

2024 | 73rd edition

Statistical Review of World Energy

In collaboration with



KEARNEY

The Energy Institute (EI) is the professional membership body for the world of energy. The EI Statistical Review of World Energy™ analyses data on world energy markets from the prior year. It has been providing timely, comprehensive and objective data to the energy community since 1952.



Explore the data online

All the tables and charts found in the printed edition are available at energyinst.org/statistical-review alongside a number of extras, including:

- The energy charting tool – view predetermined reports or chart specific data according to energy type, region, country and year.
- Historical data from 1965 for many sectors. Additional country and regional coverage for all consumption tables.
- An Excel workbook and database format of the data.

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The Statistical Review is central to the EI’s work to provide the evidence and expertise needed by governments and businesses to navigate the energy transition. Our related events programme culminates each year in London with International Energy Week.

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The EI is the professional home for people working across the world of energy - from engineers to environmentalists, technicians to analysts, academics to innovators. We provide the training, publications, mentoring, networking and chartered titles essential to skilled, rewarding careers.

Enabling industry to make energy lower carbon, safer and more efficient

The EI brings together companies from all parts of the industry, from conventional to renewable, to work in collaboration with regulators, academia and others to solve shared technical challenges. Our extensive catalogue of good practice guidance is relied on by industry worldwide.



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Foreword

Publishing the 73rd Statistical Review of World Energy is a significant moment for 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 continued effects geopolitical and economic disruption to energy markets can have on our economies and livelihoods.

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, as governments, businesses and civil society all grapple with these profound challenges.

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 of 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 some fossil fuels peaking, to economies in the global south for whom

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

economic development and improvements in quality of life continue to drive fossil growth.

In this second Statistical Review under the Institute’s custodianship, we introduce new data in areas that will grow in significance over the coming years and decades – in battery storage, carbon capture, hydrogen, ammonia, uranium and additional key minerals. Over the coming months, we’ll be engaging with users on further developments, to ensure the way we measure and analyse energy keeps pace as the transition progresses from high carbon to low, from molecule to electron, from supply to demand led.

We are grateful to our co-authors KPMG and Kearney in this vital endeavour, to the essential data compilation undertaken by Heriot-Watt University, and with continued thanks to bp. 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
President, Energy Institute

Dr Nick Wayth CEng FEI FIMechE
CEO, Energy Institute



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Simon Virley CB FEI
Vice Chair and Head of Energy and Natural Resources, KPMG

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Kearney

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Romain Debarre
Partner and Managing Director Energy Transition Institute, Kearney

2022 Key highlights

Whilst 2022 saw energy demand continue to recover from the COVID-19 pandemic, legacy supply chain issues, along with conflict in Ukraine, continued to impact the global energy sector.

Energy developments

- 2022 saw a 1% increase in total primary energy consumption taking it to around 3% above the 2019 pre-COVID level.
- Renewables' (excluding hydroelectricity) share of primary energy consumption reached 7.5%, an increase of nearly 1% over the previous year.
- Fossil fuel consumption as a percentage of primary energy remained steady at 82%.

Carbon emissions

- Carbon dioxide emissions from energy use, industrial processes, flaring and methane (in carbon dioxide equivalent terms) continued to rise to a new high growing 0.8% in 2022 to 39.3 GtCO₂e, with emissions from energy use rising 0.9% to 34.4 GtCO₂e.
- In contrast, carbon dioxide emissions from flaring decreased by 3.8% and emissions from methane and industrial processes decreased by 0.2%.

Oil

- Brent crude oil prices averaged \$101/bbl in 2022, its highest level since 2013.
- Oil consumption continued to increase, rising by 2.9 million barrels per day (b/d) to 97.3 million barrels per day (b/d), a smaller increase than was seen between 2020 and 2021. Consumption remained 0.7% below 2019 levels.
- Regionally, OECD consumption increased by 1.4 million b/d and non-OECD by 1.5 million b/d. Most of the growth came from jet/kerosene (0.9 million b/d) and diesel/gasoil (0.7 million b/d).
- Global oil production increased by 3.8 million b/d in 2022, with OPEC+ accounting for more than 60% of the increase. Among all countries, Saudi Arabia (1,182,000 b/d) and the US (1,091,000 b/d), saw the largest increases. Nigeria reported the largest decline in production (184,000 b/d) with production in Libya declining by 181,000 b/d too.
- Refining capacity increased slightly by around 534,000 b/d last year driven by an increase in capacity in non-OECD countries.

Natural gas

- Natural gas prices reached record levels in Europe and Asia in 2022, rising nearly threefold in Europe (TTF averaging \$37/mmBtu) and doubling in the Asian LNG spot market (JKM averaging \$34/mmBtu). US Henry Hub prices rose over 50% to average \$6.5/mmBtu in 2022 – their highest annual level since 2008.
- Global natural gas demand declined by 3% in 2022 dropping just below the 4 Tcm mark achieved for the first time in 2021. Its share in primary energy in 2022 decreased slightly to 24% (from 25% in 2021).
- Global gas production remained relatively constant compared to 2021.
- LNG supply grew 5% (26 Bcm) to 542 Bcm in 2022, similar to 2021. LNG supply increases came mostly from North America (10 Bcm) and APAC (8 Bcm). All other regions made a positive contribution to LNG supply growth in 2022 (8 Bcm).
- The increase in global LNG demand was triggered by Europe (62 Bcm) in 2022. Countries in the Asia Pacific region reduced their LNG imports by 24 Bcm and those in South & Central America by 11 Bcm.
- Japan replaced China as the world's largest LNG importer and accounted for close to 60% of global LNG demand growth in 2022. The Asia Pacific region accounted for around 65% of global LNG demand but fell 6.5% compared to 2021 whilst Europe increased its LNG imports by 57%.
- Overall natural gas pipeline net trade fell ~15% globally in 2022 (78 Bcm). European pipeline imports fell by 35% (82 Bcm), almost entirely attributable to supplies from Russia. Overall, Russian total pipeline exports fell 38%. The Middle East increased its pipeline exports by 12%. China increased its pipeline imports by 5 Bcm.

Coal

- Coal prices reached record levels in 2022, with European prices averaging \$294/tonne and the Japan CIF spot price averaging \$225/tonne (increases of 145% and 45% over 2021 respectively).
- Coal consumption continued to increase, rising 0.6% in 2021 to 161 EJ; the highest level of coal consumption since 2014.
- The growth in demand was largely driven by China (1%) and India (4%). Their combined growth of 1.7 EJ was sufficient to offset declines in other regions by 0.6 EJ.
- Coal consumption in both North America and Europe declined by 6.8% and 3.1% respectively. In 2022, OECD consumption was around 10% less than its 2019 pre-COVID level and non-OECD coal consumption over 6% higher.
- Global coal production increased by over 7% compared to 2021, reaching a record high of 175 EJ. China, India, and Indonesia accounted for over 95% of the increase in global production.

