



COAL 2017

Analysis and Forecasts to 2022

EXECUTIVE
SUMMARY

COAL 2017

Analysis and Forecasts to 2022

EXECUTIVE
SUMMARY

INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 29 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency's aims include the following objectives:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
- Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
- Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

IEA member countries:

Australia
Austria
Belgium
Canada
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Japan
Korea
Luxembourg
Netherlands
New Zealand
Norway
Poland
Portugal
Slovak Republic
Spain
Sweden
Switzerland
Turkey
United Kingdom
United States



**International
Energy Agency**
Secure
Sustainable
Together

© OECD/IEA, 2017
International Energy Agency
Website: www.iea.org

Please note that this publication
is subject to specific restrictions
that limit its use and distribution.
The terms and conditions are
available online at www.iea.org/t&c/

The European Commission
also participates in
the work of the IEA.

EXECUTIVE SUMMARY

Coal's decade of stagnation

Global coal demand dropped for a second year in a row in 2016, approaching the previous record for two-year declines set in the early 1990s. Global demand for coal fell by 1.9% in 2016 to 5 357 Mtce, as lower gas prices, a surge in renewables and energy efficiency improvements put a major dent on coal consumption. Demand for coal has now dropped by 4.2% since 2014, almost matching the fall of 1990-1992 which was the largest two-year decline recorded since the IEA started compiling statistics more than 40 years ago. In 2016, rising coal use in India and other Asian countries was unable to offset large declines in the United States, China (where demand dropped for the third consecutive year) and in the United Kingdom (where demand dropped by more than 50%). In the United States, coal's dominance in the power sector has been eroded by low gas prices; in China, coal demand has fallen due to lower use in the industrial and residential sectors linked to efforts to improve air quality; while in the United Kingdom a recently introduced carbon price floor has rung the death knell for coal use in power generation.

Coal's share in the global energy mix is forecast to decline from 27% in 2016 to 26% in 2022 on sluggish demand growth relative to other fuels. Growth through 2022 is concentrated in India, Southeast Asia and a few other countries in Asia. Coal demand declines in Europe, Canada, the United States and China, the largest coal consumer by far, and where we forecast a structural but slow decline with some fluctuations linked to short-term market requirements. As a result of these contrasting trends, global coal demand reaches 5 530 Mtce in 2022, which is only marginally higher than current levels, meaning that coal use all but stagnates for around a decade. Although coal-fired power generation increases by 1.2% per year in the period 2016-22, its share of the power mix falls to just below 36% by 2022, the lowest level since IEA statistics began.

While some demand centres are in decline, others are taking off

Prospects for coal are bleak throughout most of Europe. The future of coal in Europe is increasingly tied to Poland and Germany, which account for more than half of the coal consumed in the European Union. In Poland, demand is forecast to be stable through 2022. In Germany, coal demand declines even as nuclear power is progressively phased out, with coal use remaining highly sensitive to the relative prices of coal, natural gas and carbon dioxide (CO₂). The decrease in coal demand forecast in Germany could be accelerated by policy changes. For most countries in Europe, coal is increasingly becoming a negligible part of the energy mix as a growing number of countries have closed or are closing their coal-fired power plants. Hard coal production in Europe outside Poland drops to marginal levels by 2022; lignite production remains meaningful in a few countries, but with a declining profile that follows power generation trends.

Pakistan emerges in the coal landscape and others might follow. Endowed with vast reserves in the Thar lignite field and facing a severe energy shortage, Pakistan is betting on domestic and imported coal for electricity supply in the coming years. We forecast coal demand to more than quadruple between 2016 and 2022, with Pakistan emerging as a significant international player, with imports accounting for half of its consumption. Bangladesh is also planning an expanded role for coal although developments through 2022 will be limited. Egypt has postponed its coal power plans, while in the United Arab Emirates, Dubai is set to open the first large coal power plant in the Middle East. However, these increases will be modest compared to today's large consumers: Pakistan and Bangladesh combined will represent around 5% of India's coal consumption by 2022.

High prices endure, along with volatility

Tight markets in China and some supply events pushed coal prices up in 2017. Thermal coal prices dropped to USD 70/t (European prices) during the first quarter of 2017 from highs at the end of 2016. Since then, higher demand in China to meet a surge in power demand and supply issues in some major exporters pushed prices up to USD 95/t in September 2017. Volatility in spot coking coal prices has been much sharper, with prices almost doubling in three weeks to USD 290/t (FOB Australia) in April 2017 in the aftermath of cyclone Debbie hitting Queensland. After falling down below USD 140/t in June, coking coal prices went up over USD 200/t in September, largely on strong demand in China.

