

# MEETING GLOBAL MOBILITY DEMAND

## FOCUS ON BETTER ACCESS TO ELECTRICITY

**+22%**  
GLOBAL ELECTRICITY DEMAND BY 2030<sup>1</sup>

## TRANSPORT ELECTRIFICATION

**x10**  
ELECTRIC VEHICLES BY 2030

## INTERFUEL COMPETITION, INCLUDING THE IMPACT OF LNG

### CLIMATE AGENDA

Increasing focus on ESG practices and disclosures

## RUSSIAN INDUSTRIAL PRODUCTION GROWTH

**>4%**  
CAGR

## GROWTH IN ELECTRICITY DEMAND IN RUSSIA

**1.1%**  
CAGR BY 2030

## GROWTH IN DRY CARGO EXPORT

Russia aims to be amongst TOP-5 international exporters by 2030

## VOLATILITY OF RUSSIAN CURRENCY

### GLOBAL TRENDS

### LOCAL TRENDS

## INDUSTRY IMPACT

### DEMAND

Rising demand for coal in Asia offsets declining demand in Europe

**+60 Mt**  
COAL IMPORTS BY ASIAN COUNTRIES BY 2030

### SUPPLY

Australia and Russia will become key coal exporters by 2030

### COAL

## ELECTRICITY CONSUMPTION GROWTH IN SIBERIA BY 2030

**+30-40 TWh**

### ENERGY

## DEVELOPMENT OF RUSSIAN RAILWAYS' EASTERN POLYGON

**+55 Mt**  
RAILWAY CAPACITY TO THE EASTBOUND PORTS BY 2024

### LOGISTICS

## SUEK'S RESPONSE

### INCREASED SUPPLY TO ASIAN MARKETS

**+6 Mt**  
BY 2025

### INCREASED SHARE OF ENERGY AND LOGISTICS

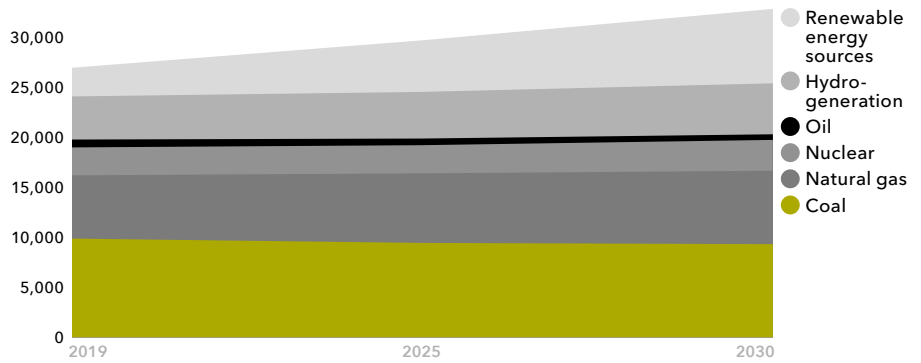
**+17 TWh**   **+50%**  
ELECTRICITY GENERATION BY 2025   TRANSSHIPMENT CAPACITY BY 2025

### LOW-EMISSION COAL MINING AND BURNING

**+25%**   **-1 Mt**  
PRODUCTION IN CO-GENERATION MODE   CO<sub>2</sub> EMISSIONS FROM 2025 BY CO-GENERATING HEAT

<sup>1</sup> Sources: International Energy Agency, World Energy Outlook, 2020.

**Coal will remain one of the key electricity sources (TWh)**



Source: International Energy Agency, World Energy Outlook 2020.

**GLOBAL ENERGY AGENDA**

To meet the growing electricity demand, affordable, versatile and reliable energy sources are needed. At the same time, increased environmental and climate change scrutiny adds the requirement to reduce environmental impact.

The United Nations has set an objective of providing full access to electricity for over 850 million people who still do not have it. The planet’s population continues to grow and is increasingly urbanised. Despite the decline in electricity consumption in 2020 due to the coronavirus, **global electricity demand will continue to grow by 0.7% every year until 2030.**

The largest contribution to this growth will come from developing economies (3% CAGR), especially Asia where it will be driven by increased industrial production, use of electrical appliances and air conditioners. In developed countries, growth in electricity consumption amid the continued electrification of transport and heating will be constrained by improvements in energy efficiency.

**Increased transport electrification could boost total electricity consumption by 6% in 2030.** The rising number of electric vehicles can be explained by a reduction in costs associated with ownership, as a result of cheaper batteries and additional government incentives. By 2030, it will cost the same to own an electric vehicle as an internal combustion engine model, across all

modes of transport and all key regions. There will also be a greater variety of models available and a well-developed charging infrastructure.