Renewables, hydro and nuclear

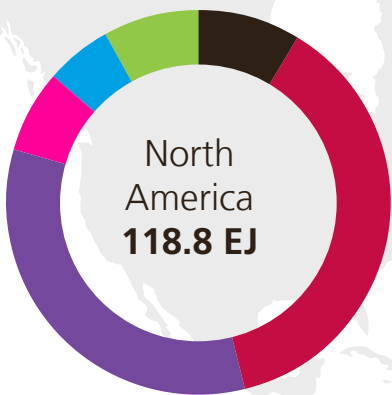
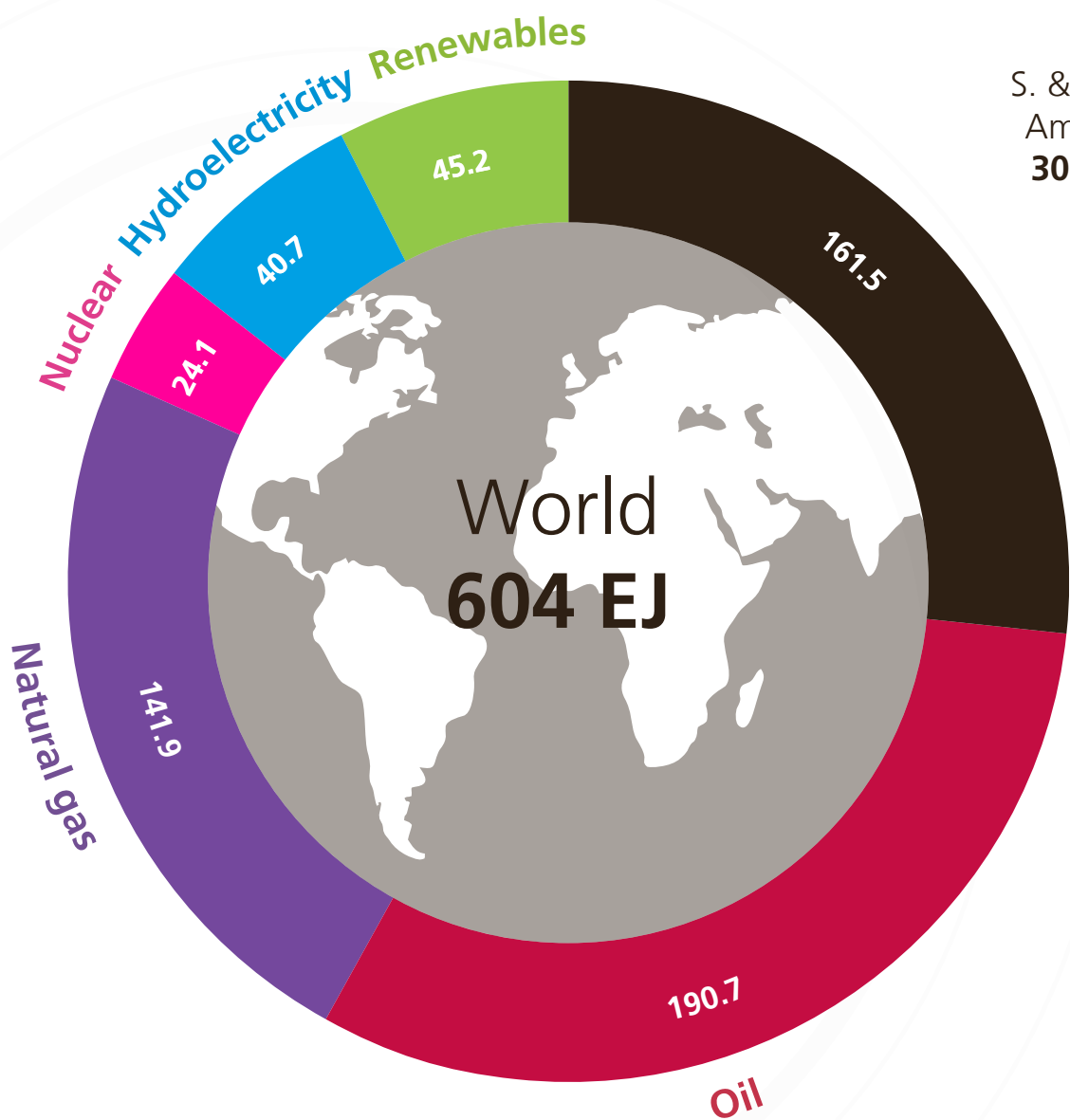
- Renewable power (excluding hydro) rose 14% in 2022 to reach 40.9 EJ. This was slightly below the previous year's growth rate of 16%.
- Solar and wind capacity continued to grow rapidly in 2022 recording a record increase of 266 GW. Solar accounted for 72% (192 GW) of the capacity additions.
- The largest portion of solar and wind growth was in China accounting for about 37% and 41% of global capacity additions respectively.
- Hydroelectricity generation increased by 1.1% in 2022 whilst output from nuclear fell by 4.4%.

Electricity

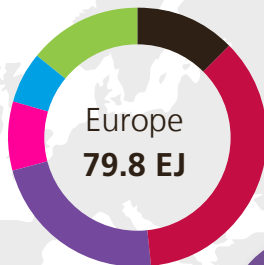
- Global electricity generation increased by 2.3% in 2022 which was lower than the previous year's growth rate of 6.2%.
- Wind and solar reached a record high of 12% share of power generation with solar recording 25% and wind power 13.5% growth in output. The combined generation from wind and solar once again surpassed that of nuclear energy.
- Coal remained the dominant fuel for power generation in 2022, with a stable share around 35.4%, marginally down from 35.8% in 2021.
- Natural gas-fired power generation remained stable in 2022 with a share of around 23%.
- Renewables (excluding hydro) met 84% of net electricity demand growth in 2022.
- Key minerals
- Lithium carbonate prices rose 335% to average a record high of \$47,000/tonne. Similarly, the price of cobalt increased 24% in 2021 to average \$64,000/tonne.
- Lithium and cobalt production rose sharply by 21%.

Regional overview

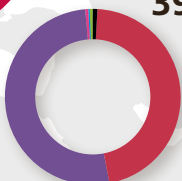
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Middle East
39.1 EJ



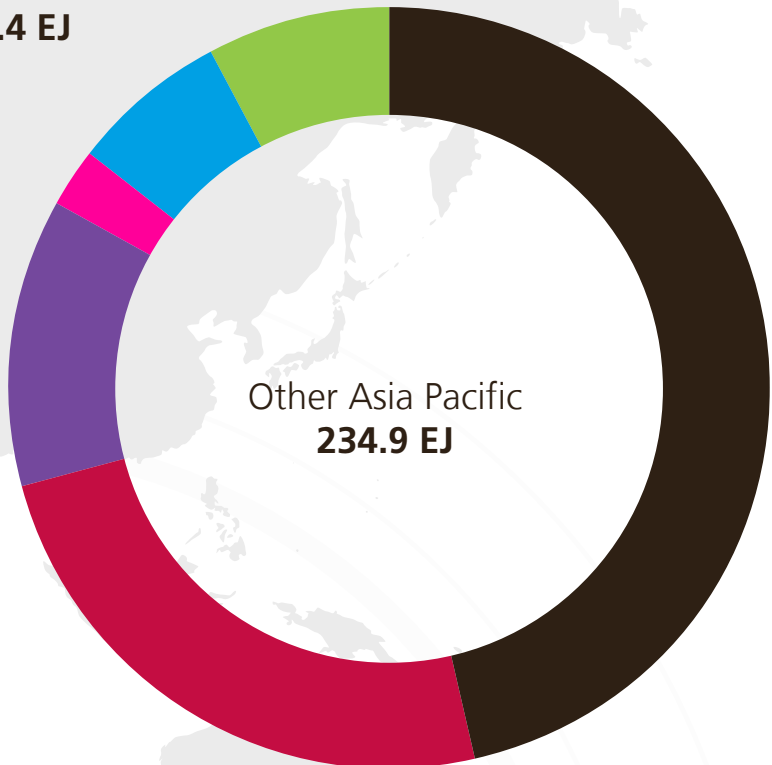
South Asia
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CIS
38.4 EJ



