

2021 at a glance

Energy demand and emissions bounced back to around pre-pandemic levels in 2021, reversing the temporary reduction in 2020 resulting from the COVID-19 pandemic.

Energy developments

- Primary energy demand increased by 5.8% in 2021, exceeding 2019 levels by 1.3%.
- Between 2019 and 2021, renewable energy increased by over 8 EJ. Consumption of fossil fuels was broadly unchanged.
- Fossil fuels accounted for 82% of primary energy use last year, down from 83% in 2019 and 85% five years ago.

Carbon emissions

- Carbon dioxide emissions from energy use, industrial processes, flaring and methane (in carbon dioxide equivalent) rose 5.7% in 2021 to 39.0 GtCO₂e, with carbon dioxide emissions from energy rising 5.9% to 33.9 GtCO₂, close to 2019 levels.
- Carbon dioxide emissions from flaring and emissions from methane and industrial processes rose more modestly by 2.9% and 4.6% respectively.

Oil

- Oil prices averaged \$70.91/bbl in 2021, the second highest level since 2015.
- Oil consumption increased by 5.3 million barrels per day (b/d) in 2021 but remained 3.7 million b/d below 2019 levels.
- A majority of the consumption growth came from gasoline (1.8 million b/d) and diesel/gasoil (1.3 million b/d). Regionally, most of the growth took place in the US (1.5 million b/d), China (1.3 million b/d) and the EU (570,000 b/d).
- Global oil production increased by 1.4 million b/d in 2021, with OPEC+ accounting for more than three-quarters of the increase. Among all countries, Libya (840,000 b/d), Iran (540,000 b/d) and Canada (300,000 b/d) saw the largest increases. Nigeria (-200,000 b/d), the UK (-170,000 b/d) and Angola (-150,000 b/d) reported the biggest declines.
- Refinery capacity declined for the first time in over 30 years by almost 500,000 b/d last year driven by a sharp reduction in the OECD (1.1 million b/d). As a result, refining capacity in the OECD in 2021 was at its lowest level since 1998.

Natural gas

- Natural gas prices rebounded strongly across all three major gas regions in 2021, rising fourfold to record annual levels in Europe (TTF averaging \$16/mmBtu) and tripling in the Asian LNG spot market (JKM averaging \$18.6/mmBtu). US Henry Hub prices nearly doubled to average \$3.8/mmBtu in 2021 – their highest annual level since 2014.
- Global natural gas demand grew 5.3% in 2021, recovering above pre-pandemic 2019 levels and crossing the 4 Tcm mark for the first time. Its share in primary energy in 2021 was unchanged from the previous year at 24%.
- LNG supply grew 5.6% (+26 Bcm) to 516 Bcm in 2021, its slowest rate of growth since 2015 (other than in 2020). LNG supply from the US rose by 34 Bcm, accounting for most of the new incremental supplies and more than offsetting declines from mainly other Atlantic Basin exporters.

- China surpassed Japan as the world's largest LNG importer and accounted for close to 60% of global LNG demand growth in 2021.
- Algerian pipeline exports to Europe were the largest source of pipeline supply growth to the region (+13 Bcm) last year, followed by Azerbaijan (+6 Bcm). While Russian pipeline supply to Europe overall was steady at 167 Bcm in 2021, exports to the EU decreased by 8.2% (-12 Bcm).

Coal

- Coal prices rose dramatically in 2021, with European prices averaging \$121/tonne and the Asian marker price averaging \$145/t, its highest since 2008.
- Coal consumption grew over 6% in 2021 to 160 EJ, slightly above 2019 levels and its highest level since 2014.
- China and India accounted for over 70% of the growth in coal demand in 2021, increasing by 3.7 and 2.7 EJ, respectively.
- Global production matched consumption with an increase in supply of 440 Mt. China and India accounted for much of the increase in production, which was largely consumed domestically, as well as Indonesia, supporting higher exports.
- Notably, both Europe and North America showed an increase in coal consumption in 2021 after nearly 10 years of back-to-back declines.

Renewables, hydro and nuclear

- Renewable primary energy (including biofuels but excluding hydro) increased by around 5.1 EJ in 2021 – corresponding to an annual growth rate of 15%, stronger than the previous year's 9%, and higher than that of any other fuel in 2021.
- Solar and wind capacity continued to grow rapidly in 2021, increasing by 226 GW, close to the record increase of 236 GW seen in 2020.
- China remained the main driver of solar and wind capacity growth last year, accounting for about 36% and 40% of the global capacity additions, respectively.
- Hydroelectricity generation decreased by around 1.4% in 2021, the first fall since 2015. In contrast, nuclear generation increased by 4.2% – the strongest increase since 2004 – led by China.

Electricity

- Electricity generation increased by 6.2% in 2021 – similar to the strong bounce back seen in 2010 in the aftermath of the financial crisis (6.4%).
- Wind and solar reached a 10.2% share of power generation in 2021, the first time wind and solar power have provided more than 10% of global power and surpassing the contribution of nuclear energy.
- Coal remained the dominant fuel for power generation in 2021, with its share increasing to 36%, up from 35.1% in 2020.
- Natural gas in power generation increased by 2.6% in 2021, although its share decreased from 23.7% in 2020 to 22.9% in 2021.

Key minerals

- The price of cobalt increased 63% in 2021 to average \$51,000/tonne. Similarly, lithium carbonate prices rose 58% to average \$11,000/tonne. So far in 2022, mineral prices have continued to surge.
- Lithium production rose sharply by 27%, cobalt output was up by only 4%.