Price volatility is here to stay. Changes in China, whether in policy or economic circumstances, feed volatility in global coal markets given its sheer size and dominance in global trade. When combined with supply disruptions, this volatility is amplified. Prices will continue to depend largely on China; as a consequence, the structural reform of the Chinese coal industry is key to the evolution in coal prices. Among exporting countries, Indonesia deserves special attention: expanding domestic demand combined with constraints on ramping up production might increase market tightness and push prices up. On the demand side, import levels of China, India, Korea and Japan are key uncertainties.

Uncertainty is the main certainty for coal trade

Imports to Japan, Korea and Chinese Taipei are under pressure. Whereas the delicate balance between imports and domestic production in China, and to a lesser extent India, made import volumes volatile in the past few years, stability in Northeast Asia (Japan, Korea and Chinese Taipei) provided a level of comfort for coal exporters. This is no longer the case. In Japan, sluggish power demand, rapid renewables deployment and the potential nuclear ramp-up provide a downside risk for coal. But this contrasts with the upside coming from substantial coal-power capacity currently in the pipeline. In Korea, the government is currently trying to reduce coal's share in the power mix while over 5 GW of new coal capacity have just been commissioned and another 4 GW are under construction. In Chinese Taipei, where new coal capacity is coming on line, coal is facing growing social opposition.

Investment in coal mining has dried up despite higher prices. Production cost reductions in coal mining reached their limits in 2015, and since prices have moved higher, the urgency to cut costs has decreased. While recent price spikes have been welcome by producers, they have not led to behavioral changes. The wounds of the low-price period of 2013-15 are still fresh and supply discipline remains the motto for fear of oversupplying the market. Despite growth expected in 2017, our forecast shows a contraction of seaborne coal trade through 2022, although India and Korea hold significant upside potential. The perception that current high prices are due to China's policies and do not signal scarcity in the traditional way is not helping investor confidence. Given uncertainties and expected price volatility, there is limited appetite for big capital expenditures in coal production except in China and India, where investment is linked to meeting large domestic needs.

Understanding priorities in China

Chinese Premier Li Keqiang has pledged to “Make the skies blue again”. Chinese coal demand declined in 2016 – as it did in 2014 and 2015 – despite an increase in coal-power generation. The main driver for this apparent contradiction was coal substitution in small industrial and residential boilers; higher efficiency in power, steel and cement industries also helped. This sets the scene for the years to come. Improving air quality has become a major policy priority, and we expect more

than 100 Mt of coal currently used in the residential and industrial sectors (others than steel and cement) to be replaced by natural gas. Combined with saturation of heavy industry growth, coal demand is forecast to decline through 2022, despite growth in coal conversion and in coal-power generation. Still, coal supplies over 55% of China's energy demand in 2022.

A competitive, profitable and safe coal mining sector is critical for the Chinese economy. Whereas policies to maintain profitability of the coal sector in China – together with improving mine safety – have been recent priorities, the sector's competitiveness is another medium-term objective to avoid burdening the Chinese economy. But cost reductions will be challenging. Closures and mergers of low-productivity mines and transport debottlenecking will push costs down, but will be offset by deterioration of geological conditions, labor inflation and increasing transportation distances. Overcapacity is another concern that needs to be addressed, while taking care of social and regional impacts of mine closures and job losses.

Coal still advances in India

Despite rapid growth in renewables deployment, coal use will continue to rise in India. With a growing fleet of coal power plants running at less than 60% of capacity and robust power demand growth, coal-fired generation is forecast to increase at nearly 4% per year through 2022. Outside the power sector, growth in thermal coal demand is centred in the industrial sector thanks to robust economic growth, as well as in coking coal, thanks to rising steel consumption, housing, railways and steel-intensive industries such as shipbuilding, defense and vehicle manufacturing.

We have significantly reduced our forecast for thermal coal imports to India compared with last year's report in response to government measures to reduce dependence on imports. A number of policies to cut imports have been implemented, which we expect to have an impact despite the lower quality of domestic Indian coal. Future production in the state-owned Singareni, captive blocks and commercial mining (if any) will play a role, but the performance of Coal India, which maintains its ambitious targets for coal production, will be critical to meet the government's desire to cut imports. In the case of coking coal, where quality issues are more difficult to overcome, we forecast imports increasing by over 5% per year through 2022.