Other Asia Pacific
234.9 EJ



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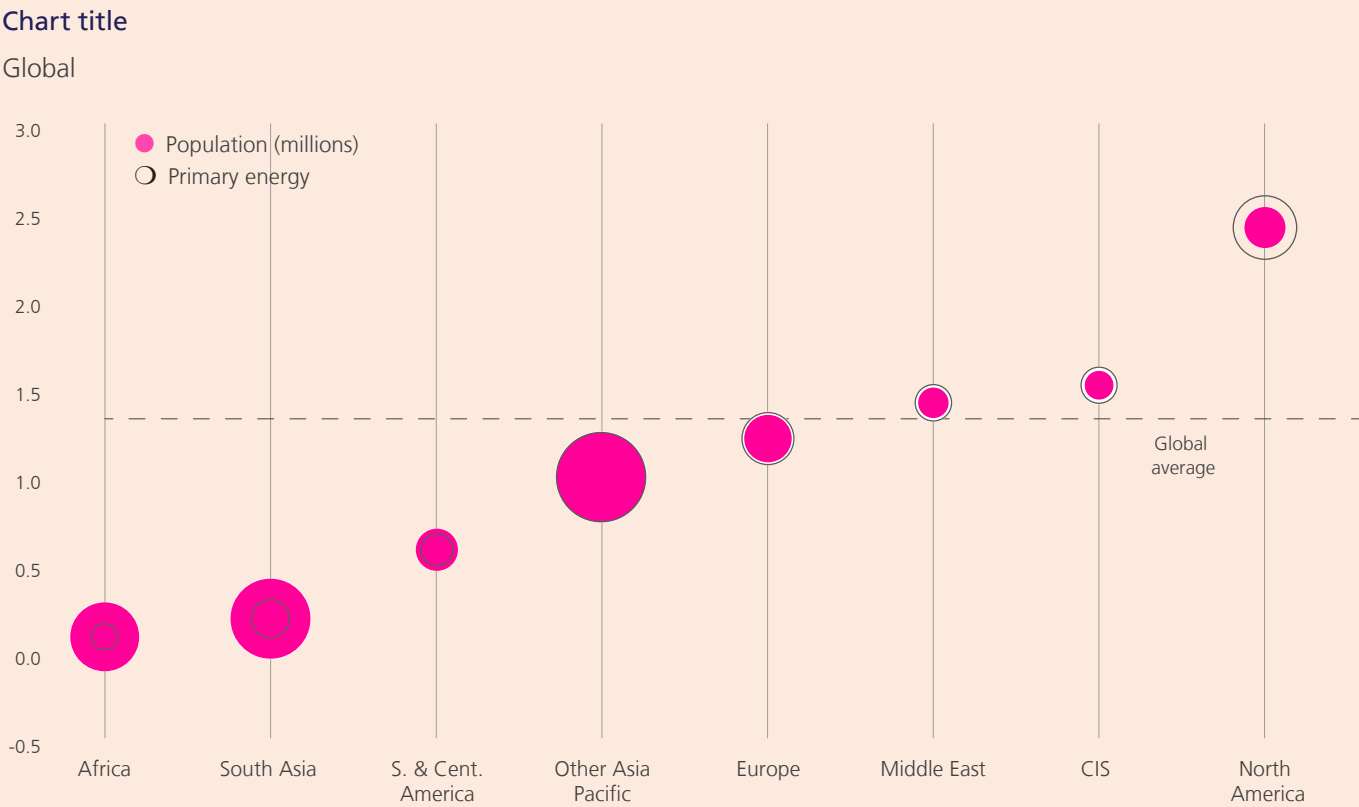
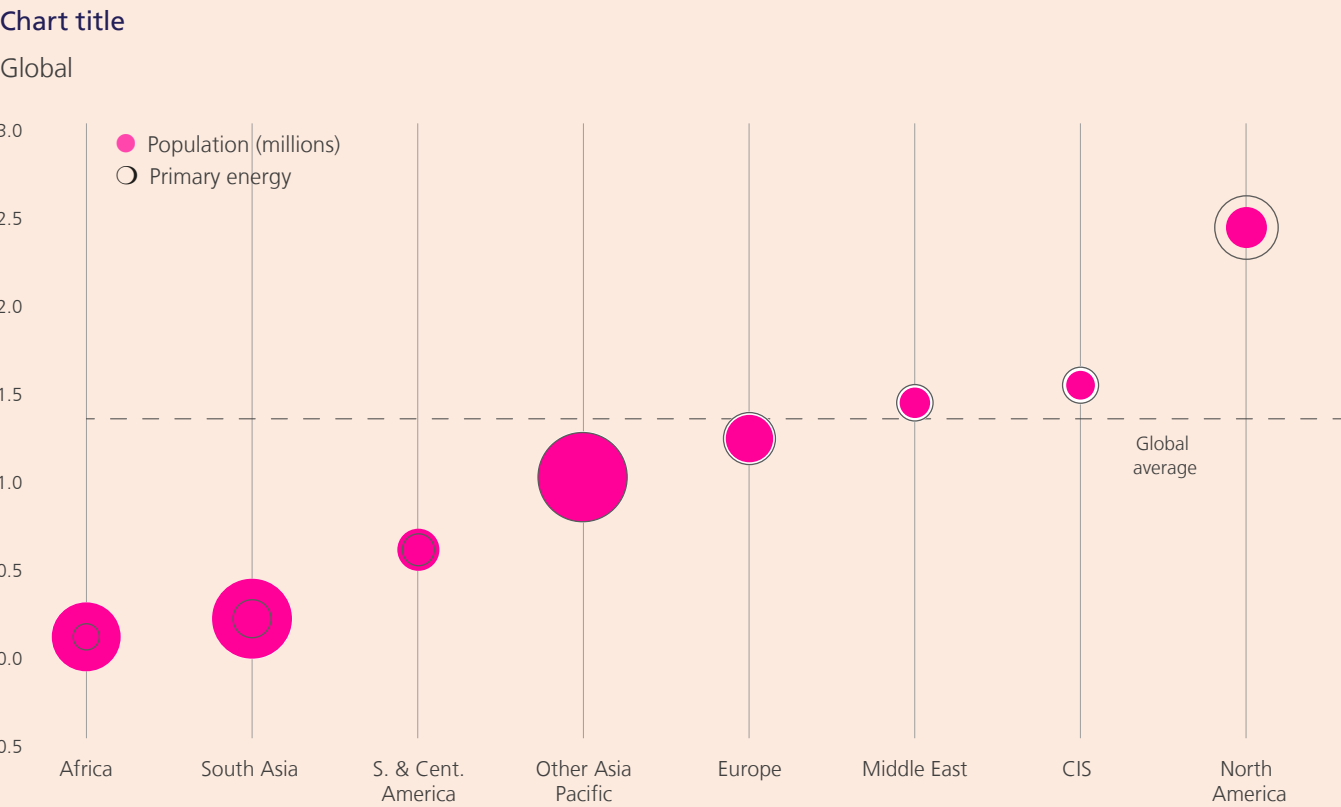
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2023 Regional overview

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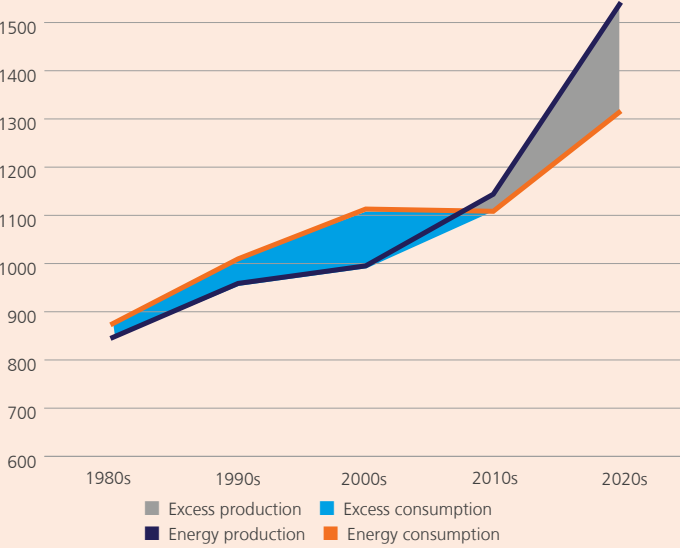
2023 Regional overview

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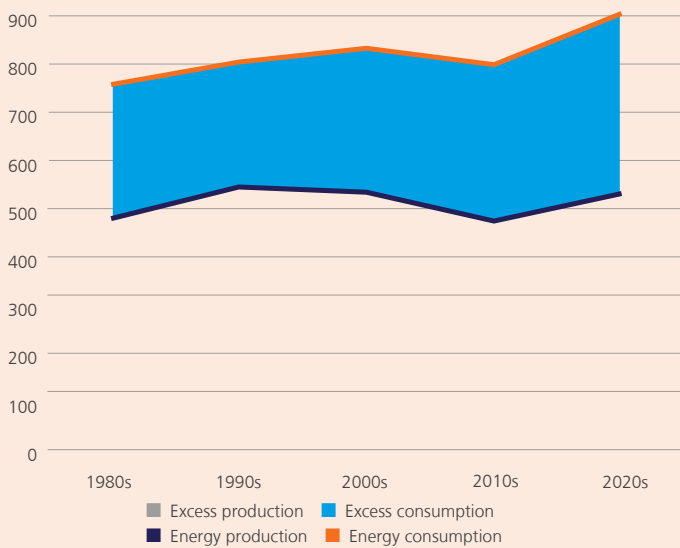
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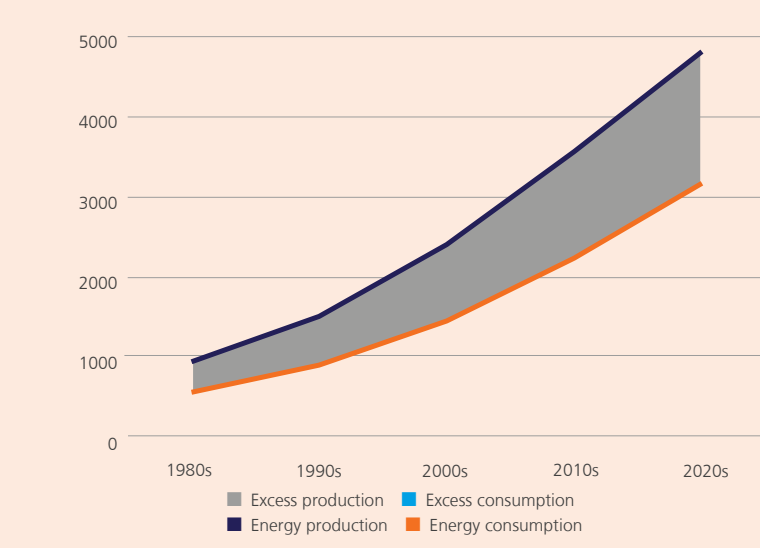
Production vs consumption by region
North America



Europe



Asia Pacific



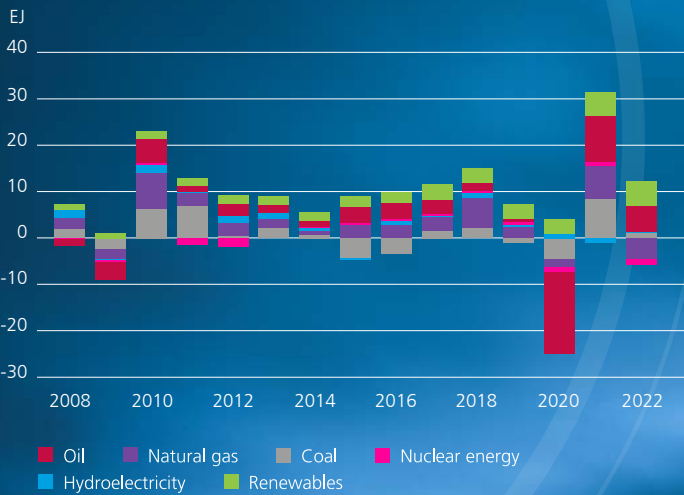
Primary energy and carbon

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P Primary energy Consumption*

