

# Stable market fundamentals for SUEK's high-CV coal

Growing electricity demand in Asia and the necessity to provide heat to millions of people in Russia drive demand for SUEK's coal.

## GLOBAL TRENDS



Population growth and rising incomes



Urbanisation and industrialisation



Development of services and digital technologies



Growing number of electric vehicles

ELECTRICITY DEMAND TO GROW BY 60% BY 2040 (CAGR 3%)<sup>1</sup>

## STABLE INTERNATIONAL COAL DEMAND

Growing Asian demand compensating for a declining European market:

Japan  
South Korea  
Taiwan

**>30%**  
of international market by 2027

India

**+4%**  
CAGR by 2027

Southeast Asia

**+2.3%**  
CAGR by 2027

## SUEK'S RESPONSE

Low-sulphur and low-nitrogen coals

Deposits and washing capacities to produce high-CV coals

Position in the lower end of the global cost curve

Downstream integration into domestic power and heat business

FOR MORE DETAILS, SEE OUR STRATEGY ON PAGES 23-33.

## LIMITED INTERNATIONAL HIGH-CV COAL SUPPLY



Depleting high-CV reserves



Rising costs

1. International Energy Agency, World Energy Outlook 2018.

### Global trends

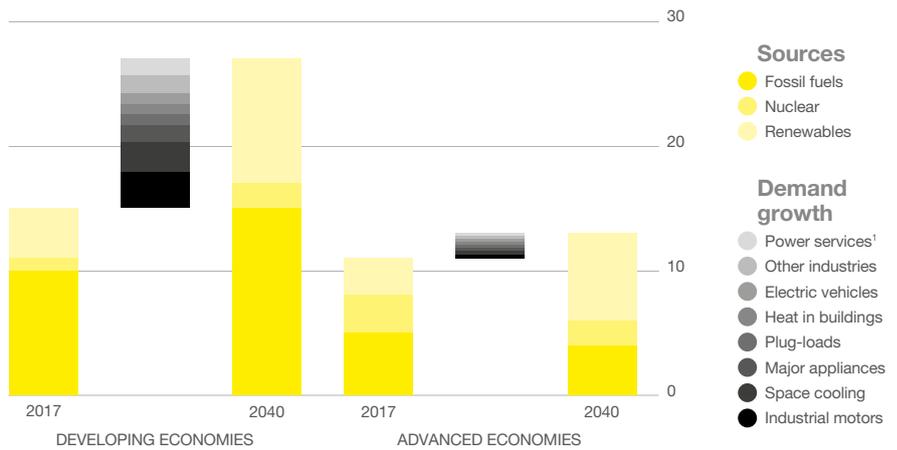
By 2040, rising incomes and an extra 1.7 billion people, mostly in urban areas in developing economies, will drive growth in global energy demand of more than 25%<sup>2</sup>. This increase would be twice as large if it were not for continued improvements in energy efficiency, aimed at addressing energy security and sustainability concerns.

Most of the growth in power consumption comes from developing economies, chiefly India. As recently as the year 2000, Europe and North America accounted for more than 40% of global energy demand and developing Asian economies for around 20%. Now, six of the top-ten power companies by installed capacities are Chinese. The shift in energy consumption to Asia has affected all fuel types and technologies, as well as investment in energy. However, coal consumption is expected to see the most profound growth in Asia of more than 100%<sup>2</sup>.

The electricity sector is experiencing its most dramatic transformation in over a century. Electricity is increasingly the ‘fuel’ of choice in economies that are more reliant on lighter industrial sectors, services and digital technologies, as well as electric vehicles for city transportation (growing at 14% per year). Since 2000, global electricity demand has grown by 3% a year, around two-thirds faster than total energy consumption, and it is expected to grow another 60% by 2040<sup>2</sup>. Developing economies account for around 85% of this increase.

Coal-fired generation, though remaining mostly flat at today’s level, is forecast to still be the largest source of electricity to 2040, with the reduced consumption in advanced economies being offset by expansion in developing countries, especially Asia. Power systems need to be increasingly more flexible to accommodate a rising contribution from wind and solar photovoltaics, the share of which is set to grow from the current level of 6% to above 20% over the next 20 years.

