	Offshore	Total
Canada	15265	–	15265	16989	–	16989
Mexico	7318	–	7318	7318	–	7318
US	141633	41	141674	147979	41	148020
Total North America	164215	41	164257	172286	41	172327
Argentina	3310	–	3310	3706	–	3706
Brazil	24163	–	24163	29135	–	29135
Chile	3830	–	3830	4510	–	4510
Costa Rica	390	–	390	408	–	408
Uruguay	1516	–	1516	1516	–	1516
Other S. & Cent. America	2519	–	2519	2742	–	2742
Total S. & Cent. America	35729	–	35729	42018	–	42018
Austria	3579	–	3579	3977	–	3977
Belgium	3042	2262	5303	3242	2262	5504
Bulgaria	702	–	702	702	–	702
Denmark	4778	2306	7084	4832	2650	7482
Finland	5604	73	5677	6884	73	6957
France	20809	2	20811	22194	2	22196
Germany	58014	8149	66163	61052	8407	69459
Greece	4702	–	4702	5220	–	5220
Ireland	4511	25	4536	4782	25	4807
Italy	11821	–	11821	12308	–	12308
Netherlands	6185	2570	8755	6771	3978	10749
Norway	5060	2	5062	5063	2	5065
Poland	8150	–	8150	9307	–	9307
Portugal	5513	25	5538	5592	25	5617
Romania	3015	–	3015	3087	–	3087
Spain	30109	5	30114	31021	7	31028
Sweden	14086	193	14279	16059	193	16252
Türkiye	11396	–	11396	11697	–	11697
Ukraine	1761	–	1761	1761	–	1761
United Kingdom	14835	13928	28763	15470	14746	30215
Other Europe	4365	–	4365	5318	–	5318
Total Europe	222036	29539	251575	236338	32369	268708
Russian Federation	2218	–	2218	2518	–	2518
Other CIS	188	–	188	192	–	192
Total CIS	2406	–	2406	2710	–	2710
Iran	342	–	342	365	–	365
Jordan	614	–	614	614	–	614
Other Middle East	608	–	608	892	–	892
Total Middle East	1564	–	1564	1871	–	1871
Egypt	1643	–	1643	1890	–	1890
Morocco	1558	–	1558	1858	–	1858
South Africa	3163	–	3163	3442	–	3442
Tunisia	245	–	245	245	–	245
Other Africa	1136	–	1136	1219	–	1219
Total Africa	7745	–	7745	8654	–	8654
Australia	10555	–	10555	11327	–	11327
China	335504	30460	365964	404605	37290	441895
India	41930	–	41930	44736	–	44736
Japan	4320	52	4372	5079	154	5232
New Zealand	994	–	994	1059	–	1059
Pakistan	1845	–	1845	1845	–	1845
Philippines	443	–	443	443	–	443
South Korea	1772	136	1908	2031	136	2167
Taiwan	836	745	1581	1105	1569	2674
Thailand	1545	–	1545	1545	–	1545
Other Asia Pacific	5824	994	6818	6884	1104	7988
Total Asia Pacific	405569	32387	437956	480659	40253	520912
Total World	839263	61967	901231	944536	72663	1017199

Source: IRENA (2024), Renewable Capacity Statistics 2024, The International Renewable Energy Agency, Abu Dhabi.

* End of year.

^ Less than 0.05.

Note: Capacity figures in this table for both onshore and offshore wind are on an AC basis.