Exajoules												Growth rate per annum		Share
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2012-23	2023
Canada														
Mexico														
US														
Total North America														
Argentina														
Brazil														
Chile														
Colombia														
Ecuador														
Peru														
Trinidad & Tobago														
Venezuela														
Other S. & Cent. America														
Total S. & Cent. America														
Austria														
Belgium														
Czech Republic														
Finland														
France														
Germany														
Greece														
Hungary														
Italy														
Netherlands														
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Spain														
Sweden														
Switzerland														
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United Kingdom														
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Total Europe														
Azerbaijan														
Belarus														
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Malaysia														
New Zealand														
Pakistan														
Philippines														
Singapore														
South Korea														
Sri Lanka														
Taiwan														
Thailand														
Vietnam														
Other Asia Pacific														
Total Asia Pacific														
Total World														
of which: OECD														
Non-OECD														
European Union*														

* In this review, primary energy comprises commercially-traded fuels, including modern renewables used to generate electricity. Energy from all sources of non-fossil power generation is accounted for on an input-equivalent basis. See the appendix or <https://www.energyinst.org/statistical-review> for more details on this methodology.
^ Less than 0.005.
Excludes Estonia, Latvia and Lithuania prior to 1985 and Slovenia prior to 1990.

													Growth rate per annum		Share
Million tonnes of carbon dioxide	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		2023	2013–23	2023
Canada															
Mexico															
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of which: OECD															
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† Less than 0.05%.

Excludes Estonia, Latvia and Lithuania prior to 1985 and Croatia and Slovenia prior to 1990.

Notes: The carbon emissions above reflect only those through consumption of oil, gas and coal for combustion related activities, and are based on ‘Default CO₂ Emissions Factors for Combustion’ listed by the IPCC in its Guidelines for National Greenhouse Gas Inventories (2006). This does not allow for any carbon that is sequestered, for other sources of carbon emissions, or for emissions of other greenhouse gases. Our data is therefore not comparable to official national emissions data.

													Growth rate per annum		Share
Billion cubic metres	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		2023	2013–23	2023
Canada															
Mexico															
US															
Total North America															
Argentina															
Bolivia															
Brazil															
Colombia															
Peru															
Trinidad & Tobago															
Venezuela															
Other S. & Cent. America															
Total S. & Cent. America															
Denmark															
Germany															
Italy															
Netherlands															
Norway															
Poland															
Romania															
Ukraine															
United Kingdom															
Other Europe															
Total Europe															
Azerbaijan															
Kazakhstan															
Russian Federation															
Turkmenistan															
Uzbekistan															
Other CIS															
Total CIS															
Bahrain															
Iran															
Iraq															
Kuwait															
Oman															
Qatar															
Saudi Arabia															
Syria															
United Arab Emirates															
Yemen															
Other Middle East															
Total Middle East															
Algeria															
Egypt															
Libya															
Nigeria															
Other Africa															
Total Africa															
Australia															
Bangladesh															
Brunei															
China															
India															
Indonesia															
Malaysia															
Myanmar															
Pakistan															
Thailand															
Vietnam															
Other Asia Pacific															
Total Asia Pacific															
Total World															
of which: OECD															
Non-OECD															
European Union#															

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.

Data before 2013: Cedigaz. These data include flaring from upstream.

As far as possible, the calculation has used flared volumes based on standard cubic metres (measured at 15°C and 1013 mbar); as they are derived directly from measures of energy content 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 the original databases.

^ Less than 0.05.

† Less than 0.05%.

Excludes Estonia, Latvia and Lithuania prior to 1985 and Croatia and Slovenia prior to 1990.

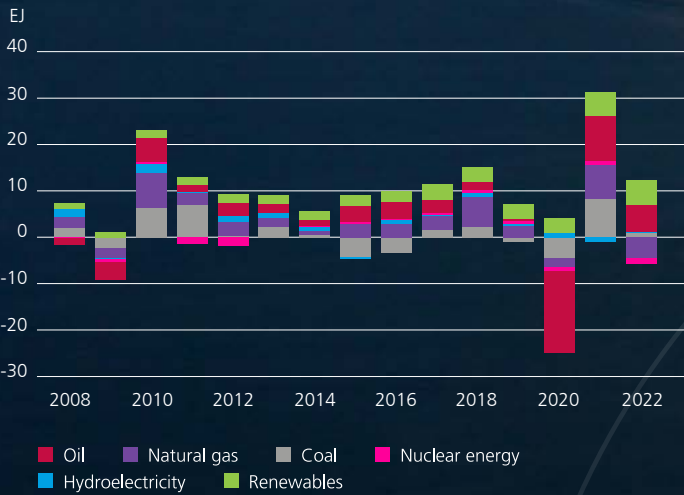
Notes: Annual changes and shares of total are calculated using exajoules figures.