Better times for US coal?

The mood in the coal industry in the United States brightened in 2017. Measures introduced by the Federal government provided optimism to the sector. At the same time, higher domestic gas prices drove higher coal use in the power sector and higher international coal prices boosted exports and revenues for coal companies. Some regulations were reviewed and the financial environment for coal mining improved. The country's first new coal mine since 2011 was opened in May and other projects were announced. However, sluggish power demand, abundant gas supply and renewables growth are expected to continue to generate headwinds for coal use and limit the prospects for any resurgence in construction of new coal power plants. As a result, US coal production is forecast to be around 510 Mtce in 2022, equivalent to current levels, while demand declines to 470 Mtce, a drop of 1% per year on average over the period.

The United States is set to remain a swing supplier to international coal markets. Recent change in the policy and regulatory environment are reducing costs for US producers, but will not significantly change their position in the seaborne supply curve. In 2017, a rise in coal imports and prices led to greater US exports; but as prices ease, so will exports. Australia is forecast to remain the largest coal exporter through 2022. Russia, Colombia and South Africa are set to see slightly

increased exports at the expense of Indonesia. Uncertainty about the level of US exports will be the highest among all major coal exporters given the role of the United States as a swing supplier.

New boost in CCUS is pivotal

Urgent action is needed to support Carbon Capture, Utilisation and Storage (CCUS). In 2017, CCUS development made important strides. The commissioning of Petra Nova Carbon Capture project, the largest CCUS project in the world applied to a coal-fired power generation plant is an important step forward. However, the progress on CCUS is lagging far behind other low carbon technologies. There is a broad agreement among energy leaders from both the governments and the industry that urgent action is needed to support CCUS. Without CCUS, the climate challenge will be much bigger. This is why the IEA, together with countries and industry leaders is working to give a new momentum to this essential technology. Indeed, without CCUS, coal use will be seriously constrained in the future.

Online bookshop

www.iea.org/books

PDF versions at 20% discount

E-mail: books@iea.org



Global Gas
Security
series

Energy
Technology
Perspectives
series

World
Energy
Outlook
series

Energy
Policies
of IEA
Countries
series

World
Energy
Investment
series

Energy
Statistics
series

Oil

Energy
Policies
Beyond IEA
Countries
series

Gas

Coal

Renewable
Energy

Energy
Efficiency

Market
Report
Series

This publication reflects the views of the IEA Secretariat but does not necessarily reflect those of individual IEA member countries. The IEA makes no representation or warranty, express or implied, in respect of the publication's contents (including its completeness or accuracy) and shall not be responsible for any use of, or reliance on, the publication.

Unless otherwise indicated, all material presented in figures and tables is derived from IEA data and analysis.

This document, as well as any data and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

IEA Publications,
International Energy Agency
Website: www.iea.org

Contact information: www.iea.org/aboutus/contactus

Typeset in France and Printed in France by IEA, December 2017

Cover design: IEA. Photo credits: © Shutterstock

IEA/OECD possible corrigenda on: www.oecd.org/about/publishing/corrigenda.htm

The paper used has been produced respecting
PEFC's ecological, social and ethical standards

COAL 2017

Analysis and Forecasts to 2022

The future of coal – the world’s dominant fuel for more than a century – continues to be one of the most pressing questions in the energy scene. Coal is under pressure in many regions of the world for its contribution to greenhouse gases. It is being squeezed out in power generation by cheap and abundant natural gas and fast-growing renewables, whose costs are also plummeting.

At the same time, however, recent declines in coal usage have also been reversed this year by stronger consumption in coal’s three largest markets – China, India, and the United States. But, whereas this growth is expected to be temporary in China and United States, that is not the case for India. Despite progress in energy efficiency improvements and the deployment of renewables, increasing energy needs for its economic growth and development will push India to expand coal use.

The IEA *Coal 2017* market and analysis report provides a comprehensive analysis of recent trends and forecasts through 2022 of coal demand, supply and trade at both the global and regional levels. The insights provided in this report help to explain the current developments in coal markets and provide a window into the fuel’s future over the next five years.

MARKET REPORT SERIES