Renewable energy Generation by source*

Terawatt-hours	2022					2023					2023 Growth rate				
	Wind	Solar	Hydro	Other renewables†	Total	Wind	Solar	Hydro	Other renewables†	Total	Wind	Solar	Hydro	Other renewables†	Total
Canada	38.4	7.1	397.7	9.1	452.3	38.9	7.6	364.2	10.4	421.2	1.5%	8.4%	-8.4%	13.8%	-6.9%
Mexico	20.5	20.3	35.6	6.7	83.1	21.7	27.1	20.4	7.1	76.3	5.5%	33.4%	-42.6%	6.0%	-8.2%
US	438.7	207.2	251.3	71.5	968.6	429.5	240.5	236.3	67.3	973.7	-2.1%	16.1%	-6.0%	-5.9%	0.5%
Total North America	497.6	234.5	684.6	87.3	1504.0	490.1	275.3	620.9	84.8	1471.1	-1.5%	17.4%	-9.3%	-2.9%	-2.2%
Argentina	14.2	2.9	22.8	2.4	42.2	14.5	3.3	29.9	2.3	49.9	2.2%	11.3%	31.3%	-3.3%	18.2%
Brazil	81.6	30.1	427.1	55.0	593.9	95.5	51.5	428.7	55.8	631.5	17.0%	70.9%	0.4%	1.5%	6.3%
Chile	8.9	15.7	20.4	6.1	51.1	9.8	18.2	24.0	6.0	58.0	9.6%	15.7%	17.9%	-0.7%	13.5%
Colombia	0.1	0.5	64.3	2.9	67.8	0.2	1.2	59.8	3.1	64.3	171.9%	138.7%	-7.0%	6.3%	-5.2%
Ecuador	0.1	^	24.6	0.4	25.1	0.2	^	25.3	0.4	26.0	244.2%	-0.4%	2.9%	-8.0%	3.3%
Peru	1.9	0.9	29.7	0.5	33.1	2.4	1.1	29.1	0.5	33.0	21.9%	16.5%	-2.3%	2.5%	-0.3%
Trinidad & Tobago	^	^	-	-	^	^	^	-	-	^	-	-	-	-	-
Venezuela	^	^	68.5	-	68.5	^	^	65.6	-	65.6	-	14.8%	-4.3%	-	-4.3%
Central America	3.6	3.2	31.4	9.8	48.0	4.3	3.3	25.4	9.7	42.7	18.0%	4.8%	-19.3%	-0.8%	-11.1%
Other Caribbean	2.2	2.4	2.0	1.2	7.8	2.1	3.0	1.6	1.2	8.0	-4.8%	29.0%	-17.2%	-1.9%	2.8%
Other South America	5.2	0.9	54.2	3.3	63.6	5.2	1.0	60.5	4.0	70.8	0.4%	1.8%	11.7%	24.0%	11.2%
Total S. & Cent. America	117.9	56.7	745.1	81.5	1001.1	134.2	82.6	749.9	83.0	1049.7	13.8%	45.6%	0.6%	1.9%	4.8%
Austria	7.2	3.8	34.0	4.7	49.7	8.0	5.2	38.9	4.6	56.6	10.9%	36.2%	14.4%	-3.0%	13.9%
Belgium	12.4	6.9	0.3	4.9	24.4	15.7	7.3	0.4	3.5	26.9	26.9%	6.6%	44.7%	-29.6%	10.0%
Bulgaria	1.5	2.1	3.8	2.2	9.6	1.6	3.4	3.1	1.9	10.0	5.7%	63.8%	-17.7%	-15.8%	4.1%
Croatia	2.1	0.2	5.5	1.2	9.0	2.3	0.4	8.2	1.1	12.0	9.9%	148.1%	49.7%	-11.6%	33.6%
Cyprus	0.2	0.6	-	0.1	0.9	0.2	0.8	-	^	1.1	-7.0%	37.2%	-	-14.9%	22.6%
Czech Republic	0.6	2.3	2.1	5.4	10.4	0.7	2.2	2.3	5.2	10.4	9.4%	-4.6%	11.9%	-4.5%	-0.4%
Denmark	19.0	2.2	^	7.3	28.5	19.4	3.5	^	6.7	29.6	1.9%	57.9%	31.7%	-8.1%	3.7%
Estonia	0.7	0.6	^	1.6	2.9	0.7	0.7	^	1.4	2.9	4.2%	22.8%	15.5%	-10.9%	-0.2%
Finland	12.0	0.4	13.5	12.8	38.7	15.0	0.7	15.2	11.0	41.9	25.1%	69.6%	12.5%	-13.9%	8.2%
France	37.9	19.1	44.3	9.7	111.0	52.3	22.2	55.5	9.7	139.8	38.0%	16.2%	25.4%	-0.3%	25.9%
Germany	124.8	60.3	17.6	51.9	254.6	142.1	61.2	19.6	49.5	272.4	13.8%	1.5%	11.4%	-4.6%	7.0%
Greece	10.9	7.1	3.9	0.6	22.4	11.0	8.5	3.9	0.7	24.2	1.2%	19.0%	2.4%	23.2%	7.6%
Hungary	0.6	4.7	0.2	2.1	7.7	0.6	6.5	0.2	1.5	8.9	5.6%	38.1%	24.7%	-29.3%	16.4%
Iceland	^	^	14.2	5.9	20.1	^	^	14.2	6.0	20.2	26.3%	374.3%	0.2%	1.5%	0.6%
Ireland	11.2	0.1	0.7	1.0	13.1	11.6	0.4	0.9	0.9	13.9	3.4%	180.0%	33.2%	-7.2%	6.2%
Italy	20.5	28.1	28.4	23.5	100.5	23.5	31.2	38.9	20.3	114.0	14.8%	11.0%	37.1%	-13.4%	13.5%
Latvia	0.2	^	2.7	0.8	3.8	0.3	^	3.8	0.6	4.7	40.5%	13.9%	38.2%	-22.0%	25.3%
Lithuania	1.5	0.3	0.5	0.7	3.0	2.5	0.4	0.5	0.5	3.8	65.8%	4.7%	-3.0%	-31.8%	25.5%
Luxembourg	0.3	0.3	0.1	0.4	1.0	0.5	0.3	0.1	0.2	1.1	48.9%	9.3%	40.9%	-43.0%	5.0%
Netherlands	21.4	17.1	^	9.8	48.3	28.9	21.2	0.1	8.0	58.2	35.0%	24.0%	36.0%	-17.9%	20.4%
North Macedonia	0.1	0.1	1.3	^	1.6	0.2	0.3	1.6	0.1	2.2	46.4%	234.6%	20.6%	80.2%	36.2%
Norway	14.8	0.3	127.6	0.2	143.0	14.0	0.5	136.1	0.3	150.9	-5.7%	72.0%	6.6%	42.0%	5.6%
Poland	19.8	8.3	2.0	7.6	37.7	24.1	11.7	2.4	8.2	46.4	22.0%	40.4%	21.8%	8.2%	23.2%
Portugal	13.2	3.5	6.5	4.3	27.6	13.2	5.5	12.1	3.5	34.3	-0.7%	55.6%	84.8%	-17.7%	24.1%
Romania	7.0	2.0	14.0	0.6	23.6	7.6	1.9	18.2	0.3	28.0	9.0%	-6.3%	30.5%	-55.6%	18.7%
Slovakia	^	0.7	3.7	1.5	5.8	^	0.6	4.7	1.9	7.2	-	-7.1%	29.0%	2.7%	24.5%
Slovenia	^	0.6	3.1	0.3	4.1	^	1.1	5.0	0.3	6.4	12.1%	67.2%	57.9%	15.67%	56.5%
Spain	62.8	35.7	17.6	6.8	122.8	64.2	46.8	25.5	5.4	142.0	2.3%	31.1%	44.8%	-19.9%	15.6%
Sweden	33.1	2.0	69.8	13.1	117.9	34.3	3.1	66.0	11.3	114.8	3.8%	57.8%	-5.4%	-13.4%	-2.7%
Switzerland	0.2	3.9	29.6	2.0	35.6	0.2	6.0	37.0	2.0	45.2	12.0%	56.7%	25.1%	-1.2%	27.0%
Türkiye	34.9	16.9	66.8	19.2	137.8	34.1	20.5	63.9	19.5	137.9	-2.5%	21.5%	-4.4%	1.5%	0.1%
Ukraine	1.6	5.2	11.1	0.8	18.6	0.9	5.7	12.7	1.0	20.4	-39.2%	9.8%	14.6%	34.5%	9.6%
United Kingdom	80.3	13.3	5.6	35.8	135.0	82.0	13.8	5.2	34.0	135.0	2.2%	4.1%	-7.9%	-5.1%	^
Other Europe	2.2	0.6	33.6	0.4	36.9	2.4	1.1	42.4	0.4	46.2	5.9%	72.2%	26.0%	-1.1%	25.3%
Total Europe	555.1	249.4	564.1	239.2	1607.8	614.1	294.9	638.7	221.6	1769.3	10.6%	18.2%	13.2%	-7.4%	10.0%
Azerbaijan	0.1	0.1	1.6	0.1	1.8	0.1	0.1	1.8	0.1	2.0	-32.1%	30.4%	10.5%	8.6%	9.1%
Belarus	0.2	0.2	0.4	0.5	1.3	0.2	0.2	0.3	0.5	1.1	-1.7%	-26.5%	-18.9%	-2.6%	-11.1%
Kazakhstan	2.3	1.8	9.2	^	13.3	3.7	2.0	8.8	^	14.4	58.0%	10.4%	-4.4%	52.6%	8.4%
Russian Federation	4.2	2.4	197.7	0.8	205.1	4.7	2.6	200.9	0.8	209.1	13.0%	9.8%	1.6%	0.9%	1.9%
Turkmenistan	-	^	^	^	^	-	^	^	^	^	-	-	-	-	-
Uzbekistan	-	0.2	5.3	-	5.5	-	0.3	7.0	-	7.3	-	73.4%	31.7%	-	33.1%
Other CIS	0.1	0.6	34.1	^	34.8	0.2	0.8	34.3	^	35.3	22.8%	46.7%	0.6%	-	1.5%
Total CIS	6.9	5.2	248.2	1.5	261.8	8.8	6.0	253.0	1.5	269.3	27.3%	15.1%	1.9%	0.3%	2.9%
Iran	1.2	0.7	14.0	^	16.0	1.3	0.8	22.7	^	24.8	6.7%	10.3%	61.8%	-	55.1%
Iraq	-	0.4	2.7	-	3.1	-	0.4	3.4	-	3.8	-	-	27.8%	-	24.0%
Israel	0.2	6.1	^	0.1	6.4	0.4	7.5	^	0.1	8.1	132.1%	23.5%	-1.0%	-	26.2%
Kuwait	^	0.1	-	-	0.2	^	0.1	-	-	0.2	-	-10.3%	-	-	-8.3%
Oman	0.1	1.4	-	-	1.6	0.1	1.5	-	-	1.6	-	2.6%	-	-	2.4%
Qatar	-	0.3	-	0.1	0.4	-	1.3	-	0.1	1.5	-	386.7%	-	-	258.6%
Saudi Arabia	1.5	0.8	-	-	2.3	1.5	4.3	-	-	5.8	-	419.5%	-	-	152.9%
United Arab Emirates	^	7.7	-	^	7.8	0.1	13.7	-	^	13.8	100.0%	77.6%	-	159.6%	78.4%
Other Middle East	1.8	6.1	1.5	^	9.3	1.7	6.2	1.5	^	9.4	-4.4%	1.9%	2.9%	^	0.9%
Total Middle East	4.8	23.7	18.2	0.3	47.0	5.1	35.9	27.6	0.3	68.9	6.5%	51.3%	51.9%	6.8%	46.7%
Algeria	^	0.6	^	-	0.7	^	0.6	0.1	-	0.7	-	-	329.9%	-	7.8%
Egypt	5.5	5.4	13.3	-	24.2	5.7	5.2	13.8	-	24.8	4.1%	-2.6%	4.0%	-	2.6%
Morocco	5.4	1.4	0.4	-	7.2	6.5	2.1	0.2	-	8.8	22.2%	45.8%	-53.5%	-	23.3%
South Africa	9.7	6.2	3.1	0.4	19.4	11.6	6.4	1.7	0.4	20.1	19.3%	3.3%	-45.6%	-	3.4%
Eastern Africa	2.8	1.7	79.6	7.3	91.3	2.6	1.9	82.1	8.5	95.2	-7.6%	14.8%	3.2%	17.4%	4.2%
Middle Africa	^	0.5	32.8	0.1	33.3	^	0.6	33.7	0.1	34.4	-	30.2%	2.9%	-5.1%	3.3%
Western Africa	0.6	1.2	25.6	0.3	27.7	1.0	1.4	28.0	0.3	30.7	64.8%	13.0%	9.3%	0.2%	10.5%
Other Northern Africa	0.3	0.3	^	-	0.7	0.3	0.4	^	-	0.7	5.0%	19.6%	-38.3%	-	11.2%
Other Southern Africa	-	0.4	1.5	0.3	2.3	-	0.								

Thousand barrels of oil equivalent per day												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada	19	22	22	23	22	21	23	22	22	22	23	8.8%	2.3%	1.1%
Mexico	–	–	–	0	0	0	0	0	1	1	1	–	–	†
US	562	597	614	655	678	701	693	632	685	729	804	10.3%	3.6%	38.8%
Total North America	580	618	637	679	701	723	717	655	708	751	828	10.2%	3.6%	40.0%
Argentina	38	49	38	53	58	51	46	27	38	43	25	-42.0%	-4.3%	1.2%
Brazil	313	329	353	331	334	401	429	411	391	390	455	16.6%	3.8%	21.9%
Colombia	12	13	13	13	12	14	13	12	15	14	16	8.0%	2.5%	0.8%
Other S. & Cent. America	6	7	7	8	7	8	10	9	11	11	11	0.8%	6.4%	0.5%
Total S. & Cent. America	369	398	410	404	411	475	498	459	456	458	506	10.5%	3.2%	24.4%
Austria	6	7	8	7	7	7	7	7	7	8	7	-7.7%	2.2%	0.3%
Belgium	8	11	7	7	8	8	8	9	8	8	8	1.6%	-0.5%	0.4%
Finland	6	7	11	4	4	11	13	13	14	15	17	13.3%	10.4%	0.8%
France	46	47	49	45	44	50	47	43	36	35	34	-3.2%	-3.0%	1.6%
Germany	58	64	59	60	61	63	66	63	66	67	72	7.5%	2.2%	3.5%
Italy	9	10	10	10	12	13	15	17	21	20	23	14.7%	10.2%	1.1%
Netherlands	28	33	32	28	37	35	38	37	39	37	37	0.2%	3.0%	1.8%
Poland	13	14	15	17	17	17	18	18	19	20	20	0.6%	4.5%	1.0%
Portugal	5	6	6	6	6	6	7	6	5	6	6	-7.2%	0.7%	0.3%
Spain	14	19	21	22	35	40	39	33	31	31	28	-9.4%	7.3%	1.4%
Sweden	4	4	4	4	3	7	8	8	9	9	7	-22.8%	5.1%	0.3%
United Kingdom	9	7	6	10	14	13	11	12	12	13	14	4.0%	3.6%	0.7%
Other Europe	26	26	28	30	32	35	40	39	39	40	41	2.8%	4.8%	2.0%
Total Europe	232	255	256	250	281	305	316	305	307	308	313	1.5%	3.0%	15.1%
Total CIS	0	0	0	0	0	0	0	^	^	^	^	29.0%	-10.6%	†
Total Middle East	0	0	0	0	0	0	0	0	1	1	2	44.3%	17.9%	0.1%
Total Africa	2	2	2	2	2	1	2	2	2	2	2	14.0%	-1.0%	0.1%
Australia	5	5	4	2	2	2	3	2	2	2	2	4.4%	-6.7%	0.1%
China	42	47	40	39	31	44	53	56	58	72	78	8.5%	6.3%	3.8%
India	5	5	10	12	11	19	21	23	35	44	49	9.9%	26.9%	2.4%
Indonesia	41	59	24	54	50	91	124	126	151	174	194	11.1%	16.7%	9.4%
South Korea	7	7	8	8	8	13	13	13	11	13	13	-2.2%	6.1%	0.6%
Thailand	30	34	36	33	36	40	44	44	39	36	39	9.3%	2.7%	1.9%
Other Asia Pacific	28	33	37	33	31	35	53	45	46	46	47	2.8%	5.3%	2.3%
Total Asia Pacific	158	189	159	180	170	243	311	310	342	388	422	8.9%	10.3%	20.4%
Total World	1342	1463	1465	1516	1564	1748	1844	1731	1815	1907	2072	8.6%	4.4%	100.0%
of which: OECD	832	895	914	948	998	1053	1054	980	1036	1079	1163	7.7%	3.4%	56.1%
Non-OECD	510	569	551	568	566	695	790	751	780	828	909	9.8%	5.9%	43.9%
European Union	220	246	248	237	262	288	300	290	291	291	295	1.4%	3.0%	14.2%