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												Growth rate per annum		Share
Thousand barrels daily	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	1.399%	3.5%	5.9%
Mexico	2875	2784	2587	2456	2224	2068	1918	1910	1926	1943	2040	4.980%	-3.4%	2.1%
US	10101	11805	12782	12356	13140	15321	17135	16493	16693	17844	19358	8.487%	6.7%	20.1%
Total North America	16976	18860	19756	19275	20178	22633	24426	23533	24033	25361	27050	6.660%	4.8%	28.1%
Argentina	644	638	646	610	590	592	720	721	797	955	1074	12.463%	5.2%	1.1%
Brazil	2110	2341	2525	2607	2731	2691	2890	3030	2991	3112	3502	12.525%	5.2%	3.6%
Colombia	1010	990	1006	886	854	865	886	781	736	754	777	3.046%	-2.6%	0.8%
Ecuador	527	557	543	548	531	517	531	479	473	481	475	-1.184%	-1.0%	0.5%
Guyana	–	–	–	–	–	–	1	74	117	278	391	40.795%	–	0.4%
Peru	171	175	153	141	136	139	144	131	128	128	123	-3.889%	-3.2%	0.1%
Trinidad & Tobago	116	114	109	97	99	87	82	76	77	74	72	-2.805%	-4.7%	0.1%
Venezuela	2680	2692	2864	2566	2199	1642	1051	680	678	735	853	16.068%	-10.8%	0.9%
Other S. & Cent. America	152	154	146	135	133	128	121	112	114	108	99	-7.819%	-4.2%	0.1%
Total S. & Cent. America	7411	7661	7991	7590	7275	6661	6426	6086	6111	6626	7368	11.201%	-0.1%	7.7%
Denmark	178	167	158	142	138	116	103	72	66	65	60	-8.253%	-10.3%	0.1%
Italy	114	120	113	78	86	97	89	112	100	94	90	-4.367%	-2.3%	0.1%
Norway	1849	1894	1953	2004	1982	1863	1774	2018	2036	1906	2022	6.097%	0.9%	2.1%
Romania	86	84	83	79	76	75	75	72	70	66	63	-4.725%	-3.1%	0.1%
United Kingdom	865	854	964	1015	1005	1092	1118	1049	874	809	715	-11.602%	-1.9%	0.7%
Other Europe	344	341	331	312	303	308	302	289	289	274	275	0.489%	-2.2%	0.3%
Total Europe	3437	3460	3602	3630	3590	3550	3460	3612	3436	3214	3225	0.345%	-0.6%	3.4%
Azerbaijan	878	851	841	828	782	784	763	703	708	669	620	-7.191%	-3.4%	0.6%
Kazakhstan	1720	1701	1672	1637	1813	1900	1903	1796	1805	1891	1771	-6.381%	0.3%	1.8%
Russian Federation	10807	10927	11087	11342	11374	11562	11679	10666	11000	11202	11075	-1.136%	0.2%	11.5%
Turkmenistan	256	263	271	270	269	259	254	219	206	203	194	-4.209%	-2.7%	0.2%
USSR	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Uzbekistan	69	63	60	57	61	64	62	44	46	45	43	-5.302%	-4.6%	†
Other CIS	35	35	36	36	37	38	39	39	41	43	44	3.163%	2.3%	†
Total CIS	13765	13840	13966	14171	14336	14607	14701	13468	13806	14053	13748	-2.174%	†	14.3%
Iran	3609	3714	3853	4578	4939	4720	3510	3230	3766	3945	4662	18.175%	2.6%	4.8%
Iraq	3099	3239	3986	4423	4538	4632	4779	4114	4102	4520	4355	-3.636%	3.5%	4.5%
Kuwait	3134	3106	3069	3150	3009	3050	2976	2721	2706	3036	2908	-4.201%	-0.7%	3.0%
Oman	942	943	981	1004	971	978	971	951	971	1064	1049	-1.458%	1.1%	1.1%
Qatar	1934	1892	1844	1846	1783	1798	1737	1715	1697	1743	1772	1.648%	-0.9%	1.8%
Saudi Arabia	11393	11519	11998	12406	11892	12261	11832	11039	10954	12191	11389	-6.578%	†	11.8%
Syria	59	33	27	25	25	24	34	43	43	43	40	-6.599%	-3.8%	†
United Arab Emirates	3540	3592	3876	4020	3880	3894	3984	3679	3640	4020	3922	-2.451%	1.0%	4.1%
Yemen	198	153	54	43	71	94	95	88	83	74	49	-32.841%	-13.0%	0.1%
Other Middle East	208	214	213	214	208	207	214	202	208	209	217	3.702%	0.4%	0.2%
Total Middle East	28117	28405	29901	31709	31316	31658	30132	27782	28171	30844	30362	-1.561%	0.8%	31.5%
Algeria	1485	1589	1558	1577	1540	1511	1487	1332	1353	1443	1408	-2.394%	-0.5%	1.5%
Angola	1738	1701	1796	1745	1671	1519	1420	1325	1177	1191	1150	-3.410%	-4.0%	1.2%
Chad	91	89	111	117	98	116	127	126	116	124	134	8.181%	4.0%	0.1%
Republic of Congo	243	253	234	232	270	330	336	307	274	269	278	3.498%	1.4%	0.3%
Egypt	710	714	726	691	660	674	653	632	608	613	610	-0.417%	-1.5%	0.6%
Equatorial Guinea	282	284	260	223	195	176	160	158	131	121	88	-26.970%	-11.0%	0.1%
Gabon	213	211	214	221	210	193	218	207	181	191	223	17.031%	0.4%	0.2%
Libya	1048	518	437	412	929	1165	1232	420	1286	1143	1271	11.243%	2.0%	1.3%
Nigeria	2276	2273	2199	1898	1966	2000	2093	1894	1678	1445	1540	6.602%	-3.8%	1.6%
South Sudan	100	155	148	137	147	144	172	165	153	141	148	4.676%	4.0%	0.2%
Sudan	118	120	109	84	70	74	72	63	64	62	57	-7.252%	-6.9%	0.1%
Tunisia	68	63	57	54	45	44	40	37	45	38	38	-0.383%	-5.7%	†
Other Africa	242	247	276	270	317	315	348	331	294	284	282	-1.018%	1.5%	0.3%
Total Africa	8612	8218	8123	7660	8121	8263	8358	6998	7360	7063	7228	2.331%	-1.7%	7.5%
Australia	401	420	378	353	322	342	458	454	444	412	383	-6.986%	-0.5%	0.4%
Brunei	135	126	127	121	113	112	121	110	107	93	93	0.177%	-3.7%	0.1%
China	4216	4246	4309	3999	3846	3802	3848	3901	3994	4111	4198	2.102%	†	4.4%
India	921	914	904	896	897	892	851	795	770	739	728	-1.496%	-2.3%	0.8%
Indonesia	871	847	838	873	837	808	781	742	692	647	641	-0.969%	-3.0%	0.7%
Malaysia	627	649	696	726	718	713	672	615	571	561	565	0.742%	-1.0%	0.6%
Thailand	466	464	481	489	486	475	475	421	398	328	324	-1.295%	-3.6%	0.3%
Vietnam	346	325	352	317	284	257	236	207	196	194	188	-2.908%	-5.9%	0.2%
Other Asia Pacific	270	292	293	277	269	230	227	204	195	167	158	-5.400%	-5.2%	0.2%
Total Asia Pacific	8254	8284	8378	8051	7774	7630	7669	7449	7366	7252	7277	0.355%	-1.3%	7.6%
Total World	86572	88728	91717	92085	92588	95002	95172	88928	90282	94413	96258	2.0%	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	64798	64928	0.2%	†	67.5%
OPEC	34740	34693	36342	37449	37240	37094	35079	31107	31928	34247	34048	-0.6%	-0.2%	35.4%
Non-OPEC	51832	54036	55375	54636	55348	57908	60093	57821	58354	60165	62210	3.4%	1.8%	64.6%
European Union*	559	554	534	468	464	448	414	392	370	346	328	-5.1%	-5.2%	0.3%

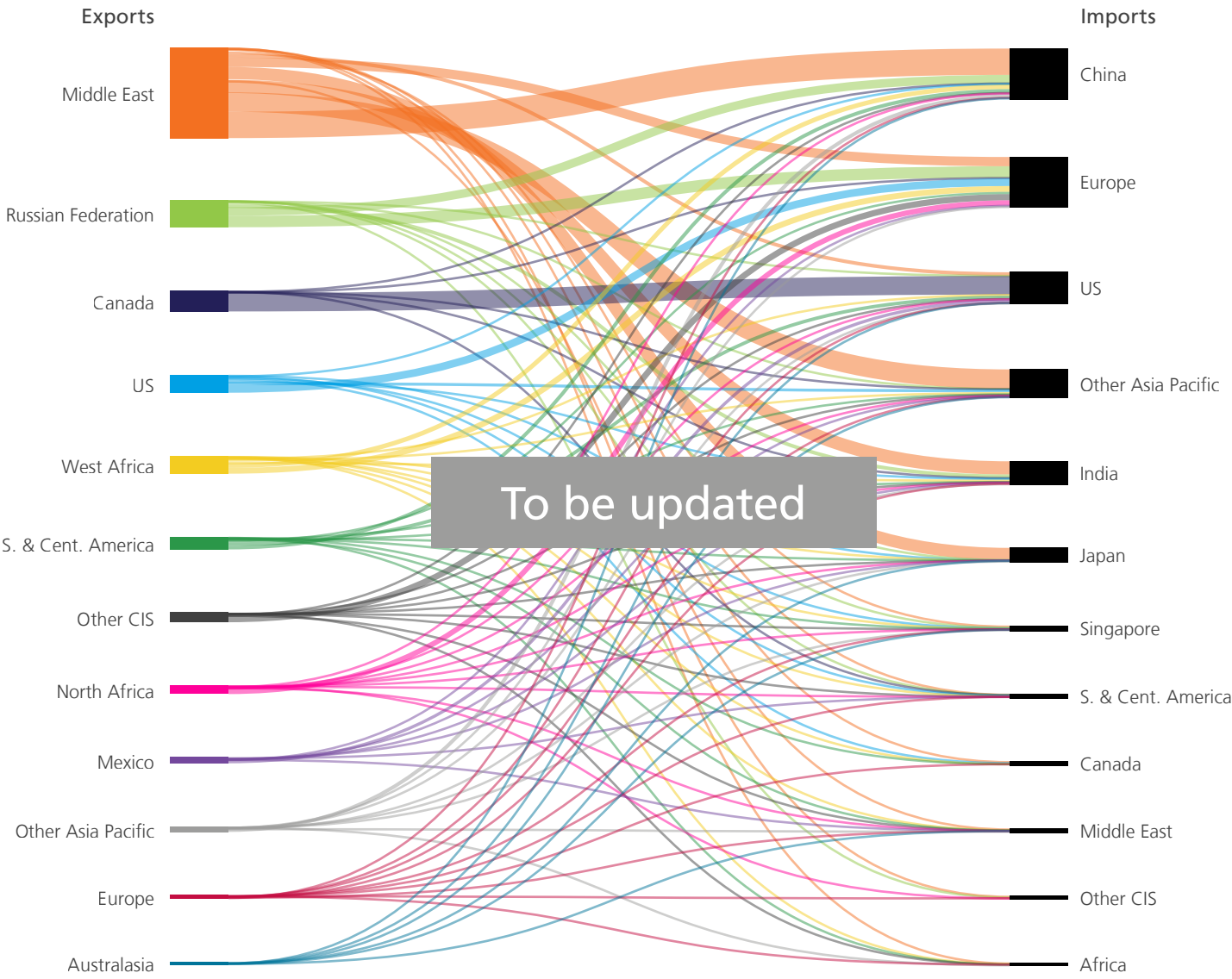
Source: includes data from FGE Iran Service.
* Includes crude oil, shale oil, oil sands, condensates (lease condensate or gas condensates that require further refining) and NGLs (natural gas liquids – ethane, LPG and naphtha separated from the production of natural gas).
Excludes liquid fuels from other 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/kerogen extracted in solid form.
^ Less than 0.05%.
† Less than 0.05%.
n/a not available.
USSR includes CIS, Georgia, Ukraine and the Baltic States.
Excludes Estonia, Latvia and Lithuania prior to 1985 and Croatia and Slovenia prior to 1990.
Note: Annual changes and shares of total are calculated using thousand barrels daily figures.

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* Excludes Estonia, Latvia and Lithuania prior to 1985 and Croatia and Slovenia prior to 1990.
† Less than 0.05%.

