

# Larger footprint, increased responsibility

**At SUEK, in all our activities and investment decisions we carefully evaluate potential environmental issues and take appropriate environmental protection initiatives.**





**Our approach**  
**Our strategic environmental priorities are closely linked to the UN Sustainable Development Goals and focus on the sustainable development of the regions where we operate and improving the quality of people's lives.**

The importance of environmental safety is enshrined in SUEK's Environmental Policy and developed in accordance with Russian and international environmental laws. Furthermore, our environmental management strategy is set out in the company's Compliance Regulation of licensed activities and environmental management, and Compliance Policy. Any contractors we engage with are also required to comply with SUEK's environmental standards, and this is set out in our contracts with them.

- Fundamental principles of our Environmental Policy:
- Improving the environmental safety of economic activities
  - Gradually reducing the negative anthropogenic impact on the environment (lower volumes of pollutants in emissions and discharges, reduction of waste)
  - Enhancing the efficiency of our use of natural resources and energy sources

With the acquisition of the energy business in 2018, we were able to extend environmental safety corporate controls to all stages of our operational cycle, from mining to heat and power generation. Both production processes have their specific features, but we are planning to harmonise key policies and standards for both businesses.

In 2018, we invested \$68.3m in environmental protection.

Key areas of SUEK's environmental activities and development:

- Compliance with environmental regulations
- Development of an integrated environmental management system in accordance with the international ISO 14001 standards
- Implementation of programmes to improve environmental safety and environmental protection, including projects for:
  - Responsible use of natural resources
  - Lower atmospheric air pollution
  - Wastewater treatment and responsible water consumption
  - Utilisation of by-products, such as coal mine methane
  - More efficient recycling of waste and secondary raw materials

Our environmental safety strategy and its planning is controlled by SUEK's Board of Directors. In 2018 we developed new environmental KPIs, which will be included in management KPIs.

**Our priorities**

**Improving our environmental performance and environmental management system**

**Engaging employees in environmental risk mitigation, enhancing our environmental management system and environmental performance indicators**

**Pursuing a transparent environmental policy, disclosing environmental reporting, engaging communities and local governments in the preparation, discussion, adoption and implementation of environmental protection initiatives**



ISO 14001

SEE SUEK'S ENVIRONMENTAL POLICY ON OUR WEBSITE [WWW.SUEK.COM/ABOUT-US/CORPORATE-GOVERNANCE/BY-LAWS/](http://WWW.SUEK.COM/ABOUT-US/CORPORATE-GOVERNANCE/BY-LAWS/)



**Air**

The company is particularly focused on reducing polluting emissions at its generating facilities. SO<sub>2</sub>, NO<sub>x</sub> and solids are the most common pollutants.

To improve dissipation, we use tall chimneys (over 120 m on average) and advanced dust-collecting equipment (electrostatic precipitators, cyclone collectors), which allow us to catch up to 99.6% of fly ash. We also upgrade our equipment and introduce advanced coal burning technologies. In general, the level of emissions at SUEK's generating facilities is significantly below the legal maximum limits.

In 2018, we modernised the flue gas scrubbing system at the Barnaulskaya CHPP-2 and achieved flue gas cleaning of 98%. At the Kemerovskaya GRES, we repaired electrostatic precipitators to improve their efficiency. Additionally, we began work to upgrade the equipment and build a new chimney at the Krasnoyarskaya CHPP-1 (275 metres high), which will reduce environmental impact in the city of Krasnoyarsk. The co-generation of heat and electricity at our plants helps markedly to reduce emissions per unit of generated energy due to the higher efficiency of the plants. SUEK also replaces 'dirty' stand alone boiler houses with combined heat and power plants. These produce heat and electricity and are equipped with efficient flue gas cleaning equipment. In 2018, we replaced 23 boiler houses in our regions of operation.

**99.6%**

**FLY ASH CAUGHT BY FILTERS AT OUR POWER PLANTS**

By the end of 2019, we plan to replace at least 35 boiler houses. This will reduce total emissions in the city of Krasnoyarsk by a minimum of 12%.

