



# COAL 2018

Analysis and forecasts to 2023

Executive Summary

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# EXECUTIVE SUMMARY

## Much talk, but not much change

**Global coal demand returned to growth in 2017.** After two years of decline, global coal demand grew by 1% last year to 7 585 million tonnes (Mt) as stronger global economic growth increased both industrial output and electricity use. Global coal power generation increased by over 250 TWh, or around 3%, and accounted for about 40% of the additional power generation worldwide. Coal kept its share in the power mix at 38% after some years of decline. Driven by strong coal power generation in the People's Republic of China ("China") and India, coal demand is expected to grow again in 2018.

**Markets trends are resistant to change.** Coal, a carbon-intensive energy source, is at the centre of debate on energy and climate policy. In a growing number of countries, the elimination of coal-fired generation is a key climate policy goal. In others, coal remains the preferred source of electricity and is seen as abundant and affordable. Despite significant media attention being given to divestments and moves away from coal, market trends are proving resistant to change.

**Global coal demand will be stable through 2023.** Global coal demand in the next five years will be stable, with declines in Europe and United States offset by growth in India and other Asian countries. China, the main player in the global coal market, will see a gradual decline in demand. Coal's contribution to the global energy mix will decline from 27% to 25%, mainly due to growth of renewables and natural gas.

## Tighter markets are pushing up prices

**Tighter markets are driving price increases.** The seaborne coal trade experienced a rebound in 2017. Chinese coal imports grew 15 Mt, while most other large importers, including Brazil, Chinese Taipei, Korea, Malaysia, Mexico, Morocco, Philippines, Pakistan, Turkey and Viet Nam, had record imports. Chile, Japan and Thailand were very close to their historical highs. Europe was the only shrinking market. With further growth in 2018 in China and India, seaborne thermal coal trade is close to the 1 billion tonne mark. Higher demand has led to higher prices.

**But higher prices are not triggering new investments.** More than two years of increasing coal prices have handed more cash to coal producers. Some of this extra revenue has been used to purchase already producing assets or, in a limited number of cases, to expand existing operations. By contrast, investment in new mines has not moved forward. Risks associated with climate policies, potentially stranded assets, local opposition, and the memories of the last downturn have cooled investors' appetite to invest in new production. Banks, insurance companies, hedge funds, utilities and other operators in advanced economies are exiting the coal business. In many parts of the world, growing opposition to coal projects has provided strong disincentives for investors.

## A tale of two Europes

**Western Europe is accelerating its coal exit.** In EU28, policy action in three areas is hitting coal demand: action on climate change, including through the Emissions Trading System; action on air pollution; and, in most Western European countries, action to specifically phase out coal-fired power generation. Along with the expansion of renewables, spurred by the growing competitiveness of wind and solar, these policy efforts will eventually push coal out of the Western European power

mix. By 2023, at least two more countries, France and Sweden, will have closed their last coal power plants, and Germany will be the only significant coal consumer remaining in Western Europe.

**By contrast, coal demand remains stable in Eastern Europe.** Most countries in the region have not announced phase-out policies, and a handful of new coal power plants are under construction in the Balkans, Greece and Poland. Given that most of these new plants will replace older and less efficient coal capacity, coal demand will not increase. Some countries in Eastern Europe are among the few places in the world (the state of Victoria, in Australia, is another example) where lignite remains the cornerstone of the electricity system.

## Blue skies, the Chinese priority

**One out of every four tonnes of coal used in the world is burned to produce electricity in China.** Hence, coal's fate largely rests on the Chinese power sector. The rebound in electricity use in China since 2016 underpins the global growth of coal use. Further, we expect increased electrification of transportation and heating, and increased electricity consumption by the growing middle class in China. In our forecast, global coal demand is very sensitive to trends of electricity use in China. Yet, despite these factors, we assume that the Chinese economy is in a structural transformation and that its electricity intensity will decline over time, stopping further growth in coal power generation by 2020.

**“Winning the battle for blue skies” remains the policy priority in China.** Environmental policies, and in particular clean-air measures, constrain coal demand. The main target of the policy action is to reduce direct coal use and small boilers in residential heating, as well as in the commercial and industrial sectors. Cement, steel and small power producers are also targeted in China's air-quality campaign. Gas use for heating and industry, and renewables for power generation, are policy priorities. Whereas cleaner use of coal is another pillar of the strategy, the only sector in which we see significant growth is coal conversion, i.e. coal-to-liquids, coal-to-gas and coal-to-chemicals. Considering all these moving pieces, we maintain the forecast in last year's report that China's coal demand has entered a slow but structural decline at less than 1% per year on average.