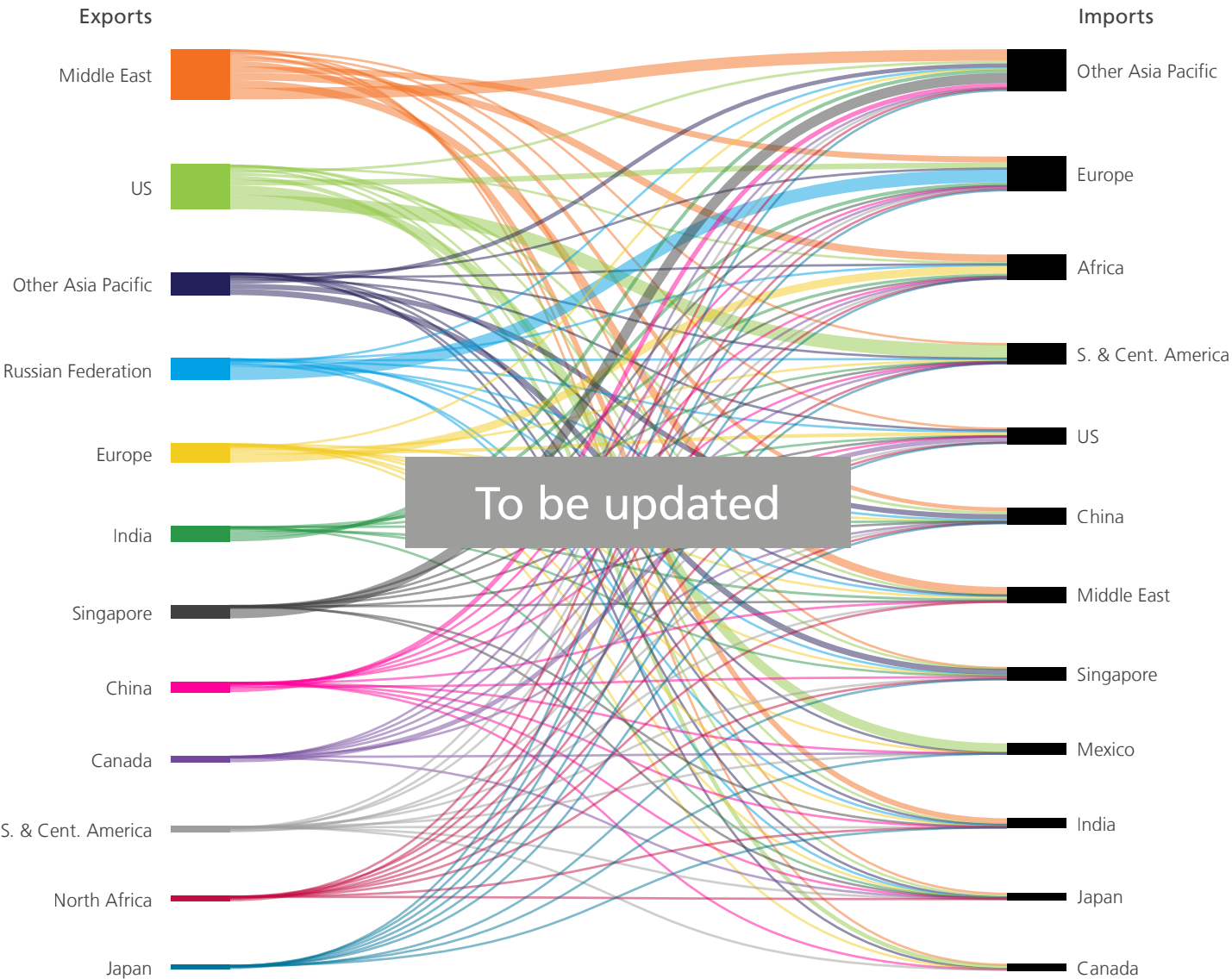
Notes: 'Light distillates' consists of aviation and motor gasolines and light distillate feedstock (LDF).
'Middle distillates' consists of jet and heating kerosenes, and gas and diesel oils (including marine bunkers).
'Fuel oil' includes marine bunkers and crude oil used directly as fuel.
'Others' consists of refinery gas, solvents, petroleum coke, lubricants, bitumen, wax, other refined products and refinery fuel and loss.

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



International trade of crude oil was 2.1 billion tonnes in 2022, an increase of around 4% over 2021. The Middle East dominated exports accounting for 43% of the total followed by Russia at 12%. On the import side, the Asia Pacific

region accounted for nearly 60% of the total. China, India, and Japan were responsible for nearly 75% of the regions' total. At 0.5 billion tonnes, Europe was the second largest destination, representing around 24% of the total.



At 1.2 billion tonnes, international trade of refined product was around 40% that of crude oil in terms of volume and only 2.5% higher than it recorded in 2021. Between them, the Middle East and the US accounted for 45% of the total exports at 0.29 and 0.25 billion tonnes respectively. At 0.5

billion tonnes, Asia Pacific region accounted for around 40% of total imports. Europe was the second largest importer of refined products at 0.2 billion tonnes, 60% below Asia Pacific region.

Crude (million tonnes)		To																
From		Canada	Mexico	S. & Cent. US	Europe	Russia	Other CIS	Middle East	Africa	Australasia	China	India	Japan	Singapore	Other Asia Pacific	Total		
Canada																		
Mexico																		
US																		
S. & Cent. America																		
Europe																		
Russia																		
Other CIS																		
Iraq																		
Kuwait																		
Saudi Arabia																		
UAE																		
Other Middle East																		
North Africa																		
West Africa																		
East & S. Africa																		
Australasia																		
China																		
India																		
Japan																		
Singapore																		
Other Asia Pacific																		
Total imports																		

† 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.

Product (million tonnes)		To																
From		Canada	Mexico	S. & Cent. US	Europe	Russia	Other CIS	Middle East	Africa	Australasia	China	India	Japan	Singapore	Other Asia Pacific	Total		
Canada																		
Mexico																		
US																		
S. & Cent. America																		
Europe																		
Russia																		
Other CIS																		
Iraq																		
Kuwait																		
Saudi Arabia																		
UAE																		
Other Middle East																		
North Africa																		
West Africa																		
East & S. Africa																		
Australasia																		
China																		
India																		
Japan																		
Singapore																		
Other Asia Pacific																		
Total imports																		

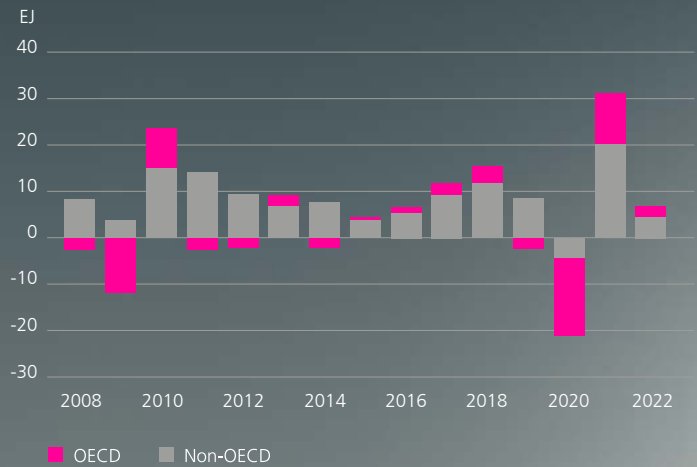
† Less than 0.05.
Notes: Does not include biofuels trade. Bunker fuel use is not included as exports. Intra-area movements (for example, between countries within Europe) are excluded.
Crude imports and exports include condensates.

Natural gas

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Natural gas Production in billion cubic metres*

												Growth rate per annum		Share
Billion cubic metres	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2023	2013–23	2023
Canada														
Mexico														
US														
Total North America														
Argentina														
Bolivia														
Brazil														
Colombia														
Peru														
Trinidad & Tobago														
Venezuela														
Other S. & Cent. America														
Total S. & Cent. America														
Denmark														
Germany														
Italy														
Netherlands														
Norway														
Poland														
Romania														
Ukraine														
United Kingdom														
Other Europe														
Total Europe														
Azerbaijan														
Kazakhstan														
Russian Federation														
Turkmenistan														
Uzbekistan														
Other CIS														
Total CIS														
Bahrain														
Iran														
Iraq														
Kuwait														
Oman														
Qatar														
Saudi Arabia														
Syria														
United Arab Emirates														
Yemen														
Other Middle East														
Total Middle East														
Algeria														
Egypt														
Libya														
Nigeria														
Other Africa														
Total Africa														
Australia														
Bangladesh														
Brunei														
China														
India														
Indonesia														
Malaysia														
Myanmar														
Pakistan														
Thailand														
Vietnam														
Other Asia Pacific														
Total Asia Pacific														
Total World														
of which: OECD														
Non-OECD														
European Union*														

Source: Includes data from Cedigaz, FGE MENAgas service.
* Excludes gas flared or recycled. Includes natural gas produced for Gas-to-Liquids transformation.
^ Less than 0.05.
† Less than 0.05%.
Excludes Estonia, Latvia and Lithuania prior to 1985 and Croatia and Slovenia prior to 1990.
Notes: As far as possible, the data above represents standard cubic metres (measured at 15°C and 1013 mbar); as they are derived directly from measures of energy content 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.
Annual changes and shares of total are calculated using billion cubic metres figures.