Biofuels production by fuel type

Thousand barrels of oil equivalent per day	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Biogasoline														
Canada & Mexico	16	17	16	17	17	17	18	16	16	17	17	1.4%	0.4%	1.5%
US	479	516	534	554	575	580	569	501	542	554	563	1.7%	1.6%	50.7%
Brazil	269	278	294	275	270	322	341	315	291	297	343	15.5%	2.4%	30.8%
Other S. & Cent. America	13	16	18	19	20	22	22	18	22	22	23	4.7%	5.7%	2.1%
Europe	52	51	52	52	55	56	55	52	57	59	61	2.8%	1.6%	5.5%
CIS	^	^	^	^	^	^	^	^	^	0	0	29.0%	61.7%	†
Middle East	0	0	0	0	–	–	–	–	–	–	–	–	-100.0%	–
Africa	2	2	2	2	2	1	2	2	2	2	2	14.0%	-0.9%	0.2%
Asia Pacific	47	53	57	52	58	69	80	76	86	98	102	4.3%	8.1%	9.2%
Total World	879	934	974	971	997	1067	1087	980	1015	1049	1112	6.0%	2.4%	100.0%
of which: OECD	554	591	608	628	652	661	647	575	620	634	647	1.9%	1.6%	58.2%
Non-OECD	326	343	365	343	345	407	439	405	395	415	465	12.2%	3.6%	41.8%
European Union	46	45	48	46	48	50	50	48	52	54	55	1.7%	1.8%	4.9%
Biodiesel														
Canada & Mexico	2	5	6	7	6	5	5	7	6	5	7	30.4%	11.7%	0.7%
US	82	80	80	101	104	121	124	131	144	175	240	37.6%	11.3%	25.0%
Brazil	43	51	58	56	64	79	88	95	100	93	112	20.4%	9.9%	11.6%
Other S. & Cent. America	43	53	40	54	57	52	47	30	43	46	28	-38.8%	-4.2%	2.9%
Europe	180	204	204	199	225	249	262	253	250	249	252	1.2%	3.4%	26.2%
CIS	0	0	0	0	0	0	0	–	–	–	–	–	-100.0%	–
Middle East	^	^	0	0	0	0	0	0	1	1	2	44.3%	48.5%	0.2%
Africa	^	^	0	0	^	^	^	^	^	^	^	–	-19.0%	†
Asia Pacific	111	136	102	128	112	174	231	235	256	290	320	10.4%	11.1%	33.3%
Total World	463	529	491	545	567	681	758	751	800	858	960	11.9%	7.6%	100.0%
of which: OECD	278	304	306	320	347	392	407	406	416	445	516	16.0%	6.4%	53.7%
Non-OECD	185	225	186	225	221	289	351	346	384	413	444	7.5%	9.2%	46.3%
European Union	174	201	200	191	214	238	250	242	239	237	240	1.4%	3.3%	25.0%

Source: Includes data from S&P Global Commodity Insights; US Energy Information Administration.

* Includes biogasoline (such as ethanol) and biodiesel. Volumes have been adjusted for energy content.

^ Less than 0.5.

† Less than 0.05%.

Note: Annual changes and shares of total are calculated using thousand barrels a day oil equivalent figures.

Renewable energy Biofuels consumption*

Thousand barrels of oil equivalent per day												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada	35	36	34	32	38	39	40	37	39	47	54	14.7%	4.6%	2.6%
Mexico	2	3	3	3	4	4	4	5	4	4	4	2.0%	8.9%	0.2%
US	573	581	608	658	661	652	670	608	670	705	799	13.2%	3.4%	37.6%
Total North America	609	620	645	693	703	695	715	650	714	757	857	13.2%	3.5%	40.4%
Argentina	19	22	24	26	30	28	29	16	17	23	21	-8.8%	0.7%	1.0%
Brazil	278	305	357	324	332	385	426	396	392	390	429	10.0%	4.4%	20.2%
Colombia	12	13	13	13	12	15	16	13	15	16	20	20.5%	4.9%	0.9%
Other S. & Cent. America	15	15	17	18	19	18	19	18	20	18	18	0.8%	1.9%	0.8%
Total S. & Cent. America	324	356	411	380	393	447	489	442	444	446	487	9.0%	4.1%	22.9%
Austria	8	8	9	9	9	8	8	7	8	7	7	-3.3%	-1.6%	0.3%
Belgium	6	8	5	8	9	9	9	12	13	14	14	-0.8%	7.9%	0.6%
Finland	4	8	8	3	7	6	7	7	12	10	7	-33.4%	5.7%	0.3%
France	49	52	53	53	54	53	55	50	56	65	63	-3.4%	2.6%	2.9%
Germany	50	53	50	50	51	53	52	63	56	56	58	3.5%	1.5%	2.7%
Italy	24	20	25	25	25	26	15	21	22	20	23	14.9%	-0.3%	1.1%
Netherlands	6	7	6	5	6	10	13	15	15	19	22	17.3%	14.2%	1.1%
Poland	14	13	12	8	11	17	18	19	20	21	22	3.0%	4.7%	1.0%
Portugal	5	5	7	5	5	5	5	5	6	5	6	21.1%	2.2%	0.3%
Spain	22	23	24	27	31	41	40	36	36	35	32	-8.3%	3.9%	1.5%
Sweden	10	12	14	18	17	20	20	21	23	28	27	-2.3%	10.3%	1.3%
United Kingdom	19	22	17	18	17	24	31	29	29	37	41	9.8%	7.9%	1.9%
Other Europe	38	37	38	42	50	51	60	62	62	61	68	11.3%	5.9%	3.2%
Total Europe	256	269	267	270	291	324	334	346	358	379	390	2.9%	4.3%	18.4%
Total CIS	^	^	^	1	2	2	3	3	5	6	8	27.3%	33.7%	0.4%
Total Middle East	^	^	^	^	1	1	1	1	1	1	1	9.9%	24.0%	0.1%
Total Africa	1	1	1	1	1	2	1	1	2	1	1	1.0%	3.4%	0.1%
Australia	5	5	4	3	3	3	2	2	2	2	2	-4.2%	-7.8%	0.1%
China	57	60	44	45	42	54	58	44	46	47	50	5.6%	-1.4%	2.3%
India	6	5	6	12	9	17	21	20	32	45	55	22.6%	25.9%	2.6%
Indonesia	15	27	13	44	38	55	94	123	137	154	181	17.6%	27.9%	8.5%
South Korea	10	9	8	8	8	13	13	13	11	13	14	11.2%	3.3%	0.7%
Thailand	23	28	30	31	34	37	42	42	38	34	38	10.4%	5.0%	1.8%
Other Asia Pacific	16	18	22	24	25	27	31	33	34	37	39	5.5%	9.4%	1.8%
Total Asia Pacific	132	151	127	167	158	206	261	276	300	332	379	14.1%	11.1%	17.8%
Total World	1323	1397	1451	1513	1547	1676	1805	1720	1823	1923	2124	10.4%	4.8%	100.0%
of which: OECD	890	914	936	987	1015	1048	1075	1019	1095	1163	1279	10.0%	3.7%	60.2%
Non-OECD	433	483	515	526	532	628	729	701	728	760	845	11.1%	6.9%	39.8%
European Union	226	241	243	242	258	286	287	304	316	329	332	0.9%	3.9%	15.6%

Biofuels consumption by fuel type

Thousand barrels of oil equivalent per day	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Biogasoline														
Canada & Mexico	477	485	503	516	522	520	525	456	503	506	514	1.6%	0.8%	46.3%
US	28	30	30	30	32	34	34	30	32	36	42	16.2%	4.0%	3.8%
Brazil	236	255	299	268	269	305	339	301	291	296	317	6.9%	3.0%	28.5%
Other S. & Cent. America	18	20	23	25	26	28	29	24	27	28	32	14.4%	5.9%	2.9%
Europe	51	52	53	51	53	56	60	59	70	78	80	1.6%	4.5%	7.2%
CIS	-	-	-	^	1	1	2	2	3	4	5	25.9%	-	0.5%
Middle East	^	^	^	^	^	^	^	^	^	0	0	1.5%	1.2%	^
Africa	1	1	1	1	1	2	1	1	2	1	1	1.0%	3.4%	0.1%
Asia Pacific	51	54	61	70	65	80	91	84	96	109	120	9.4%	8.9%	10.8%
Total World	862	897	970	962	970	1026	1082	957	1024	1060	1111	4.8%	2.6%	100.0%
of which: OECD	565	577	596	608	619	623	632	557	616	631	650	3.0%	1.4%	58.5%
Non-OECD	297	321	373	353	351	403	450	400	408	428	461	7.6%	4.5%	41.5%
European Union	42	42	43	41	43	46	49	50	57	62	63	0.7%	4.1%	5.6%
Biodiesel														
Canada & Mexico	96	96	105	141	138	132	145	152	167	199	285	42.7%	11.5%	28.1%
US	8	8	7	6	9	10	10	11	12	16	17	7.7%	7.6%	1.6%
Brazil	43	50	59	56	63	80	88	95	101	94	112	19.5%	10.1%	11.0%
Other S. & Cent. America	28	30	31	32	34	34	34	23	25	29	26	-8.6%	-0.7%	2.6%
Europe	204	217	215	219	237	268	274	288	288	300	310	3.3%	4.3%	30.6%
CIS	^	^	^	1	1	1	1	1	2	2	3	30.0%	20.6%	0.3%
Middle East	-	-	-	^	^	1	1	1	1	1	1	11.3%	-	0.1%
Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asia Pacific	81	97	66	97	94	126	170	193	204	223	259	16.4%	12.3%	25.6%
Total World	461	500	482	551	577	650	723	763	799	864	1013	17.3%	8.2%	100.0%
of which: OECD	325	337	340	378	397	425	443	462	480	532	629	18.2%	6.8%	62.1%
Non-OECD	136	163	142	173	181	225	280	301	319	332	384	15.8%	10.9%	37.9%
European Union	184	198	200	201	215	240	237	254	259	266	269	0.9%	3.9%	26.5%

* Includes biogasoline (such as ethanol) and biodiesel. Volumes have been adjusted for energy content.