## India, coal's safest bet

**The unmatched period of coal power generation growth in India is set to continue.** Coal power generation in India has grown continuously since 1974. With the Indian economy expected to grow over 8% per year to 2023 and the electrification process continuing, power demand is forecast to rise by more than 5% per year over the period. The large-scale ongoing renewable expansion and the use of supercritical technology in new coal power plants will slow coal demand growth, which will grow by less than 4% per year through 2023, compared to over 6% on average per year in the past decade. Outside the power sector, economic growth and infrastructure development will increase coal consumption in steel and cement production.

**South and Southeast Asia are the second engine of growth.** Indonesia, Pakistan, Bangladesh, Philippines and Viet Nam combined have more than 800 million people, with an average annual per capita electricity consumption of just over 800 kWh, one-seventh that of EU28. Increasing coal power generation, supported by new coal plants under construction, will be the main driver of coal demand growth in those countries. In other countries with higher per capita electricity use, like Malaysia and the United Arab Emirates, new coal plants are largely due to energy mix diversification policies. Southeast Asia has the fastest growth in coal demand at over 5% per year through 2023, although India, with almost 150 Mtce of additional demand, supports the largest absolute growth.

## China remains the wild card of coal trade

**India, Korea, and above all, China hold the key.** The future of coal imports remains tied to South and Southeast Asia. For India, where the progress observed in coal production and transportation will not be sufficient to reduce imports, we have revised our forecast for thermal imports upward. Growth is also expected in Korea, Viet Nam, Malaysia, the Philippines, Pakistan and others. By contrast, imports to Europe decline over time. Overall, the market depends on China, whose sheer size and changing policies give it a unique potential to swing imports from one year to the other. Whereas the arbitrage between domestic and imported prices in coastal areas is relevant, policies (for instance import quotas, port caps, taxes, and quality tests) are also important.

**Australia recovers its leadership in export markets, but Indonesia follows closely.** In our forecast, Indonesian exports decline, pushed by increasing domestic demand and lower prices, leaving Australia as the largest exporter in the world. This could change if prices rise as Indonesian producers have a proven record to ramp up production whenever prices are attractive. We forecast increasing exports from the Russian Federation, which is ramping up export infrastructure and targeting the Asian markets. Our forecast for US coal exports has not changed much compared to 2017. Abundant cheap gas and renewable expansion will continue to squeeze domestic coal power generation, and exports will depend on prices prevailing in the international markets, as the United States remains a swing supplier.

## Coal, the most controversial fuel

**One planet, two coal worlds.** Since 2015, we have observed that coal's shift to Asia, and the emergence of two worlds – one with coal power generation and the other without it, would make it difficult to build agreements on coal and emission reductions. This became more evident when the United Kingdom and Canada launched the Powering Past Coal Alliance, which has been joined by more than 20 countries, as well as states, provinces, municipalities and businesses, who have committed to end unabated coal power generation by 2030. Today, coal used for power generation in the countries that have joined the Alliance accounts for less than 2% of global coal consumption. In many other countries, however, the end of coal generation is not envisaged given the role that coal plays for securing access to affordable energy.

**Carbon capture, utilisation and storage (CCUS) is the bridge between the two worlds.** If there is to be continued coal use in the longer term while meeting the overall goals of the Paris agreement, CCUS has to be in the portfolio. The International Energy Agency is committed to continue to build momentum on this crucial technology. While 2018 brought some good news in terms of policies and projects, our progress with deploying CCUS remains woefully off-track with what is required for a sustainable energy future.

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# COAL 2018

Analysis and Forecasts to 2023

Coal remains a major component of global fuel supplies, accounting for 27% of all energy used worldwide and making up 38% of electricity generation. It plays a crucial role in industries such as iron and steel. But concerns about air pollution and greenhouse gas emissions cloud the future of coal. *Coal 2018: Analysis and Forecasts to 2023* addresses these key questions and more:

- Do China's policies to limit urban coal use to ramp up natural gas and renewables mean it is abandoning coal?
- Will the push for renewables in India lead to a peak in Indian coal demand?
- How significant will the growth in coal demand be in other parts of developing Asia?
- How likely is it that coal demand will continue to decline in the United States and Europe? Will this trend spread to other parts of the world?
- Will robust demand and high prices for seaborne coal lead to new investment in coal mining?

This year's annual IEA coal market report also presents recent trends and the IEA's five-year forecasts for global coal supply, demand, and trade.

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