 Natural gas Major trade movements 2023 – LNG



In 2022, international trade of natural gas as liquified natural gas (LNG) represented 56% of all inter-regional traded gas. At a total of 542 Bcm, it was up 5% on the previous year. The Middle East was the largest exporter of LNG and, together with Australia and the US, represented 65% of total

LNG exports. At 98 Bcm, Japan was the largest importer of LNG. Along with China, it accounted for 35% of total global imports. As a region, Asia Pacific imported around 65% of total LNG, followed by Europe at just over 30%.

 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	
Canada																				
Mexico																				
US																				
North America																				
Argentina																				
Brazil																				
Chile																				
Other S. & Cent. America																				
S. & Cent. America																				
Belgium																				
France																				
Italy																				
Spain																				
Türkiye																				
United Kingdom																				
Other European Union																				
Rest of Europe																				
Europe																				
Egypt																				
Kuwait																				
United Arab Emirates																				
Other Middle East & Africa																				
Middle East & Africa																				
China																				
India																				
Japan																				
Malaysia																				
Pakistan																				
Singapore																				
South Korea																				
Taiwan																				
Thailand																				
Other Asia Pacific																				
Asia Pacific																				
Total exports																				

Source: Includes data from GIIGNL, IHS.
* 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



Unlike LNG trade that grew in 2022, international trade of natural gas via pipelines declined by around 15%, falling 78 Bcm compared to 2021. Over the past 10 years Russia has, on average, been responsible for around 43% of total

global gas exports via pipelines. In 2022, its share of total global pipeline exports fell to 29%, a drop of around 76 Bcm. Despite this, it still ranked highest at 25% of total global exports, followed by Norway at 23%.

 Natural gas Trade movements 2023 by pipeline

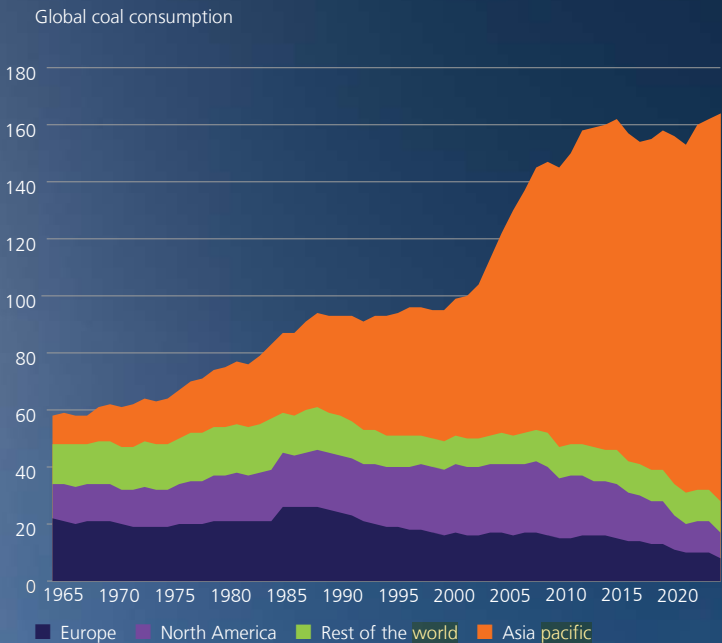
Billion cubic metres To	From																			Total imports
	Canada	Mexico	US	Bolivia	Other S. & Cent. America	European Union	Norway	Other Europe	Azerbaijan	Kazakhstan	Russian Federation	Turkmenistan	Uzbekistan	Iran	Qatar	Other Middle East	Algeria	Libya	Other Africa	
Canada																				
Mexico																				
US																				
North America																				
Argentina																				
Brazil																				
Other S. & Cent. America																				
S. & Cent. America																				
European Union																				
Rest of Europe																				
Europe																				
Belarus																				
Kazakhstan																				
Russian Federation																				
Other CIS																				
CIS																				
United Arab Emirates																				
Other Middle East																				
Middle East																				
South Africa																				
Other Africa																				
Africa																				
Australia																				
China																				
Malaysia																				
Singapore																				
Thailand																				
Asia Pacific																				
Total exports																				

Source: Includes data from FGE MENAgas service, IHS.
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.

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 and Central America, Europe and the Commonwealth of Independent States 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 7 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 fell below 10 EJ, their lowest levels since 1965.



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

Coal Production*

												Growth rate per annum		Share
Million tonnes	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	0.4	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%
USSR	†	†	†	†	†	†	†	†	†	†	†	†	†	†
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.
† Less than 0.05%.
n/a not available.
USSR includes CIS, Georgia, Ukraine and the Baltic States.
Excludes Estonia, Latvia and Lithuania prior to 1985 and Croatia and Slovenia prior to 1990.
Notes: Annual changes and shares of total are calculated using million tonnes figures.



Coal Production*

												Growth rate per annum		Share
Exajoules	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	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%
USSR	^	^	^	^	^	^	^	^	^	^	^	^	^	^
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.

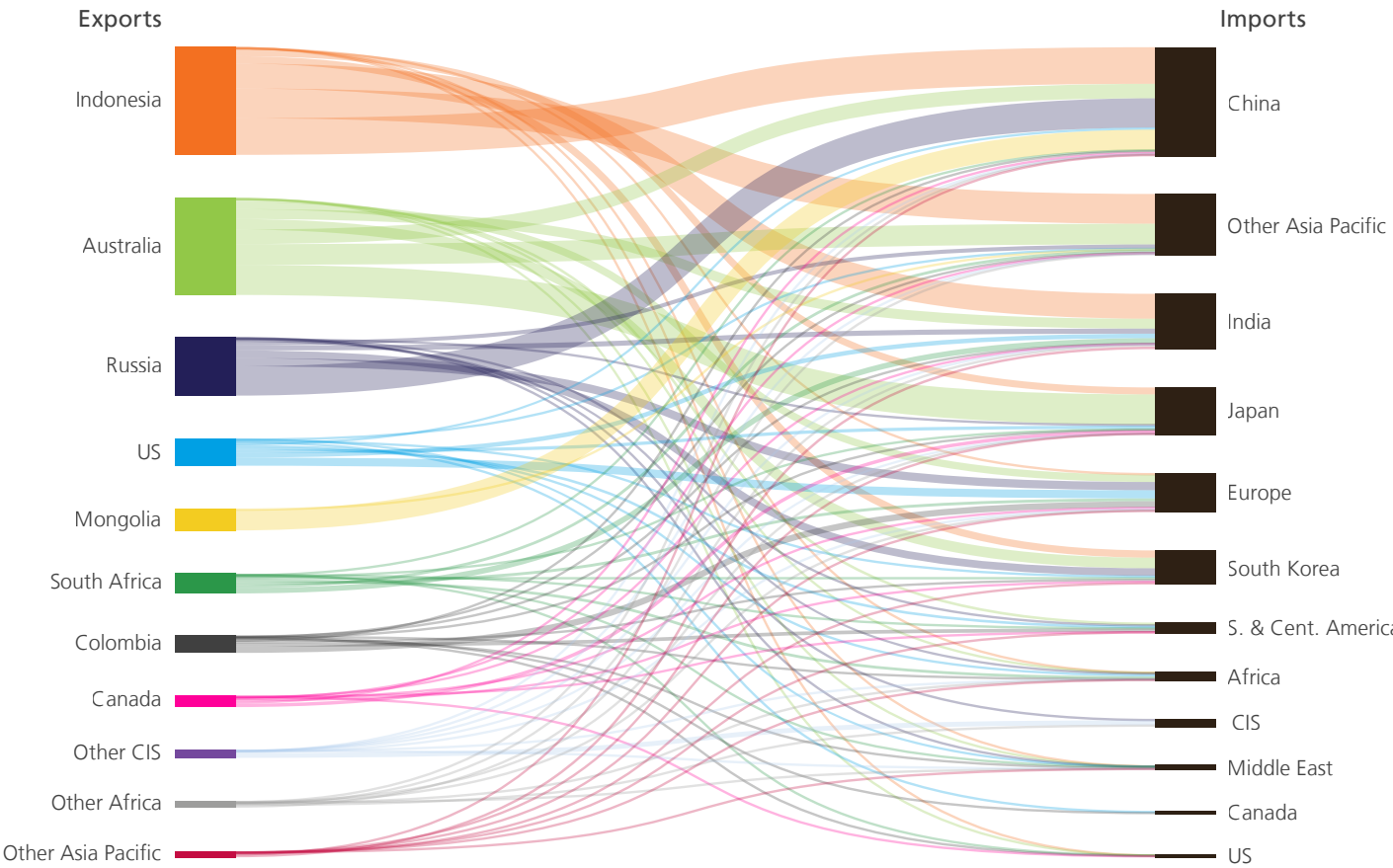
† Less than 0.05%.