In coal mines, the biggest atmospheric pollutant is methane (91%). We remove methane from the working coal seams prior to mining and the extraction of gas from mined-out areas to ensure production is safe and then utilise it for power generation. This reduces our greenhouse gas (GHG) emissions and is a key part of our commitment to mitigating our environmental impact in support of the Paris Agreement on Climate Change. Our Kirov and Komsomolets mines are equipped with recovery systems and gas engine plants that capture gas and use it to generate heat and electricity. In 2018, the company utilised 4.2 million m<sup>3</sup> of methane captured from mined-out areas.

The rest of our air emissions relate to CO, NO<sub>x</sub> and SO<sub>2</sub>, which are below the limits prescribed by Russian legislation.

We also work to decrease dust emissions across the whole production and transportation cycle.

At our mining sites, we use special equipment to reduce the concentration of dust in atmospheric air. This includes cleaning machines in Khakassia and Buryatia, sprinkling and spraying equipment and a fog-generating unit (Zabaikalye). In 2018, at the Tugnuisky open-pit mine, we launched a dust suppression system that generates fog in the area of dust creation.

We have introduced the best international and domestic state-of-the-art technologies at our ports. These technologies minimise SUEK's environmental impact in the handling of dusty goods. They include an integrated dust control system from stationary and mobile cannons with a 'winter package', vacuum units, automatic irrigation of intra-port roads, and protected telescopic conveyors. These measures comprehensively ensure the effectiveness of dust reduction.

In 2018, at Vanino Bulk Terminal, we continued design and research works on construction of new dust and wind shields, in addition to the existing dust suppression system, for the stacker reclaimer. We also equipped a second stacker reclaimer with the same system. In order to improve dust suppression in winter, we purchased equipment to quickly assemble a mobile snow generator. A new dust suppression system with improved nozzles is being mounted along the perimeter of the storage areas to supplement the six existing systems.

In 2018, at our Murmansk Commercial Seaport, we created the Environmental Dispatching Office, which predicts the environmental situation in the affected area and at the production sites themselves. The company started the first stage of construction of dust and wind shields 20 metres high with a total length of 2.5 km.

At Maly Port, in 2018, we purchased a vacuum collector unit and installed a stationary dust suppression system.

**Pollutant emissions per unit of electricity (CO, NO<sub>x</sub>, SO<sub>2</sub>) (kg/kWh)**

2018	0.008
2017	0.008

**Pollutant emissions per tonne of coal (CO, NO<sub>x</sub>, SO<sub>2</sub>) (kg/t)**

2018	0.14
2017	0.12
2016	0.12

## Water

The company does not use water from vulnerable or state-protected sources, or from those of particular importance to local communities or to biodiversity.

Due to the nature of their production processes, SUEK's mining units inevitably generate wastewater. The majority of the wastewater discharged by the company is natural water (with characteristics typical of local groundwater) that is pumped out of mining areas during operations. Our production sites are equipped with facilities for treating industrial (including from underground mines and open-pit mines) and household wastewater. In addition, part of the treated water is used in production.

In 2018, SUEK upgraded its wastewater treatment facilities at the Ruban mine, built mine water treatment facilities at the Yalovsky mine, reconstructed household wastewater treatment equipment at the Taldinskaya-Zapadnaya 1 mine, built settling ponds for the treatment of open-pit mine water at the Pavlovsky open-pit mine, an evaporation pond at the Chernogorsky open-pit mine, and also put into operation treatment facilities at the Vostochno-Beisky open-pit mine.

At our generating facilities, water resources are mainly used for the cooling of equipment, which does not affect the quality of the water. The company's GRESs and CHPPs are equipped with treatment plants for industrial and storm sewage.

In 2018, we continued to reduce water consumption from both surface and underground sources, we increased the amount of water recycled and reused, created new closed water circulation cycles without discharging wastewater to water bodies and abandoned the discharge of wastewater to surface water bodies at the Kemerovskaya CHPP and Kuznetskaya CHPP.