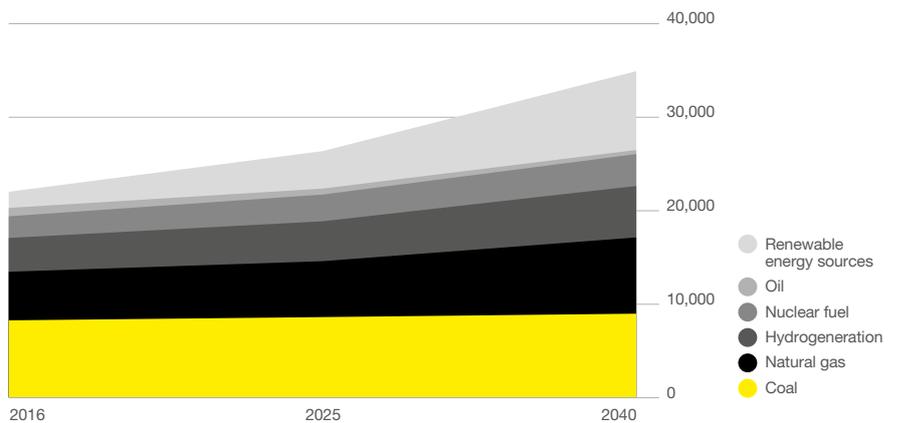
### Electricity demand growth by end-use and generation by source (thousand TWh)



Source: International Energy Agency, World Energy Outlook 2018.

1. Power operations to provide end-use services, including electricity consumed within power plants and losses from transmission and distribution.

### Coal continues to play an important role in ensuring global electricity security (electricity generation by source, TWh)



Source: International Energy Agency, World Energy Outlook 2018.

2. International Energy Agency, World Energy Outlook 2018.

## Coal industry developments

**Major trends in the coal-fired power generation industry include increasing plant efficiency (requiring higher grades of coal), toughening restrictions on sulphur and nitrogen emissions, and stable global coal consumption, as decreasing demand in the EU, US and China is balanced by rising demand in India and Southeast Asia.**

Power generation, which is already the biggest consumer of coal, is expected to increase coal consumption by 17% in the next 20 years, when it will represent over 35% of total coal consumption.

Coal remains a basic fuel for power generation in Asia, where the demand is projected to grow at a CAGR of 1.3% over the next ten years. The key drivers are listed below:

### Japan and South Korea

Will remain the major markets for high-calorific-value low-sulphur and low-nitrogen coals for the next decade, as the average efficiency rate of their coal-fired power stations is already 42% compared to the global level of 37%. Japan plans to launch 36 new high-efficiency low-emission (HELE) coal-fired power stations through 2027<sup>1</sup>.

### Southeast Asia

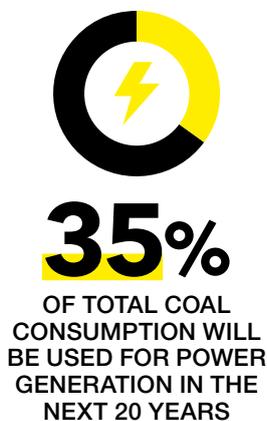
The most significant driver of global coal trade is the increase of imports to countries such as Southeast Asia, including Vietnam, Taiwan, Malaysia, Thailand and the Philippines. This reflects the development of their power generation industries, a lack of significant coal reserves and increased industrialisation. Total imports to this group of countries are forecast to grow by 82 Mt by 2027.

### China

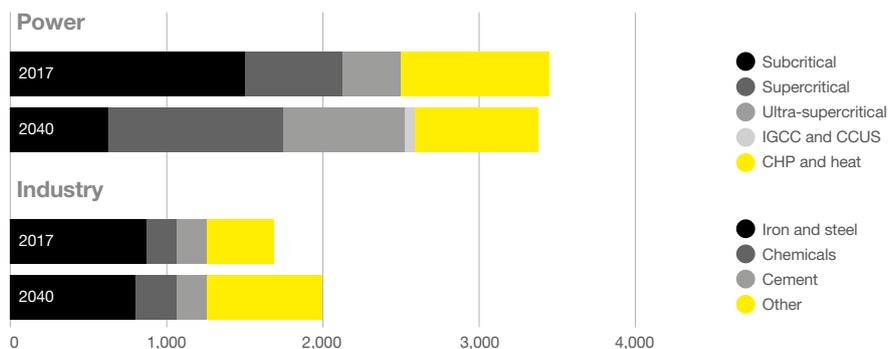
Continued overcapacity in China and reduced growth rates for coal-based power generators are expected to drive a decline in China's demand for imported coal at a CAGR of -4.9% (representing a 73 Mt decrease in seaborne import volumes by 2027).