^ Less than 0.5.

† Less than 0.05%.

Note: Annual changes and shares of total are calculated using thousand barrels a day oil equivalent figures.

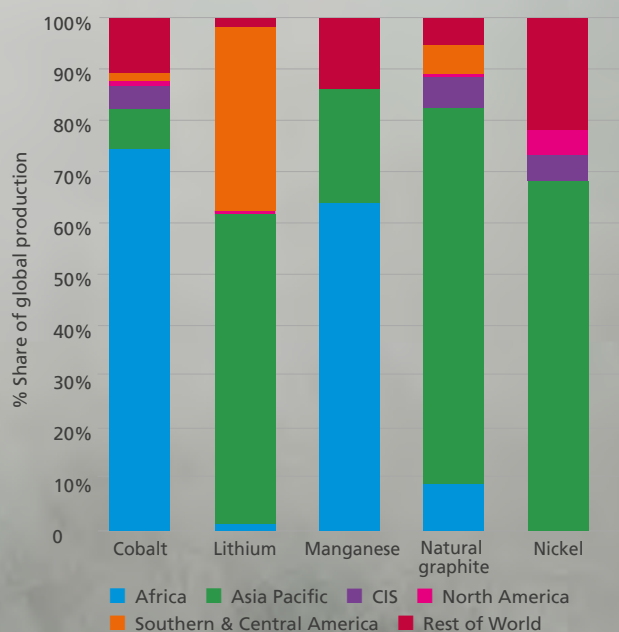
Key minerals

Whilst production of copper has grown at an average rate of just under 2% over the past ten years (it dropped by 1.6% in 2023), production of other minerals critical to the global energy system, continued to grow on average at around 4% per annum. The Asia Pacific region produced nearly 70% of the metals and materials critical to the manufacture of Li-ion batteries. Within this, China was both the world's leading producer of refined cobalt and the world's leading consumer of it, with nearly 87% of consumption used by the lithium-ion battery industry. As well as producing nearly 20% of the world's lithium production, China also produced around 74% of its graphite supply.

Portugal holds the largest lithium reserve in Europe (around 60,000 metric tons). Whilst historically it has primarily focused on ceramics for glassware production, it is increasingly looking to enter the lithium market.

Although prices for metals and materials have fallen across the board from their 2022 highs, lithium carbonate prices sat at around 400% higher than their 2019 pre-COVID levels and copper some 140% above its.

In 2023, the Asia Pacific region produced nearly 70% of the metals and materials critical to the manufacture of Li-ion batteries



Global production and prices of key metals and minerals now sit above their 2019 pre-COVID levels

Key minerals Production and reserves

Cobalt production and reserves

Mine production

Thousand tonnes												Reserves					
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum	Share	at end of		R/P ratio	
												2023	2013–23	2023	2023	Share	R/P ratio
Australia	6.4	6.2	6.0	5.5	5.8	4.9	5.7	5.6	5.3	5.8	4.6	-20.6%	-3.2%	2.3%	1700	16.0%	370
Canada	4.0	3.9	4.3	4.2	3.7	3.5	3.3	4.5	4.4	3.1	2.1	-31.4%	-6.3%	1.1%	230	2.2%	110
China	2.6	2.8	2.6	2.3	2.5	2.0	2.5	2.2	2.2	1.8	1.8	0.0%	-3.9%	0.9%	140	1.3%	80
DR Congo	76.6	76.5	84.4	69.0	90.3	109.4	78.0	86.6	93.1	115.4	139.8	21.2%	6.2%	71.0%	6000	56.4%	43
Cuba	4.0	3.7	4.0	3.9	3.9	3.5	3.8	3.8	4.0	3.8	3.2	-14.6%	-2.1%	1.6%	500	4.7%	154
Madagascar	2.4	3.4	4.0	3.8	3.1	2.9	2.9	0.8	2.0	3.3	3.6	9.1%	4.1%	1.8%	100	0.9%	28
Morocco	2.0	2.2	2.3	2.7	2.5	1.8	2.4	2.4	1.8	1.7	1.7	0.0%	-1.7%	0.9%	13	0.1%	8
New Caledonia	3.2	4.0	3.6	3.2	2.8	2.1	1.7	2.2	1.5	1.8	1.8	0.0%	-5.7%	0.9%	56	0.5%	32
Papua New Guinea	1.0	2.1	2.5	2.2	3.3	3.3	2.9	2.9	3.0	3.0	2.9	-3.0%	11.1%	1.5%	49	0.5%	17
Philippines	2.8	4.6	4.3	4.0	4.6	4.8	5.1	4.9	4.3	4.7	4.5	-3.8%	4.8%	2.3%	260	2.4%	58
Russian Federation	6.3	6.3	6.2	5.5	5.9	6.1	6.3	9.7	8.0	9.2	8.8	-4.3%	3.4%	4.5%	250	2.3%	28
South Africa	3.0	3.0	2.9	2.3	2.3	2.3	2.1	1.8	1.2	1.0	1.0	0.0%	-10.4%	0.5%	37	0.3%	37
Zambia	5.9	4.6	3.0	5.0	2.6	1.6	0.4	0.3	0.2	0.3	0.3	0.0%	-27.1%	0.1%	270	2.5%	1071
Rest of World	11.4	7.5	7.1	4.8	4.0	2.8	3.0	3.7	6.5	13.7	20.9	52.8%	6.3%	10.6%	1037	9.7%	50
Total World	131.6	130.7	137.2	118.4	137.3	150.9	120.0	131.5	137.5	168.3	196.9	17.0%	4.1%	100.0%	10642	100.0%	54

Sources: includes data from US Geological Survey, British Geological Survey ©UKRI and World Mining Data.

^ less than 0.05%. Rest of World is the sum of only recorded reserves.

Lithium production and reserves

Mine production

Thousand tonnes of Lithium content												Reserves					
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum	Share	at end of		R/P ratio	
												2023	2013–23	2023	2023	Share	R/P ratio
Argentina	2.5	3.2	3.6	5.8	5.7	6.4	6.3	5.9	6.0	6.4	9.6	50.5%	14.4%	4.8%	3600	13.8%	375
Australia	10.1	12.4	11.9	14.0	21.3	57.0	45.0	39.7	55.3	74.7	86.0	15.1%	23.9%	43.4%	6200	23.8%	72
Brazil	0.4	0.2	0.1	0.2	0.3	1.0	2.2	1.4	1.7	2.6	4.9	86.3%	28.5%	2.5%	390	1.5%	80
Chile	10.5	10.8	9.8	13.6	14.2	17.0	19.2	21.6	28.2	48.8	56.5	15.8%	18.3%	28.5%	9300	35.7%	165
China	4.7	2.3	2.0	2.3	6.8	7.1	10.8	13.3	14.0	22.6	33.0	46.0%	21.5%	16.7%	3000	11.5%	91
Portugal	0.3	0.3	0.3	0.4	0.8	1.2	0.9	0.3	0.9	0.4	0.4	0.0%	2.4%	0.2%	60	0.2%	158
US	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.6	0.6	0.0%	-3.4%	0.3%	1100	4.2%	1789
Zimbabwe	1.0	0.9	0.9	1.0	0.8	1.6	1.2	0.4	0.7	1.0	3.4	230.1%	13.0%	1.7%	310	1.2%	91
Rest of World	-	^	-	^	0.1	3.0	0.4	0.1	0.1	0.7	3.6	447.1%	-	1.8%	2068	7.9%	576
Total World	30.4	31.0	29.5	38.2	50.9	95.1	86.9	83.7	107.9	157.8	198.0	25.5%	20.6%	100.0%	26028	100.0%	131

Sources: includes data from US Geological Survey, British Geological Survey ©UKRI and World Mining Data.

^ less than 0.05. Rest of World is the sum of only recorded reserves.