Excludes Estonia, Latvia and Lithuania prior to 1985 and Croatia and Slovenia prior to 1990.

Notes: 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.

International coal trade fell by nearly 4% in 2022, its lowest level since 2017. Together Indonesia, Australia, and Russia were responsible for just over 71% of total global exports. Within this, Russia’s coal exports fell by 12% relative to 2022. China was the largest importer of coal at nearly 6 EJ and,

whilst its imports from Indonesia fell by 0.5 EJ, it increased its imports from Russia and Mongolia by 1.5 EJ and 0.5 EJ respectively. Whilst Asia Pacific accounted for 74% of global coal imports, Europe was the second largest region seeing its coal imports increase by 10% over 2021.



Coal Inter-area movements 2023

From	To													
Exajoules	Canada	Mexico	US	S. & Cent. America	Europe	CIS	Middle East	Africa	China	India	Japan	South Korea	Other Asia Pacific	Total
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
Russia	–	–	–	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

^ Less than 0.05.

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.



Renewable energy Biofuels production*

													Growth rate per annum		Share
Thousand barrels of oil equivalent per day	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		2023	2013–23	2023
Canada															
Mexico															
US															
Total North America															
Argentina															
Brazil															
Colombia															
Other S. & Cent. America															
Total S. & Cent. America															
Austria															
Belgium															
Finland															
France															
Germany															
Italy															
Netherlands															
Poland															
Portugal															
Spain															
Sweden															
United Kingdom															
Other Europe															
Total Europe															
Total CIS															
Total Middle East															
Total Africa															
Australia															
China															
India															
Indonesia															
South Korea															
Thailand															
Other Asia Pacific															
Total Asia Pacific															
Total World															
of which: OECD															
Non–OECD															
European Union															

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															
US															
Brazil															
Other S. & Cent. America															
Europe															
CIS															
Middle East															
Africa															
Asia Pacific															
Total World															
of which: OECD															
Non–OECD															
European Union															
Biodiesel															
Canada & Mexico															
US															
Brazil															
Other S. & Cent. America															
Europe															
CIS															
Middle East															
Africa															
Asia Pacific															
Total World															
of which: OECD															
Non–OECD															
European Union															

Source: Includes data from F.O. Lichts; US Energy Information Administration (March 2021).
* Includes biogasoline (such as ethanol) and biodiesel. Volumes have been adjusted for energy content.
† Less than 0.05%.
Notes: Annual changes and shares of total are calculated using thousand barrels a day oil equivalent figures.



Renewable energy Biofuels consumption*

													Growth rate per annum		Share
Thousand barrels of oil equivalent per day	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		2023	2013–23	2023
Canada															
Mexico															
US															
Total North America															
Argentina															
Brazil															
Colombia															
Other S. & Cent. America															
Total S. & Cent. America															
Austria															
Belgium															
Finland															
France															
Germany															
Italy															
Netherlands															
Poland															
Portugal															
Spain															
Sweden															
United Kingdom															
Other Europe															
Total Europe															
Total CIS															
Total Middle East															
Total Africa															
Australia															
China															
India															
Indonesia															
South Korea															
Thailand															
Other Asia Pacific															
Total Asia Pacific															
Total World															
of which: OECD															
Non-OECD															
European Union															

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															
US															
Brazil															
Other S. & Cent. America															
Europe															
CIS															
Middle East															
Africa															
Asia Pacific															
Total World															
of which: OECD															
Non-OECD															
European Union															
Biodiesel															
Canada & Mexico															
US															
Brazil															
Other S. & Cent. America															
Europe															
CIS															
Middle East															
Africa															
Asia Pacific															
Total World															
of which: OECD															
Non-OECD															
European Union															

Source: Includes data from F.O. Lichts; US Energy Information Administration (March 2021).
* Includes biogasoline (such as ethanol) and biodiesel. Volumes have been adjusted for energy content.
^ Less than 0.5.
† Less than 0.05%.
Notes: Annual changes and shares of total are calculated using thousand barrels a day oil equivalent figures.

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

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%	2012	38.8%
2002	36.5%	2013	39.1%
2003	36.7%	2014	39.3%
2004	36.9%	2015	39.5%
2005	37.2%	2016	39.8%
2006	37.4%	2017	40.0%
2007	37.6%	2018	40.2%
2008	37.9%	2019	40.4%
2009	38.1%	2020	40.5%
2010	38.4%	2021	40.6%
2011	38.6%	2022	40.7%
*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

Appendices Approximate conversion factors

Crude oil*		To					
From							
		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		To convert					
From							
		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)		To convert					
From							
		billion cubic metres NG	billion cubic feet NG	petajoules NG	million toe	million tonnes LNG	tonnes to barrels oil equivalent
		Multiply by					
1 billion m³ NG	1.000	35.315	36.000	0.860	0.735	34.121	5.883
1 billion ft³ 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

(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

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 1015)
1 exajoule (EJ)	= 1 quintillion joules (1 x 1018)
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 vaporisation 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, India, Myanmar, Nepal, Pakistan and Sri Lanka), 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.

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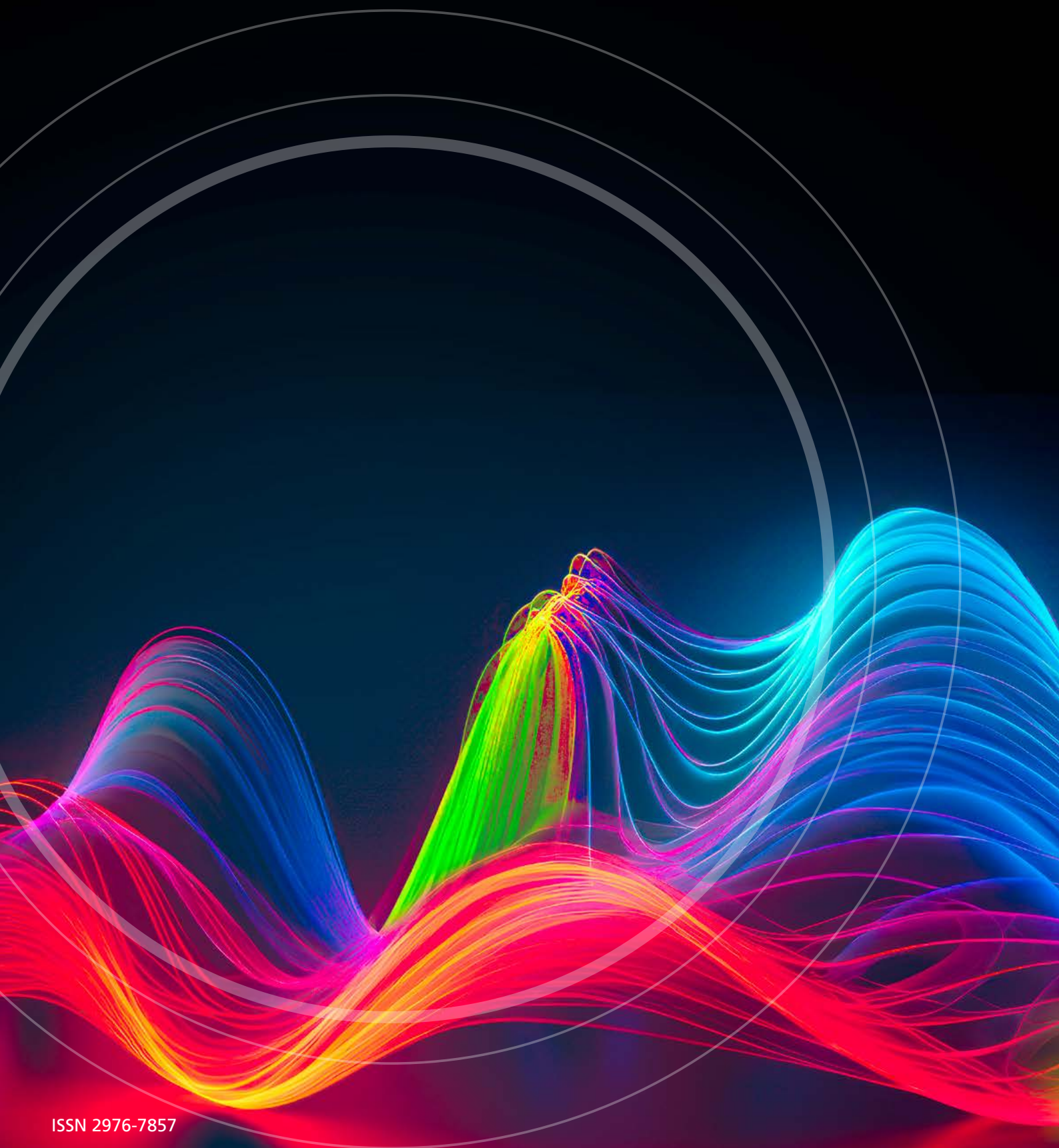
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