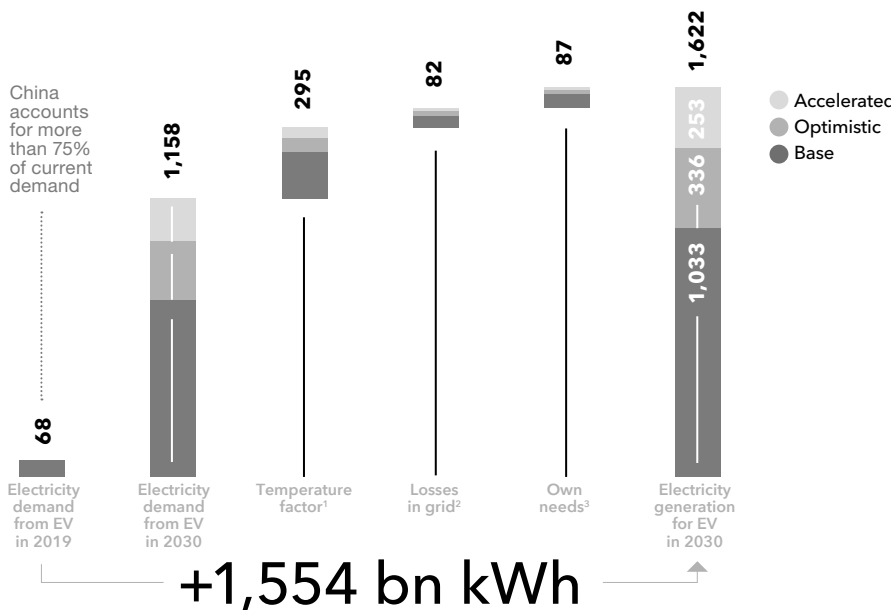
In terms of supply, the growth drivers will be **solar and wind generation**: their share, according to the International Energy Agency’s outlook, **will grow from 8 to 19% by 2030.** At the same time, **coal will remain one of the most important electricity sources, with a share of 28%.**

**Coal generation will address around 30% of additional demand for electricity from electric vehicles, which will total 90–180 billion kWh.** Generating this amount of electricity will require from 175 Mt of coal, in the baseline scenario, to 240 Mt in the accelerated scenario by 2030.

Liquefied natural gas (LNG) is one of the key fossil fuels that will compete with coal in the medium to long term. In this context, it is important to understand the potential imbalance in the global LNG market, i.e. the excess capacity that will directly compete with coal for energy markets against its potential cost.

As anticipated, in the late 2020s, demand for LNG will begin to exceed supply from existing or planned capacities, with the capacity deficit amounting to 125–175 Mt a year by 2035. With that, based on the cost curve of new projects, the incentive price for commissioning these capacities will be approximately \$7/mmbtu, which corresponds to a price level for FOB Newcastle coal of around \$100–110/tonne. Therefore, according to our estimates, **in emerging markets coal will remain a more competitive fuel than gas until 2030–2035.**

**The growth in the number of electric vehicles will increase electricity consumption (bn kWh)**



Source: McKinsey & Co.

<sup>1</sup> Based on battery efficiency curve (temperature for maximum efficiency -21.5° C). The calculation was based on the monthly temperature forecast for 2020–2030.  
<sup>2</sup> Forecast for 2030, trend towards loss reduction is assumed.  
<sup>3</sup> Forecast for 2030, trends towards loss reduction and auxiliary generation are assumed.

# GLOBAL COAL MARKET

Key trends in coal-fired generation include:

- A decrease in demand in Europe, the USA and potentially in China will be offset by growth in India and other countries of Southeast Asia
- An increase in the efficiency of power plants consuming higher-calorific coal
- Tighter restrictions on sulphur and nitrogen emissions

Following a marginal decline due to COVID-19, coal-fired generation will recover. A 40% decline in coal generation in developed countries will be offset by growth in **developing countries, which plan to commission around 300 GW of coal generation capacity by 2030.**

**Our baseline scenario** assumes slow growth in global steam coal trade at 0.1–0.2% a year.

**Southeast Asian countries** (Vietnam, Thailand, Malaysia, Philippines and others) developing coal-fired power industry, with an average annual demand growth rate of 5%, are becoming key drivers of consumption growth.

**South Korea and Japan** will remain important, as robust markets with attractive prices, but their consumption will slowly decline to reflect their decarbonisation plans.

**Indian** demand for imported coal is expected to grow further, supported by demand for electricity and from the cement industry.