Natural Graphite production and reserves

Mine production

Thousand tonnes												Reserves					
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum	Share	at end of		R/P ratio	
												2023	2013–23	2023	2023	Share	R/P ratio
Brazil ¹	91.9	87.0	75.1	61.7	79.8	95.0	96.0	95.0	95.0	96.0	96.0	0.0%	0.4%	5.8%	74000	20.3%	771
Canada	20.0	30.0	30.0	21.0	14.0	11.0	11.0	7.6	12.0	13.0	3.5	-73.1%	-16.0%	0.2%	5700	1.6%	1629
China	750.0	780.0	725.0	625.0	625.0	693.0	700.0	762.0	820.0	1210.0	1230.0	1.7%	5.1%	73.7%	78000	21.4%	63
India ²	146.4	116.7	134.6	137.3	46.4	44.5	30.5	31.8	57.3	82.4	82.4	0.0%	-5.6%	4.9%	8600	2.4%	104
Madagascar	4.3	5.3	8.1	9.2	13.3	48.1	53.4	48.5	91.1	116.7	55.2	-52.7%	29.1%	3.3%	24000	6.6%	435
Mexico	7.0	9.2	6.5	3.8	1.7	4.1	1.6	1.5	1.8	1.7	2.0	16.8%	-11.7%	0.1%	3100	0.9%	1538
Mozambique	-	-	-	-	0.3	104.0	153.0	12.0	72.0	163.0	94.0	-42.3%	-	5.6%	25000	6.9%	266
Norway	6.2	8.3	9.2	9.6	9.6	12.0	9.8	5.5	6.3	10.4	6.5	-37.5%	0.4%	0.4%	600	0.2%	93
Russian Federation	20.2	17.6	15.9	19.4	19.5	11.9	17.5	12.9	15.3	14.3	16.0	11.7%	-2.3%	1.0%	25645	7.0%	1603
Sri Lanka	3.1	4.0	4.2	4.0	3.5	4.0	4.0	4.0	3.0	2.6	2.2	-15.4%	-3.5%	0.1%	1500	0.4%	682
Türkiye	28.7	3.9	-	-	-	16.8	10.0	15.2	28.3	27.7	27.7	0.0%	-0.4%	1.7%	69000	18.9%	2490
Ukraine	2.0	8.0	7.9	6.1	13.9	12.2	1.5	4.1	3.2	1.0	2.0	100.0%	0.0%	0.1%	13750	3.8%	6875
Rest of World ³	45.7	57.8	56.5	59.0	59.4	56.6	51.1	53.5	53.9	50.9	50.8	-0.2%	1.1%	3.0%	35500	9.7%	699
Total World	1125.6	1127.8	1073.0	956.2	886.4	1113.1	1139.4	1053.6	1259.1	1789.8	1668.3	-6.8%	4.0%	100.0%	364395	100.0%	218

Sources: includes data from US Geological Survey, British Geological Survey ©UKRI and World Mining Data.

^ less than 0.05. ¹Including beneficiated and directly shipped material. ²Run of the mine. ³Rest of World is the sum of only recorded reserves.

Rare Earth metals production and reserves

Mine production

Thousand tonnes ¹												Reserves					
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum	Share	at end of		R/P ratio	
												2023	2013–23	2023	2023	Share	R/P ratio
Australia	1.3	6.2	11.9	13.9	17.3	18.6	17.6	21.1	22.5	16.0	16.8	5.1%	29.5%	4.7%	5700	4.9%	340
Brazil	0.3	-	0.9	2.7	1.7	1.2	0.7	0.6	0.5	0.1	0.1	0.0%	-13.2%	0.0%	21000	18.2%	262500
China	93.8	105.0	105.0	105.0	105.0	120.0	132.0	140.0	168.0	210.0	240.0	14.3%	9.9%	67.9%	44000	38.1%	183
India	0.3	1.7	1.0	1.1	1.4	2.1	2.5	2.5	2.6	2.6	2.6	0.0%	24.3%	0.7%	6900	6.0%	2654
Madagascar	-	-	-	-	-	2.0	4.0	2.8	3.9	2.6	2.6	0.0%	-	0.7%	162	0.1%	62
Russian Federation	1.4	2.1	2.3	3.1	2.5	2.6	2.6	2.6	2.6	2.6	2.6	0.0%	6.1%	0.7%	10000	8.7%	3846
Thailand	0.1	1.9	0.8	1.6	1.3	1.0	1.9	3.6	8.2	7.1	7.1	0.0%	49.2%	2.0%	-	0.0%	-
US	5.5	5.4	5.9	-	-	18.0	28.0	39.0	42.0	42.0	43.0	2.4%	22.8%	12.2%	1800	1.6%	42
Rest of World ²	0.3	0.2	0.9	4.8	15.4	25.5	26.6	32.1	35.6	13.5	38.9	188.0%	63.8%	11.0%	26040	22.5%	669
Total World	103.0	122.6	128.6	132.2	144.6	191.0	215.9	244.3	286.0	296.5	353.7	19.3%	13.1%	100.0%	115602	100.0%	327

Sources: includes data from US Geological Survey, British Geological Survey ©UKRI and World Mining Data.

^ less than 0.05. ¹Thousand tonnes of rare earth oxide equivalent. ²Rest of World is the sum of only recorded reserves.

Copper production and reserves

Mine production

Thousand tonnes												Reserves					
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum	Share	at end of		R/P ratio	
												2023	2013–23	2023	2023	Share	R/P ratio
Australia	990	1000.0	971.0	970.0	860.0	950.0	934.0	885.0	900.0	819.0	810.0	-1.1%	-2.0%	3.8%	100000	10.0%	123
Chile	5780	5800.0	5760.0	5500.0	5500.0	5800.0	5790.0	5730.0	5600.0	5330.0	5000.0	-6.2%	-1.4%	23.2%	190000	19.0%	38
China	1600	1620.0	1710.0	1740.0	1710.0	1600.0	1680.0	1720.0	1800.0	1940.0	1700.0	-12.4%	0.6%	7.9%	41000	4.1%	24
Democratic Republic of Congo	970	1100.0	1020.0	910.0	1090.0	1200.0	1290.0	1600.0	1800.0	2350.0	2500.0	6.4%	9.9%	11.6%	80000	8.0%	32
Indonesia	504	400.0	474.0	548.0	622.0	780.0	642.5	505.0	810.0	941.0	840.0	-10.7%	5.2%	3.9%	24000	2.4%	29
Peru	1380	1400.0	1700.0	2300.0	2450.0	2400.0	2460.0	2150.0	2200.0	2450.0	2600.0	6.1%	6.5%	12.1%	120000	12.0%	46
United States	1250	1370.0	1380.0	1410.0	1260.0	1200.0	1260.0	1200.0	1200.0	1230.0	1100.0	-10.6%	-1.3%	5.1%	50000	5.0%	45
Rest of World	5780	6035.0	7793.1	7826.1	8277.5	8400.3	6947.0	6766.0	6670.0	6843.0	7000.0	2.3%	1.9%	32.5%	3		

Key minerals Production and reserves

Platinum group metals production and reserves*

Mine production

Thousand tonnes												Reserves							
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		at end of		Share		R/P ratio	
	2023	2013-23	2023	2023	Share	R/P ratio													
Canada	23.5	28.5	28.6	33.6	26.5	26.5	27.8	27.0	21.0	21.5	21.5	0.0%	-0.9%	5.6%	310	0.4%	14		
Russian Federation	105.5	106.0	103.0	102.4	107.0	106.0	122.0	116.0	107.0	107.0	115.0	7.5%	0.9%	30.1%	5500	7.7%	48		
South Africa	206.0	152.4	222.0	209.3	229.8	178.0	213.7	185.5	226.3	197.1	191.0	-3.1%	-0.8%	50.1%	63000	88.0%	330		
United States	16.3	16.1	16.2	17.0	17.6	18.1	18.5	18.8	17.7	13.1	12.7	-3.1%	-2.5%	3.3%	820	1.1%	65		
Zimbabwe	22.0	22.6	22.6	26.9	26.0	26.0	24.9	27.9	27.1	31.3	34.0	8.6%	4.4%	8.9%	1200	1.7%	35		
Rest of World	12.7	14.8	12.3	11.5	17.3	17.1	6.2	7.0	6.8	7.3	7.3	0.3%	-5.4%	1.9%	800	1.1%	110		
Total World	386.0	340.4	404.7	400.7	424.2	371.7	413.0	382.2	405.9	377.3	381.5	1.1%	-0.1%	100.0%	71630	100.0%	188		

Sources: includes data from US Geological Survey and Kearney Energy Transition Institute.

* Platinum and Palladium. ^ less than 0.05. Rest of World is the sum of only recorded reserves.

Manganese production and reserves

Mine production

Thousand tonnes												Reserves							
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		at end of		Share		R/P ratio	
	2023	2013-23	2023	2023	Share	R/P ratio													
Australia	3.0	3.1	2.5	2.2	2.8	3.5	3.2	3.3	3.3	3.0	3.0	-1.3%	0.1%	15.1%	500	26.2%	167		
China	3.0	3.0	3.0	2.3	1.7	1.2	1.3	1.0	1.0	0.7	0.7	-0.4%	-13.1%	3.7%	280	14.7%	378		
Gabon	2.0	1.9	2.0	1.6	2.2	2.3	2.5	4.3	4.6	4.7	4.6	-1.5%	8.9%	23.2%	61	3.2%	13		
Ghana	0.5	0.4	0.4	0.6	0.8	1.4	1.6	0.9	0.9	0.8	0.8	-0.5%	4.7%	4.2%	13	0.7%	15		
India	0.9	0.9	0.9	0.7	0.7	1.0	0.8	0.5	0.5	0.7	0.7	-0.1%	-2.4%	3.6%	34	1.8%	47		
South Africa	4.3	5.2	5.9	5.3	5.4	5.8	5.8	7.2	7.2	7.3	7.2	-1.4%	5.3%	36.3%	600	31.4%	83		
Rest of World	4.0	4.1	3.7	3.8	4.6	3.9	4.2	2.9	2.5	2.7	2.7	-0.1%	-3.6%	13.8%	420	22.0%	153		
Total World	17.7	18.6	18.4	16.6	18.2	19.0	19.3	20.0	20.0	20.1	19.8	-1.1%	1.2%	100.0%	1908	100.0%	96		

Sources: includes data from US Geological Survey and Kearney Energy Transition Institute.

^ less than 0.05. Rest of World is the sum of only recorded reserves.