### India

India, which became the world's second-largest coal consumer in 2015, is the single largest source of global demand growth. India is pushing to expand the role of renewables in its power mix. However, robust growth in electricity demand will still drive a near-doubling in coal-fired power output by 2040. Although India has set ambitious targets for domestic coal production, imports continue to rise at a rate of 4% per year, increasing India's share in global trade to 20% in the next ten years.



## More efficient technologies change coal demand (Mtce)



Source: International Energy Agency. World Energy Outlook 2018.

1. Japan's Strategic Energy Plan 2030, [http://www.meti.go.jp/english/press/2018/pdf/0703\\_002c.pdf](http://www.meti.go.jp/english/press/2018/pdf/0703_002c.pdf)

High-calorific-value coal (of 5,600 kcal per kg and higher) already accounts for 45% of international thermal coal trade<sup>1</sup>.

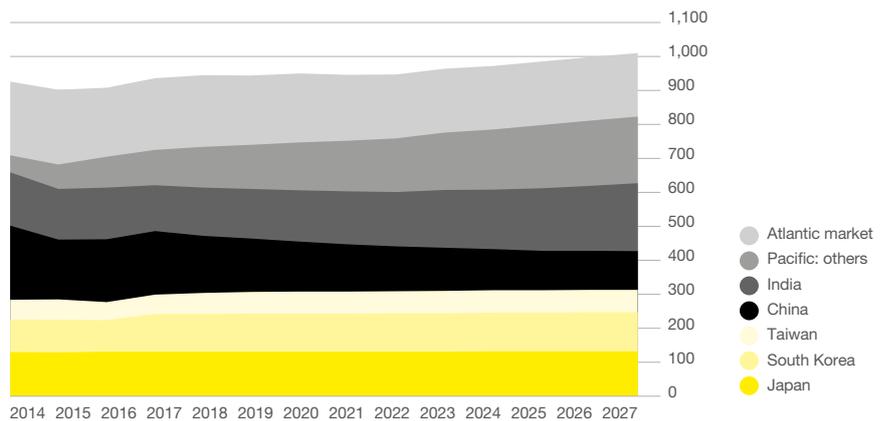
Demand for it, primarily in Japan, South Korea and Taiwan, will be underpinned by tightening environmental regulations and limited transition of high-efficient plants to lower-grade coals.

On the supply side, coal producers are currently unable to respond promptly to demand increases by boosting coal extraction. Global capacity excess is currently estimated at 55 Mt, which is only 6% of the international market, and is mostly in the lower-CV category.

Meanwhile new capacities are likely to be at the higher end of the global cost curve. The potential for increasing production and transportation cost efficiencies appears to be almost fully exhausted, as oil and metal prices have increased, salaries have increased and mining parameters (overburden ratios and transportation distances) have deteriorated. Meanwhile Indonesia, the largest exporter of coal, has seen a gradual depletion of its high-CV reserves.

As China remains one of the largest coal importers, its regulation of local production and prices will also influence international prices in the medium term, though mostly lower-CV. In 2016-2017, China completed 50% of its programme to shut down 800 Mt of inefficient and dangerous mining capacities by 2020. During this period, less than 280 Mt of capacity was commissioned in China. These newly commissioned enterprises will take some time to launch production, due to significant technical, staff rehiring and security check challenges. In addition, major Chinese producers have been maintaining flat production levels to keep prices high.

## Stable demand for high-CV coal import in North-East Asia (Mt, seaborne import)



Sources: Wood Mackenzie, IHS, investment banks reports, SUEK estimations.

In January 2017, China introduced a domestic spot prices regulation scheme – ‘corridor mechanism’, to reduce price volatility and ensure sustainable relationships between coal and power companies. This mechanism stipulated a cap of 600 CNY/t (equivalent to \$86.5/t FOB NEWC) for domestic contractual prices, with higher prices triggering regulatory intervention. Similarly, the floor figure is 470 CNY/t (\$66.4/t FOB NEWC), which also entails regulatory action. Overall, in 2017-2018, prices were in the upper range of the corridor. Most market players believe that the scheme will remain in effect until at least 2020 and will continue to influence the global coal market.