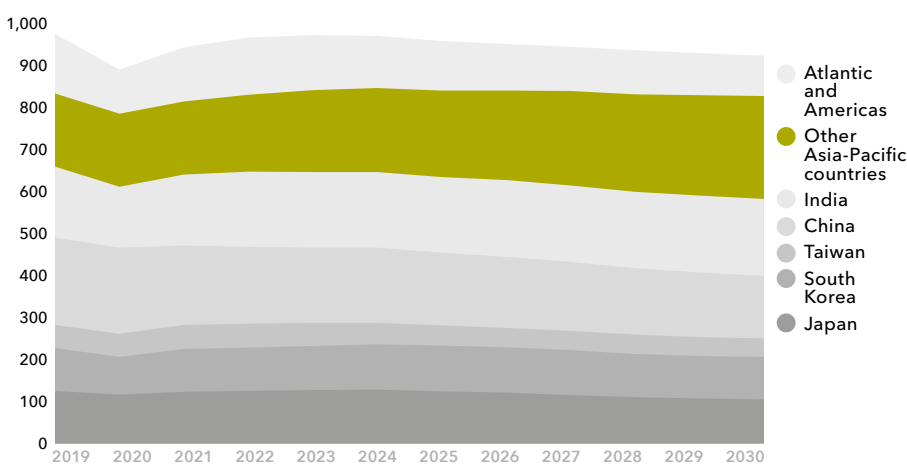
**China** may reduce its coal imports, as the pace of its new coal-fired power capacity development slows down after 2025.

In the **Atlantic market**, consumption will continue to decrease in most of Western and Northern Europe due to regulatory restrictions on coal generation, while demand in North Africa and the Middle East will rise.

On the supply side, much of the capacity planned for commissioning is likely to be on the right side of the global cost curve, mainly due to the deterioration of production parameters (stripping ratios and transportation distances) and, therefore, subject to review during lower prices. Indonesia, currently the world's largest coal exporter, will cut international supplies due to rising domestic consumption. Consequently, **by 2030, Australia and Russia will be the biggest coal exporters.** In addition, Russian coal meets the requirements of Japanese and South Korean buyers for low sulphur and nitrogen content.

Currently, supply and demand tend to converge and stay in a fundamental balance. The surplus of coal industry capacity is only 3% of the global market (approximately 32 Mt). In 2022–2024, capacity is expected to fall below 13 Mt, **and after 2025, a coal supply deficit may emerge.** Against comparable basic industries, the capacity utilisation rate in the coal industry is around 97%, while the utilisation rate in non-ferrous metallurgy, fertiliser industry or steel production does not exceed 80%.

**Steam coal demand, seaborne trade (Mt)**



Source: Wood Mackenzie.

**5%**  
CAGR OF SOUTHEAST  
ASIAN MARKET BY 2030



~48%

OF ELECTRICITY IN SIBERIA IS GENERATED FROM COAL

~95%

OF HEAT IN SIBERIA IS GENERATED FROM COAL

Co-generation is the most efficient source of energy in Siberia as it consumes local coals and can provide central heating for nine months of the year, as a by-product to electricity generation.

## RUSSIAN ENERGY MARKET FUNDAMENTALS

In June 2020, Russia adopted its Energy Strategy to 2035<sup>1</sup>. According to its assumptions and our estimates, **the growth of electricity consumption in Russia is predicted to be 1.1% per year**. In nominal terms, the additional consumption in 2035, as compared to 2019, will total 150–250 TWh (+14–23%), and **30–40 TWh (+15–19%) in Siberia**, SUEK's key domestic supply region.

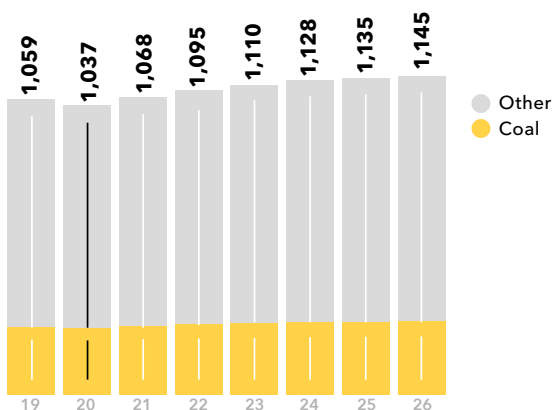
Such growth in demand for electricity in Siberia and the Far East will mainly be triggered by new industrial facilities, the electrification and a railcar turnover increase on the Baikal-Amur Mainline (BAM), as well as the electrification of heating in private homes. In the city of Krasnoyarsk the latter will add 0.1–0.2 TWh of consumption in 2022–2023. This growth will multiply as the heating electrification programme is replicated across other cities in Siberia, which face environmental challenges and have a large number of private households (primarily Abakan, Minusinsk and Novokuznetsk). Increases in data processing capacity will also contribute to growing power consumption.