Nickel production and reserves

Mine production

Thousand tonnes												Reserves							
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Growth rate per annum		at end of		Share		R/P ratio	
	2023	2013-23	2023	2023	Share	R/P ratio													
Australia	234.0	245.0	234.0	204.0	190.0	170.0	180.0	160.0	151.0	155.0	160.0	3.2%	-3.7%	4.2%	24000	16.6%	150		
Canada	223.0	235.0	240.0	236.0	210.0	176.0	180.0	130.0	134.0	143.0	180.0	25.9%	-2.1%	4.7%	2200	1.5%	12		
Indonesia	440.0	177.0	170.0	199.0	400.0	606.0	800.0	1000.0	1040.0	1580.0	1800.0	13.9%	15.1%	47.3%	55000	38.0%	31		
New Caledonia	164.0	178.0	190.0	207.0	210.0	216.0	220.0	190.0	186.0	200.0	230.0	15.0%	3.4%	6.0%	7100	4.9%	31		
Philippines	446.0	523.0	530.0	347.0	230.0	345.0	420.0	370.0	387.0	345.0	400.0	15.9%	-1.1%	10.5%	4800	3.3%	12		
Russian Federation	275.0	239.0	240.0	222.0	180.0	272.0	270.0	250.0	205.0	222.0	200.0	-9.9%	-3.1%	5.3%	8300	5.7%	42		
Rest of World	885.6	900.2	974.2	671.0	686.6	871.8	873.8	892.5	924.2	910.3	836.9	-8.1%	-0.6%	22.0%	43470	30.0%	52		
Total World	2667.6	2497.2	2578.2	2086.0	2106.6	2656.8	2943.8	2992.5	3027.2	3555.3	3806.9	7.1%	3.6%	100.0%	144870	100.0%	38		

Sources: includes data from US Geological Survey and Kearney Energy Transition Institute.

^ less than 0.05. Rest of World is the sum of only recorded reserves.

Key minerals Prices

Minerals, materials, and battery prices

Year	USD\$1000/te						USD\$/KWh			
	Cobalt ¹	Lithium carbonate ²	Nickel Sulphate ³	Pet Needle Coke ⁴	Natural Graphite ⁵	Copper ⁶	Lithium Iron Phosphate Cells ⁷	Lithium Nickel Manganese Cobalt Oxide Cells ⁸		
2000	33.42	4.47				1.81				
2001	23.26	1.49				1.58				
2002	15.23	1.59				1.56				
2003	23.37	1.55				1.78				
2004	52.76	1.72				2.86				
2005	35.19	1.46				3.68				
2006	37.96	2.32				6.73				
2007	67.35	3.53				7.13				
2008	86.00	4.44				6.96				
2009	39.38	5.94				5.16				
2010	45.97	5.19			0.91	5.16				
2011	39.66	5.10			1.08	7.54				
2012	31.02	5.42			1.35	8.82				
2013	27.07	5.70			1.43	7.96				
2014	30.79	5.72			0.99	7.33				
2015	28.46	5.72			0.92	6.86				
2016	25.47	6.55			0.69	5.51				
2017	55.79	12.02			0.58	4.87				
2018	81.17	17.04			0.65	6.17				
2019	35.91	13.04			0.78	6.53				
2020	35.91	10.29	17.47		0.67	6.01				
2021	33.95	6.49	16.63		0.53	6.17				
2022	52.93	15.17	24.42	1.02	0.56	9.32	0.07			0.10
2023	67.06	59.43	27.11	1.38	0.76	8.83	0.10			0.14
2023	35.44	40.30	20.39	0.89	0.65	8.49	0.09			0.10

¹ 2000-2012 spot grade for cathodes, source US Geological Survey. 2013-2017 source London Metal Exchange. Data from 2018 onwards: min purity 99.8%, Cobalt metal EXW Europe, min. 99.8% purity, source Benchmark Mineral Intelligence.

² 2000-2008 unit value, data series 140, source US Geological Survey. Data from 2009 onwards: Lithium carbonate global weighted average, min 99% purity, source Benchmark Mineral Intelligence.

³ Nickel sulphate CIF Asia, min 22% (100% Nickel contained basis), source Benchmark Mineral Intelligence.

⁴ Pre-calcined pet needle coke DDP China, sulphur <0.5%, source Benchmark Mineral Intelligence.

⁵ Flake graphite FOB China, -194 mesh, source Benchmark Mineral Intelligence.

⁶ Copper, grade A cathode, LME spot price, CIF European ports, source International Monetary Fund (IMF)

⁷ Global weighted LFP cell, source Benchmark Mineral Intelligence.

⁸ Global weighted NCM cell, source Benchmark Mineral Intelligence.

Methodology

The Statistical Review provides a globally consistent data time series. Here we outline the definitions, conversion factors and calculations we use to produce the report.

Primary energy

Traditionally, in the Statistical Review of World Energy, the primary energy of non-fossil based electricity (nuclear, hydro, wind, solar, geothermal, biomass in power and other renewables sources) has been calculated on an 'input-equivalent' basis – i.e. based on the equivalent amount of fossil fuel input required to generate that amount of electricity in a standard thermal power plant. For example, if nuclear power output for a country was 100 TWh, and the efficiency of a standard thermal power plant was 38%, the input equivalent primary energy would be $100/0.38 = 263$ TWh or about 0.95 EJ.

For many years, the efficiency of this standard power plant has been assumed to be 38%. However, in reality, the world average efficiency of fossil fuel-based power changes over time and has risen from around 36% in 2000 to over 40% today. Moreover, given the much higher efficiency of the most modern power plant (e.g. the thermal efficiency of a modern gas turbine plant is above 55%), the global average is expected to increase in the future.

Therefore, to better assess primary energy trends, we use a time-dependent thermal equivalence model. The conversion factor used each year to calculate the 'input-equivalent' consumption for a given level of generation is based on a simplified representation of measured average efficiency levels:

1965-2000: assumed constant efficiency of 36%

2000-2017: a linear increase from 36% to 40% based on observed data

2018 onwards: the annual rate of efficiency improvement is based on the simplified assumption that efficiency will increase linearly to 45% by 2050.

The table below quantifies these assumptions (rounded to 1 decimal place):

Thermal equivalent efficiency factors used to convert non-fossil electricity (excluding biomass powered electricity) to primary energy.

Thermal equivalent efficiency factors used to convert non-fossil electricity to primary energy

Year(s)	Efficiency factor	Year(s)	Efficiency factor
2001	36.2%	2013	39.1%
2002	36.5%	2014	39.3%
2003	36.7%	2015	39.5%
2004	36.9%	2016	39.8%
2005	37.2%	2017	40.0%
2006	37.4%	2018	40.2%
2007	37.6%	2019	40.4%
2008	37.9%	2020	40.5%
2009	38.1%	2021	40.7%
2010	38.4%	2022	40.8%
2011	38.6%	2023	41.0%
2012	38.8%		

*1965-2000 = 36.0%

In this year's Statistical Review, we use the updated thermal equivalent efficiency factor to convert electricity generation from biomass to primary energy equivalent. Prior to 2022, the same factor was used for biomass as for all non-fossil electricity. From 2022 onwards, we assume a constant efficiency of 32% for biomass power to better reflect the actual efficiency of biomass power plants.

Primary energy consumption is reported in net terms. The gross calorific value to net calorific value adjustment is fuel-specific.

Fuels used as inputs for conversion technologies (gas-to-liquids, coal-to-liquids and coal-to-gas) are counted as production for the source fuel and the outputs are counted as consumption for the converted fuel.

Oil

Oil reserves

Total proved reserves of oil are generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and geological conditions.

The data series for proved oil reserves in this year's review does not necessarily meet the definitions, guidelines and practices used for determining proved reserves at company level, for instance as published by the US Securities and Exchange Commission nor does it necessarily represent the EI's view of proved reserves by country. Rather the data series has been compiled using a combination of primary official sources and third-party data.

Oil reserves include field condensate and natural gas liquids as well as crude oil. This inclusive approach helps to develop consistency with the oil production numbers published in the Review, which also include these categories of oil. The reserves and R/P ratio for Canada includes Canadian oil sands and the reserves and R/P ratio for Venezuela includes the Orinoco Belt.

Liquid hydrocarbon fuels from non-hydrocarbon sources, such as ethanol from corn or sugar or synthetic oil derived from natural gas (so-called GTL or gas-to-liquids), are not included in either the reserves or production series.

We have provided a detailed explanatory note on reserves clarifying current definitions and terminology.

R/P ratios represent the length of time that those remaining reserves would last if production were to continue at the previous year's rate. They are calculated by dividing remaining reserves at the end of the year by the production in that year.

Reserves-to-production (R/P) ratios are available by country and feature in the table of oil reserves. There is a time series of crude oil reserves from 1980, which can be found in the Excel workbook. Data are measured in thousand million barrels.

Please note that these reserves tables have not been updated this year.

Oil production

Oil production data includes crude oil, shale oil, oil sands, condensates (lease condensate or gas condensates that require further refining) and NGLs (natural gas liquids – ethane, LPG and naphtha separated from the production of natural gas). Excludes liquid fuels from other sources such as biofuels and synthetic derivatives of coal and natural gas. This also excludes liquid fuel adjustment factors such as refinery processing gain. Excludes oil shales/kerogen extracted in solid form.

The split of crude/condensate and natural gas liquids figures are available. The crude condensate table includes crude oil, shale/tight oil, oil sands, lease condensate or gas condensates that require further refining. Excludes liquid fuels from other sources such as biomass and synthetic derivatives of coal and natural gas. The NGL's table includes ethane, LPG and naphtha separated from the production of natural gas. Excludes condensates.

World oil production tables are available in both thousand barrels daily and million tonnes.

Liquids, oil and oil product consumption

Oil consumption as defined in previous Statistical Reviews (i.e. including biofuels) has been renamed 'liquids' consumption and a table is still included on this original basis. In addition, more granularity has been included on the product split of both oil products and biofuels (breaking out ethane & LPG and naphtha in oil products and the ethanol/biodiesel split of biofuels).