Overall, in the next 20 years coal-fired generation will remain the chief source of reliable, scalable and affordable power for rapidly developing countries, where people are in dire need of access to secure and uninterrupted electricity. In other parts of the world, the future of coal-fired generation will depend on cost-effective adaptation to the increasing flexibility of energy systems, as well as toughening environmental and climate regulations.

**45%**  
OF THERMAL  
COAL TRADE  
IS HIGH-CV COAL

1. Global Coal Imports and Exports Outlook by Quality, December 2018 HIS Markit.

## Russian coal and energy market

Coal is one of Russia's most important energy resources. Annual Russian consumption of thermal coal has remained stable at an average of 155 Mt for the past five years.

In 2014, the Russian government launched its coal industry development programme to 2030<sup>1</sup>, focused on the following:

- a responsible approach to developing resources both at currently operating and new deposits
- stimulating the development of state-of-the-art technology for coal mining, processing and washing, to increase the value of the product, and consequently improve business profitability and create new jobs
- investment in personnel development and R&D to meet the best international standards (in quality and health & safety)
- removing infrastructure restrictions on the development of industry development and, above all, reducing bottlenecks at railways and ports

The electric power industry accounts for approximately 70% of total coal consumption. Coal-fired power plants generate 17% of all electricity in Russia. This share rises to 48% in Siberia, a major industrial region close to the main coal production regions. Coal demand in Siberia and the Far East, and capacity utilisation at coal-fired thermal power plants in those regions, is influenced by hydroelectric output. In low-water years hydropower plants produce less electricity, which has to be compensated for by coal-fired generation, while in years with high water levels, the opposite is true.

Depending on the weather, approximately 15% of coal consumption is used to heat homes and social and industrial facilities.

In addition, thermal coal is used in the metallurgical, cement and other industries in Russia.

Major suppliers of thermal coal to the Russian market include SUEK, Vostsibugol, Russian Coal, Kuzbassrazrezugol and Luchegorsky open pit. Products supplied by these five companies cover approximately 56% of the total demand for thermal coal in Russia. 17% of Russian thermal coal demand is also covered by imports, mainly from Kazakhstan.

Russia's major coal deposits are concentrated in the Siberian and Far Eastern regions of the country: they account for 96% of total production. The largest single region is Kuzbass, where almost 60% of all Russian coal is mined.

Prospects for increasing the consumption of thermal coal in Russia are closely linked to the rising demand for electricity in Siberia. Siberia, where SUEK's energy assets are located, is a developing industrial region, with relatively densely populated cities and good payment discipline. Its gross regional product grew 6% from 2011 to 2016, which translated into 5.94% growth in electricity consumption (with an elasticity coefficient of 0.99 between these two indicators).

Hydroelectric generation provides up to 50% of Siberian power supply, with coal and gas accounting for 48% and 2% respectively. Coal-fired power generation is the most beneficial power supply to the local economy as it consumes local coals.

The aluminium industry is the major consumer of electricity in Siberia, accounting for 30% of demand. Changes in aluminium output therefore significantly influence the energy balance of the region. New aluminium capacities planned for launch by 2025 (Boguchansky and Taishet aluminium smelters) may increase Siberian electricity demand by 9%. There are a number of other industrial and infrastructure projects that may increase the demand for coal-fired power, given the absence of hydropower-generation expansion projects.



**48%**

**OF POWER IN SIBERIA  
IS GENERATED  
FROM COAL**

In 2007-2016, Russia ran a state programme to support the construction of new power capacities under capacity delivery agreements (DPM-1). The Russian government has also recently adopted a new state support programme (DPM-2), which will enable power producers to upgrade 40 GWt of capacity by 2030.

In the Siberian heat market, the major driver of consumption is rising urbanisation. According to a state programme, the construction of new houses will increase to 120 million m<sup>2</sup> by 2025. On the supply side, capacity development is restricted by the current tariff system based on actual costs which makes long-term investment planning impossible. The planned transition to the 'alternative boiler' method<sup>2</sup> will enable the government to increase tariffs above the rate of inflation to justify the costs of capacity upgrades and favour the co-generation of heat and power. Of the towns supplied by SUEK, Rubtsovsk has been the first to trial a transfer to the 'alternative boiler' method.

1. Available at [https://www.rosugol.ru/programme/index\\_1.php](https://www.rosugol.ru/programme/index_1.php).

2. Heat pricing method based on the expected cost of construction of an alternative boiler house.

## Risks and opportunities for SUEK

In the current environment, SUEK is one of the most competitive suppliers to the international market both in the high energy and low energy coal segments.