Coal-fired power plants generate 17% of all of Russia's electricity. This share rises to 48% in Siberia, where most of SUEK's energy assets are located. This is a major industrial region with a good payment record and located near the main coal producing regions. Coal demand in Siberia and the Far East and capacity utilisation at coal-fired thermal power plants in those regions are influenced by hydroelectric output, which accounts for approximately 50% of electricity generation. 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.

The aluminium industry is the major consumer of electricity in Siberia, accounting for 30% of demand. New aluminium smelters may increase Siberian electricity demand by 9% from 2025.

Considering the lack of hydrogeneration expansion projects, industrial and

### Russian electricity demand forecast (TWh) and share of coal-fired generation



Source: Russian Energy Ministry order 'The Approval of the Scheme and the Programme of Developing the Unified Energy System of Russia in 2020–2026', 30 June 2020.

infrastructure projects in the region may trigger additional demand for coal-fired power.

In 2007–2016, Russia ran a state programme to support the upgrade and construction of new power capacities under capacity delivery agreements (DPM-1). In 2019, the Russian government adopted a new state support programme (**DPM-2 or COMMod**), which will enable power producers to upgrade 40 GW of capacity by 2031. COMMod projects are selected on a competitive (auction) basis. One of the key criteria is the lowest cost of future electricity supplies. In 2020, 15 projects with a total installed capacity of 4 GW were selected for COMMod 2026, including six SUEK's plants.

Coal generation accounts for 95% of heat production in Siberia. The major driver of heat consumption is rising urbanisation. Under a state development programme, annual housing construction in the region will increase to 120 million m<sup>2</sup> by 2030.

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 long-term tariff 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. This enables long-term investment planning for the modernisation of heat

networks. Of the cities and towns supplied by SUEK, Rubtsovsk and Barnaul in the Altai region and Krasnoyarsk and Kansk in the Krasnoyarsk region were the first to switch to the long-term tariff. In 2021, the city of Biysk, Altai region, Abakan and Chrenogorsk in Khakassia will switch to long-term tariff setting, whereas a number of cities and towns in Kemerovo region have submitted documents to the Russian Ministry of Energy for transferring to a price zone.

**The long-term heat tariff** is a pricing method introduced in Russia in 2017 to calculate heating prices, when only the maximum long-term level is set. The calculation is based on the cost of constructing and operating a new alternative boiler house. The final heat price is determined by agreement of the parties.

Carbon regulation presents a challenge for the conventional power industry. It implies the development and expected introduction from 2023 of cross-border carbon regulation, introducing a carbon tax on CO<sub>2</sub> emissions generated during the manufacture of products imported into the European Union. Currently the Russian government and business are analysing the possible approach to assessing the carbon footprint of Russian products and are working out their argued opinion.

<sup>1</sup> Source: <https://minenergo.gov.ru/node/1026>.

**THE RUSSIAN ENERGY STRATEGY TO 2035 INCLUDES THE FOLLOWING PRIORITIES**

**To develop the coal mining industry:**

- Priority licensing of deposits with the safest mining and geological conditions and high-CV coals
- Development of railway and other transport infrastructure to support the transportation of Russian coal, primarily to the east
- Introduction of innovations, automation and robotisation
- Modernisation of storage, transportation and transshipment of coal, taking into account present-day environmental requirements

**To develop the power industry:**

- Increasing the reliability of power supply
- Development of competition in the wholesale and retail electricity markets
- Improvement of development planning systems and structural optimisation of generating capacities
- Development of demand management and electricity storage market
- Gradual elimination of cross-subsidisation
- Introduction of incentives to reduce the unused reserve relative to the declared consumed capacity

**To develop heat supply:**

- Transition to a new target model of the heat market (heat supply price zones with a long-term tariff). Creation of conditions for financing projects to improve the efficiency of district heating systems and heat consumption and to upgrade fixed assets
- Improving the efficiency of district heating systems, taking into account the priority of co-generation

**RUSSIAN LOGISTICS MARKET FUNDAMENTALS**

Russia plans to become one of the TOP-5 international exporters by 2035 and is actively developing its logistics infrastructure, including to support the growth of eastbound coal exports to 195 Mt by 2025.