Total liquids consumption comprises inland demand plus international aviation and marine bunkers and refinery fuel and loss. Consumption of biogasoline (such as ethanol), biodiesel and derivatives of coal and natural gas are also included.

Oil consumption figures include inland demand plus international aviation and marine bunkers and refinery fuel and loss. Consumption of biogasoline (such as ethanol), biodiesel and derivatives of coal and natural gas are excluded. Derivatives of coal and natural gas are included.

Oil product consumption – Gasoline includes motor and aviation gasoline, gasolines and light distillate feedstock (LDF). Diesel/gasoil includes marine gasoil. 'Fuel oil' includes marine bunkers and crude oil used directly for fuel. 'Others' consists of refinery gas, solvents, petroleum coke, lubricants, bitumen, wax, other refined products and refinery fuel and loss.

Data are supplied in both exajoules and thousand barrels daily figures.

Oil prices

The key crudes quoted are Brent, West Texas Intermediate (WTI), Nigerian Focados and Dubai in US\$ per barrel.

The spot crude price history from 1972 and annual crude price history from 1861 are available in the historical data Excel workbook.

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Refining

The refinery capacity data presented in this Review represents the sum of reported atmospheric crude distillation and condensate splitting capacity. Capacity should comprise the amount of input that a distillation facility can process under usual operating conditions, taking into account scheduled downtime. Figures are in thousand barrels daily at year end per calendar day.

Refinery throughputs are based on the quantity of crude and condensate processed in atmospheric distillation units and condensate splitters. Figures are in thousands of barrels per day.

The refining margins presented are benchmark margins for three major global refining centres: US Gulf Coast (USGC), North West Europe (NWE – Rotterdam) and Singapore. In each case they are based on a single crude oil appropriate for that region and have optimised product yields based on a generic refinery configuration (cracking, hydrocracking or coking), again appropriate for that region. The margins are on a semi-variable basis, i.e. the margin after all variable costs and fixed energy costs.

Methodology

Oil trade movements

The tables exclude the intra-area movements of oil (for example, crude oil and products moving between countries within Europe). They do not include biofuels. Bunkers fuel is not included as exports. Crude imports and exports include condensates. Saudi Arabian exports from 1980 are also available in the oil trade movements table in the Excel workbook. The split of crude oil and products are detailed. Data in the tables are in million tonnes and thousand barrels per day.

Natural gas

Natural gas reserves

Total proved reserves of natural gas are generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known reservoirs under existing economic and operating conditions.

The data series for proved natural gas reserves in this year's Review does not necessarily meet the definitions, guidelines and practices used for determining proved reserves at company level, for instance as published by the US Securities and Exchange Commission nor does it necessarily represent the EI's view of proved reserves by country. Rather, the data series has been compiled using a combination of primary official sources and third-party data.

Although every effort is made to come up with a consistent series for reserves based on a common definition, different countries use different methodologies and the data have varying levels of reliability.

R/P ratios represent the length of time that those remaining reserves would last if production were to continue at the previous year's rate. They are calculated by dividing remaining reserves at the end of the year by the production in that year.

As far as possible, the data represents standard cubic metres (measured at 15°C and 1013 mbar) and have been standardised using a gross calorific value (GCV) of 40 MJ/m³.

There is a time series of natural gas reserves, which can be found in the Excel workbook. Data are measured in billion cubic metres.

Please note that these reserves tables have not been updated this year.

Natural gas production

Gas production comprises marketed production and excludes gas flared or recycled gas. Includes natural gas produced for gas-to-liquids transformation.

As far as possible, the data above represents standard cubic metres (measured at 15°C and 1013 mbar); as they are derived directly from tonnes of oil equivalent using an average conversion factor and have been standardised using a gross calorific value (GCV) of 40 MJ/m³, they do not necessarily equate with gas volumes expressed in specific national terms.

Natural gas production is provided in three different units of measurement to accommodate regional customary usage. World natural gas production PDF tables are in both billion cubic metres, and exajoules. Data in the Excel workbook are also in billion cubic feet per day (bcf/d).

Natural gas consumption

Natural gas consumption excludes natural gas converted to liquid fuels but includes derivatives

of coal as well as natural gas consumed in gas-to-liquids transformation.

As far as possible, the data above represents standard cubic metres (measured at 15°C and 1013 mbar); as they are derived directly from tonnes of oil equivalent using an average conversion factor and have been standardised using a gross calorific value (GCV) of 40 MJ/m³ they do not necessarily equate with gas volumes expressed in specific national terms. The difference between these world consumption figures and the world production statistics is due to variations in stocks at storage facilities and liquefaction plants, together with unavoidable disparities in the definition, measurement or conversion of gas supply and demand data.

Consumption data in the PDF data table is in billion cubic meters (bcm) and exajoules, data in billion cubic feet per day (bcf/d) can be found in the Excel workbook.

Natural gas prices

Annual prices are given for benchmark natural gas hubs together with contracted pipeline and LNG imports. The benchmark hub prices incorporate US (Henry Hub), Canada (Alberta), Netherlands TTF index and the UK (NBP).

Contract prices are represented by LNG imports into Japan, the Japan Korea Marker (JKM) and Average German Import Prices.

The prices for LNG and European border are calculated as CIF prices, where CIF = cost + insurance + freight (average freight prices) in US dollars per million British thermal units (Btu).

Natural gas trade movements

Trade flows are on a contractual basis and may not correspond to physical gas flows in all cases. The data illustrates the flow of pipeline natural gas and LNG between sources of production and the regions of consumption. LNG trade. As far as possible, the data represents standard cubic metres (measured at 15°C and 1013 mbar) and has been standardised using a gross calorific value (GCV) of 40 MJ/m³.

Coal

Coal reserves

Total proved reserves of coal are generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known deposits under existing economic and operating conditions.

Total proved coal reserves are shown for anthracite and bituminous (including brown coal) and sub-bituminous and lignite.

Reserves-to-production (R/P) ratios represent the length of time that those remaining reserves would last if production were to continue at the previous year's rate. They are calculated by dividing remaining reserves at the end of the year by the production in that year. The R/P ratios are calculated excluding other solid fuels in reserves and production.

R/P ratios are available by country and feature in the table of coal reserves. R/P ratios for the region and the world are depicted in the chart above and the Energy charting tool.

Coal reserve data is in million tonnes.

Please note that these reserves tables have not been updated this year.

Coal production

Coal production includes data for commercial solid fuels only. Included in the hard coal

category are bituminous and anthracite (hard coal). The sub-bituminous coal includes lignite and brown coal. Other commercial solid fuels are also included. The data includes coal produced for coal-to-liquids and coal-to-gas transformations.

In the coal production PDF table, the units are in exajoules. The data can also be downloaded from the Excel workbook in million tonnes.

Coal consumption

Coal consumption includes data for solid fuels only. Included in the hard coal category are bituminous and anthracite. The sub-bituminous coal includes lignite and brown coal. Other commercial solid fuels are also included. The figures exclude coal converted to liquid or gaseous fuels, but includes coal consumed in transformation processes.

Differences between world consumption figures and the world production statistics are accounted for by stock changes, and unavoidable disparities in the definition, measurement or conversion of coal supply and demand data.

Coal prices

Annual prices quoted include the Northwest Europe marker price, Japan steam spot CIF price, China Qinhuangdao spot price and the US Central Appalachian coal spot price index. Coal prices except for the US Central Appalachian price are calculated as CIF prices, where CIF = cost + insurance + freight (average freight prices). The US Central Appalachian price is FOB = free on board. All prices are quoted in US dollars per tonne.

IHS Northwest Europe prices for 1996-2000 are the average of the monthly marker, 2001-2017 the average of weekly prices. IHS Japan prices basis = 6,000 kilocalories per kilogram NAR CIF. Chinese prices are the average monthly price for 2000-2005, weekly prices 2006-2017, 5,500 kilocalories per kilogram NAR, including cost and freight (CFR).

Coal trade movements

Commercial solid fuels only, i.e. bituminous coal and anthracite (hard coal), and lignite and brown (sub-bituminous) coal, and other commercial solid fuels. Intra-area movements (for example, between countries in Europe, Other CIS, Other Africa, Other Asia Pacific) are excluded.

Nuclear energy

The data are based on gross generation and not accounting for cross-border electricity supply. 'Input-equivalent' energy is the amount of fuel that would be required by thermal power stations to generate the reported electricity output. Details on thermal efficiency assumptions are available online.

Data for the units are in exajoules in the PDF. The data are available in the Excel workbook in terawatt-hours (TWh).

Hydroelectricity

The data are based on gross generation and not accounting for cross-border electricity supply. 'Input-equivalent' energy is the amount of fuel that would be required by thermal power stations to generate the reported electricity output.

Details on thermal efficiency assumptions are available online.

In the hydroelectricity consumption PDF table, the units are in exajoules. The data are available in the Excel workbook in terawatt-hours (TWh).

Methodology

Renewable energy

The data are based on gross generation and not accounting for cross-border electricity supply. 'Input-equivalent' energy is the amount of fuel that would be required by thermal power stations to generate the reported electricity output. Details on thermal efficiency assumptions are available online.

Renewable power is based on gross generation from renewable sources including wind, geothermal, solar, biomass and waste, and not accounting for cross-border electricity supply.

Biofuels production and consumption

The data includes biogasoline (such as ethanol) and biodiesel. Volumes have been adjusted for energy content.

The biofuels PDF tables are in thousand barrels of oil equivalent per day figures. The data are available in additional units in the Excel workbook.

Electricity

Electricity generation is based on gross output.