SUEK responds to demand for high-CV coals from the premium Asian Pacific and Atlantic markets, by developing high-quality coal deposits and washing capacities to produce high-calorific-value coal (5,600 kcal per kg and above) with low sulphur content, which already represents over 80% of SUEK's export portfolio. SUEK's coal from Tugnui and Urgal also has the low nitrogen content demanded in Japan, where over 70% of coal consumed is above 5,500 kcal per kg. Producing the necessary coal blend, our geographic proximity to Japan, South Korea and Taiwan and our own sales network enable us to continuously enhance our presence in these lucrative markets. Over the past five years SUEK has increased shipments to this region by 40%.

Meanwhile, the development of our own railcar fleet and port capacities has helped us reduce infrastructure restrictions and ensure timely deliveries to our clients.

SUEK's vertically integrated business model and economies of scale ensure operational efficiency and cost control at every stage of the business cycle. This enables us to maintain our position at the lower end of the global cost curve and generate profitability even during the bottom of the commodity cycle.

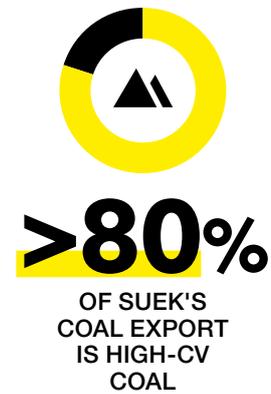
The consolidation of the heat and power business in 2018 has provided synergistic opportunities to increase the utilisation rate of the mines that supply locally to our energy assets. As a result, the reliability of fuel supplies to heat and power plants in Siberia, where SUEK plays the role of one of the major energy producers, has increased.

The co-generation of heat and power provides cost savings. SUEK's power assets operate at a utilisation rate exceeding 50% and work in a combined cycle for nine months of the year. The short transportation routes from mining sites to the power plants make it possible to utilise all grades of coal, including hard coal fines which cannot be transported over long distances.

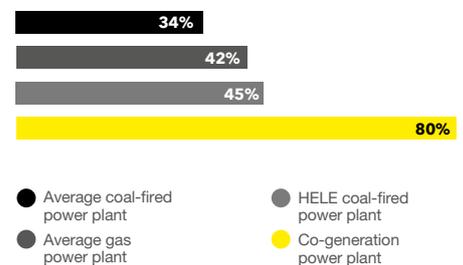
SUEK's power assets have been significantly upgraded over the course of the state-regulated ten-year capacity delivery agreement programme. The new programme and the transfer to the 'alternative boiler' method will enable us to modernise our power and heat capacities further.

In 2018, the international community, state authorities, banks and industries, reiterated their environmental commitments at the COP24 climate summit in Poland. All of SUEK's development projects, both in the Coal and Energy Segments, include investments in environmental initiatives to ensure they comply with international standards of environmental responsibility.

On the financial side, SUEK's transfer to a multi-product business model with the integration of the heat and power business in 2018 has improved the credit risk profile of the company. It has also decreased revenue volatility and the company's dependence on global coal prices, making the Group's financial performance easier to forecast. SUEK has diversified its pool of financing institutions to include Asian banks, to ensure it has access to necessary capital from the countries which are amongst its major consumers.



### Power plant efficiency by type (%)



## SUEK's SWOT analysis



### Strengths

Vertically-integrated business model and economies of scale ensuring cost control

30+ years of high-quality low-sulphur coal reserves, efficient mining and washing capacities

Diversified coal portfolio for all key markets, including high-CV coals

One of the largest global coal sales networks

Favourable geographic locations of heat and power assets close to fuel supply and large consumers

Co-generation of heat and power

Access to funding and prudent financial policy ensuring financial stability

Effective and transparent ESG programmes



### Weaknesses

Sensitivity of earnings to global coal prices and RUB exchange rate

Energy CAPEX dependence on state regulations

Cap on electricity generation output at several assets due to restricted power grids in several regions



### Opportunities

Stable demand for high-CV coals

New power supply agreement programme

New coal applications

Transfer to the 'alternative boiler' tariff

New financing opportunities

New housing and energy-intensive industrial facilities in the regions where we operate



### Threats

International coal price volatility

More stringent CO<sub>2</sub> regulations for power stations

Decrease in output or suspension of energy-intensive industries due to macroeconomic factors

More stringent CSR requirements from the financial community

Russian railway infrastructure restrictions