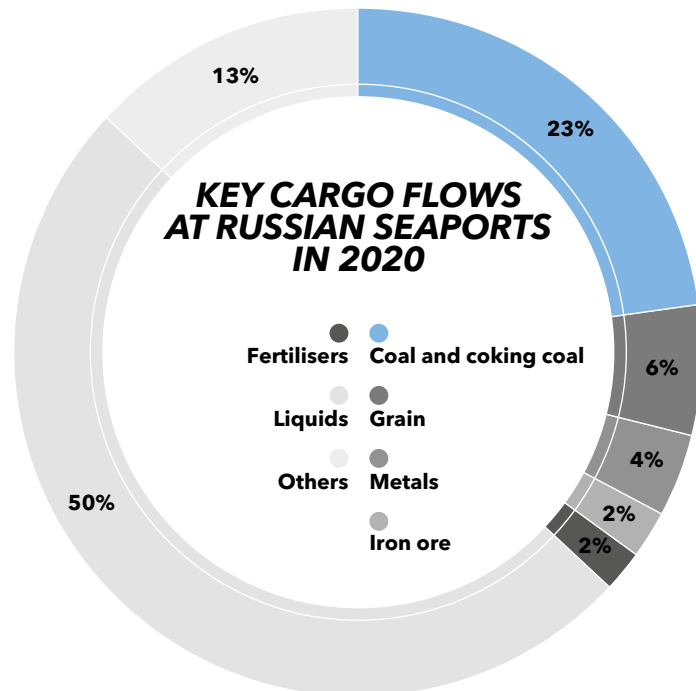
In the cargo turnover structure at Russian ports, 10 key cargo items account for 95%.

**The Development of Seaports federal programme** assumes a 30% increase in the throughput of Russian seaports by 2030. The main goals of the project are:

- Accelerated development of terminals of paramount importance (container and coal)
- Fulfilment of the Russian transit potential
- Reorientation of Russian foreign trade cargo from the ports in neighbouring states to domestic seaports

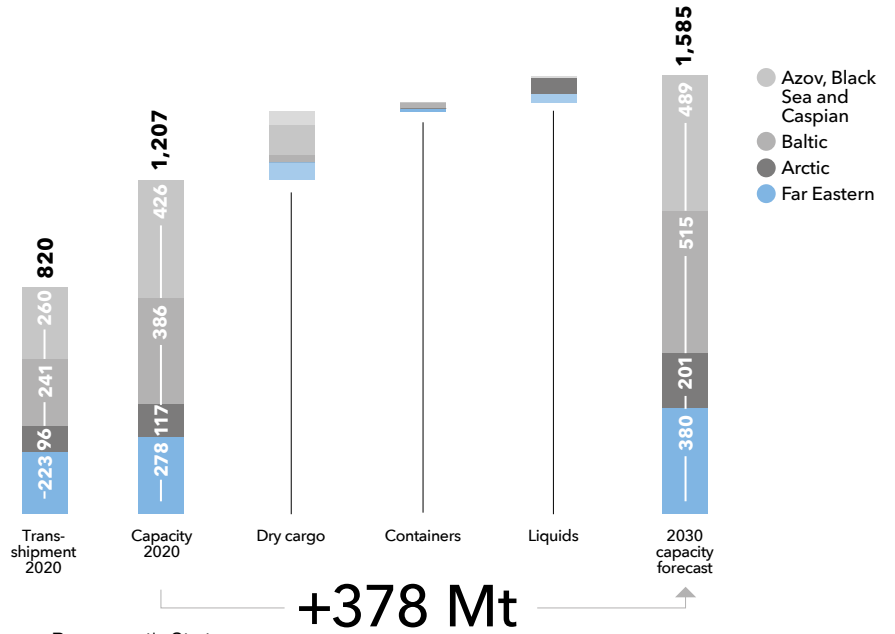
- Creating conditions for the export of agro-industrial products worth \$45 billion a year
- Creating conditions for increasing cargo traffic through the Northern Sea Route

The main constraint for port loading is still the throughput of Russian railways, mainly in the Far East. An increase in transshipment is possible through the capacity development of existing ports and the expansion of railway approaches. Therefore, the elimination of imbalances in the development of railway and road access routes to seaports is one of the key strategic activities.



The state programme for developing the Eastern Polygon of Russian Railways provides for increasing the throughput of the Trans-Siberian and Baikal-Amur Mainlines towards eastern ports by 55 Mt of coal by 2024.

### A 30% increase in the capacity of seaports by 2030 (Mt)



Source: Rosmorport's Strategy.