Carbon

Carbon emissions from primary energy use are estimated by applying the Default CO₂ Emission Factors for Combustion to the consumption of each energy product type (coal, natural gas and various oil products) from the list of IPCC emission factors. Biofuels are considered as not emitting CO₂, consistent with the practice of the IEA. Second, the revised method takes account of fuel consumption used for non-combustion purposes, such as the use of oil products and natural gas in the petrochemicals industry or of oil to produce bitumen for road construction. Estimates of the share of non-combusted fossil

fuels taken from the IEA's energy balances are subtracted from the total consumption of fossil fuels before applying the relevant emission factors.

Carbon emissions from flared natural gas are calculated using data series on volumes of gas flared from two sources: Cedigaz up to 2012, and the Payne Institute for Public Policy, Colorado School of Mines, from 2013 onward. Payne Institute's data include flaring from upstream, downstream oil and gas, while Cedigaz include flaring from upstream only. Volumes of gas flared have been standardised using a Gross Calorific Value (GCV) of 40 MJ/m³. The IPCC Default CO₂ Emission Factor for Combustion for natural gas (56,100 kg CO₂ per TJ) is used and perfect combustion has been assumed. These emissions represent around 1% of total CO₂ emissions.

Data for methane emissions associated with the production, transportation and distribution of fossil fuels for 1990-2020 are sourced, where available, from IEA (2023) Greenhouse Gas Emissions from Energy (all rights reserved). For countries not covered by the IEA, additional data has been sourced from Kayrros. For a selected number of fossil fuel producing countries where methane emission data is not currently available through either provider, an estimate of historical methane emissions has been derived using regional average methane intensity of production. For 2023, methane emission estimates are derived for all countries using methane intensity of fossil fuel production in 2022. Total methane emissions at a global and regional level show a discrepancy with IEA data due to non-inclusion of residual emissions i.e. emissions which have not been allocated to named countries. There is a wide range

of uncertainty with respect to both current estimates of methane emissions and the global warming potential of methane emissions. To ensure alignment with financial and government reporting standards, the methane to CO₂e factor is a 100-year Global Warming Potential (GWP) of 25, recommended by the IPCC in AR4. Carbon emissions from industrial processes refer only to non-energy CO₂ emissions from cement production and are sourced for 1990-2023 from Andrew, R. M. (2019) Global CO₂ emissions from cement production, 1928-2018. Earth System Science Data 11, 1675-1710, (updated dataset May 2023).

Minerals

Total proved reserves of minerals are generally taken to be those quantities that geological and engineering information indicates with reasonable certainty can be recovered in the future from known resources under existing economic and geological conditions.

The data series for mineral reserves in this year's review does not necessarily meet the definitions, guidelines and practices used for determining proved reserves at company level nor does it necessarily represent the EI's view of proved reserves by country. Rather the data series has been compiled using a combination of primary official sources and third-party data.

Revisions and corrections

Each year revisions are made to historical data when updated or more reliable data sources become available. Corrections are also made when errors are identified in data. In this Statistical Review corrections have been made to the emissions, biofuels, historic oil prices and oil refinery throughput tables.

Appendices Approximate conversion factors

Crude oil*

From	To				
	tonnes (metric)	kilolitres	barrels	US gallons	tonnes per year
	Multiply by				
Tonnes (metric)	1	1.165	7.33	307.86	–
Kilolitres	0.8581	1	6.2898	264.17	–
Barrels	0.1364	0.159	1	42	–
US gallons	0.00325	0.0038	0.0238	1	–
Barrels/day	–	–	–	–	49.8

*Based on worldwide average gravity.

Oil products

From	To convert					
	barrels to tonnes	tonnes to barrels	kilolitres to tonnes	tonnes to kilolitres	tonnes to gigajoules	tonnes to barrels oil equivalent
	Multiply by					
Ethane	0.059	16.850	0.373	2.679	49.400	8.073
Liquefied petroleum gas (LPG)	0.086	11.600	0.541	1.849	46.150	7.542
Gasoline	0.120	8.350	0.753	1.328	44.750	7.313
Kerosene	0.127	7.880	0.798	1.253	43.920	7.177
Gas oil/diesel	0.134	7.460	0.843	1.186	43.380	7.089
Residual fuel oil	0.157	6.350	0.991	1.010	41.570	6.793
Product basket	0.124	8.058	0.781	1.281	43.076	7.039

*Based on worldwide average gravity.

Natural gas (NG) and liquefied natural gas (LNG)

From	To convert						
	billion cubic metres NG	billion cubic feet NG	petajoules NG	million toe	million tonnes LNG	tonnes to gigajoules	tonnes to barrels oil equivalent
	Multiply by						
1 billion m ³ NG	1.000	35.315	36.000	0.860	0.735	34.121	5.883
1 billion ft ³ NG	0.028	1.000	1.019	0.024	0.021	0.966	0.167
1 petajoule NG	0.028	0.981	1.000	0.024	0.021	0.952	0.164
1 million toe	1.163	41.071	41.868	1.000	0.855	39.683	6.842
1 million tonnes LNG	1.360	48.028	48.747	1.169	1.000	46.405	8.001
1 trillion Btu	0.029	1.035	1.050	0.025	0.022	1.000	0.172
1 million boe	0.170	6.003	6.093	0.146	0.125	5.800	1.000

Units

1 metric tonne	= 2204.62 lb.
	= 1.1023 short tons
1 kilolitre	= 6.2898 barrels
1 kilolitre	= 1 cubic metre
1 kilocalorie (kcal)	= 4.1868 kJ
	= 3.968 Btu
1 kilojoule (kJ)	= 1,000 joules
	= 0.239 kcal
	= 0.948 Btu
1 petajoule (PJ)	= 1 quadrillion joules (1 x 10 ¹⁵)
1 exajoule (EJ)	= 1 quintillion joules (1 x 10 ¹⁸)
1 British thermal unit (Btu)	= 0.252 kcal
	= 1.055 kJ
1 barrel of oil equivalent (boe)	= 5.8 million Btu
	= 6.119 million kJ
1 kilowatt-hour (kWh)	= 860 kcal
	= 3600 kJ
	= 3412 Btu

Calorific equivalents

One exajoule equals approximately:

Heat units	239 trillion kilocalories
	948 trillion Btu
Solid fuels	40 million tonnes of hard coal
	95 million tonnes of lignite and sub-bituminous coal
Gaseous fuels	See Natural gas and LNG table
Electricity	278 terawatt-hours

All fuel energy content is net or lower heating value (i.e., net of heat of vapourisation of water generated from combustion).

1 barrel of ethanol = 0.58 barrels of oil equivalent
 1 barrel of biodiesel = 0.86 barrels of oil equivalent
 1 tonne of ethanol = 0.68 tonne of oil equivalent
 1 tonne of biodiesel = 0.88 tonne of oil equivalent

Other terms

Tonnes: Metric equivalent of tons

Percentages

Calculated before rounding of actuals.

Rounding differences

Because of rounding, some totals may not agree exactly with the sum of their component parts.

Definitions

Regional definitions

Country groupings are made purely for statistical purposes and are not intended to imply any judgment about political or economic standings.

North America

US (excluding US territories), Canada, Mexico.

Caribbean

Atlantic islands between the US Gulf Coast and South America, including Puerto Rico, US Virgin Islands and Bermuda.

Central America

Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama.

South and Central America

Caribbean (including Puerto Rico and US Virgin Islands), Bermuda, Central and South America.

Europe

European members of the OECD plus Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Georgia, Gibraltar, Latvia, Lithuania, Malta, Montenegro, North Macedonia, Romania, Serbia and Ukraine.

Commonwealth of Independent States (CIS)

Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Turkmenistan, Uzbekistan.

Middle East

Arabian Peninsula, Iran, Iraq, Israel, Jordan, Lebanon, Syria.

Northern Africa

Territories on the north coast of Africa from Egypt to Western Sahara.

Eastern Africa

Territories on the east coast of Africa from Sudan to Mozambique. Also Madagascar, Malawi, Uganda, Zambia, Zimbabwe.

Middle Africa

Angola, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Republic of Congo, Equatorial Guinea, Gabon, Sao Tome & Principe.

Western Africa

Territories on the west coast of Africa from Mauritania to Nigeria, including Burkina Faso, Cape Verde, Mali and Niger.

Southern Africa

Botswana, Eswatini, Lesotho, Namibia, South Africa.

Asia Pacific

Brunei, Cambodia, China[†], China Hong Kong SAR*, China Macau SAR*, Indonesia, Japan, Laos, Malaysia, Mongolia, North Korea, Philippines, Singapore, South Asia (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka), Myanmar, South Korea, Taiwan, Thailand, Vietnam, Australia, New Zealand, Papua New Guinea and Oceania.

[†] Mainland China

* Special Administrative Region

Australasia

Australia, New Zealand.

OECD members (Organization For Economic Co-operation and Development)

Europe: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye, UK.

Other member countries: Australia, Canada, Chile, Colombia, Costa Rica, Israel, Japan, Mexico, New Zealand, South Korea, US.

OPEC members (Organization of the Petroleum Exporting Countries)

Middle East: Iran, Iraq, Kuwait, Saudi Arabia, United Arab Emirates.

North Africa: Algeria, Libya.

West Africa: Angola, Equatorial Guinea, Gabon, Nigeria, Republic of Congo.

South America: Venezuela.

European Union members

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Republic of Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

Non-OECD (Organization for Economic Co-operation and Development)

All countries that are not members of the OECD.

More information

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Acknowledgements

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With the support of our Knowledge Partner S&P Global Commodity Insights and the continuing support of bp.

Our thanks also go to the various government and bp offices worldwide who kindly give their time and effort each year to completing the annual returns forms. Thanks also go to the following data providers Benchmark Mineral Intelligence, Cedigaz, Comité Professionnel du Pétrole (CPDP), FGE, FGE Iran Desk, ICIS, Kayrros, Oxford Economics, Petro-Logistics, Rystad Energy, Wood Mackenzie and the World Bank.