As part of our Bettercoal Code compliance audit in 2018, an assessment of SUEK's environmental performance was carried out. The experts noted that the company demonstrated best practices in:

- Effective water management, which reduces the need for water intake
- Efficient water purification through the use of modern modular treatment systems
- Efficient energy management, via a comprehensive energy efficiency programme aimed at reducing energy consumption
- The setting of targets for environmental and natural resource use
- Reducing the amount of waste generated by hazard Class I through the replacement of lamps containing mercury
- Plans for the re-cultivation of land disturbed by mining operations beyond what is required by law

### Water consumption per unit of electricity (m<sup>3</sup>/kWh)

2018	0.0488
2017	0.0500

### Water consumption per tonne of coal production (m<sup>3</sup>/ t)

2018	1.4
2017	1.3
2016	1.3

### Suspended and dissolved solids in wastewater (kg per tonne of coal)

2018	0.18
2017	0.21
2016	0.23

### Production waste recycling

Production operations are inextricably linked with waste generation. About 99.9% of the waste we produce is not hazardous (overburden, etc.). Most of this waste is used in production processes or for reclamation purposes (73%). The rest requires special treatment and is transferred to dedicated organisations for neutralisation.

In order to reduce waste sent for disposal, in 2018, our Zabaikalye facilities purchased specialised equipment to process organic waste, industrial rubber articles, polymers, rubbers, oil sludge, bitumen, roofing felt, electronic equipment, waste oils, medical, wood and other carbon-containing waste.

We continued operating our tyre-recycling plant in Khakassia, the aim of which is to convert worn dump-truck tyres into new products, such as tiles for injury-free sports coatings, and rubber granules for road surfacing. Adding rubber granules to asphalt coatings increases the grip and makes the road surface more resistant to temperature changes.

At our power facilities, the majority of waste produced during coal burning is ash and slag, which are not hazardous. Until recently, these wastes were taken to specially equipped disposal facilities, called ash dumps, which neutralised any negative environmental impact they might have had.

Currently, we are implementing a major project to utilise ash and slag waste in our production operations. In 2017-2018, experts confirmed the possibility of using these materials to reclaim disturbed land. There is potential to utilise 3.2 Mt of ash and slag for this purpose every year (90% of total waste).

### Energy efficiency

As part of the Russian government's nationwide initiative to improve energy-efficiency and develop the power industry, SUEK has developed and implemented an Energy Saving and Energy Efficiency Programme. In addition to its economic benefits, this programme enables us to achieve our objective of reducing our energy consumption, which helps to minimise our overall impact on the environment.

We have developed an energy efficiency management system in accordance with best international practices. The system meets the requirements of the international ISO 50001 standards 'Energy Management System', and the national GOST R ISO 50001-2012 standards 'Energy Management System'. In order to be compliant with these requirements, in 2016-2017, a number of coal units certified their conformity to the Russian GOST standard. In 2018, we initiated the certification of compliance with the requirements of the international ISO 50001 standards of the entire Coal Segment.

The main areas of our energy efficiency programme include:

- Regular development and introduction of energy efficiency goals and action plans
- Control procedures at various levels
- Introducing innovations and best available technologies related to energy efficiency

As part of programme implementation in the Coal Segment, in 2018 we carried out the following activities:

- Development of existing equipment, dispatching systems and fuel consumption control
- Installation of reactive power compensation devices for electrical appliances
- Conversion of mine heating plants to coal fuel
- Introduction of modern pumping stations
- Modernisation of diesel locomotives
- Upgrade of excavators and auxiliary equipment, including an increase in the body space of dump trucks in order to boost their capacity (Zarechny mine), reduction of idle runs and hot downtime, improved maintenance and engine setting of mining equipment
- Development of professional skills of dump truck and bulldozer operators, improvement of rate setting and motivation systems

### Used and recycled waste of total generated waste (%)



### Energy consumption per coal production (kWh/m<sup>3</sup> of rock mass)



ISO 50001

**-2%**  
**ELECTRICITY CONSUMPTION PER TONNE OF COAL COMPARED TO 2017**

In 2018, electricity consumption per unit of coal output across the Group decreased by 2% year-on-year.

We also improved diesel fuel consumption. The consumption of diesel fuel by the largest category of user (dump trucks) decreased by 2% per tonne of coal or rock year-on-year to 0.203 kg/t.

In the Energy Segment, all plants annually develop energy saving and energy efficiency programmes. Their main purposes are:

- Improving the efficiency and reliability of equipment
- Reducing heat losses
- Reducing electricity consumption for own needs
- Saving fuel and energy resources

Most of our plants apply the principle of co-generation, which helps us save fuel.

In 2018, the energy business's programmes resulted in fuel and energy savings of 38.3 thousand equivalent fuel tonnes (+15% year-on-year), and 12.4 million kWh (+65% year-on-year).

**Land reclamation and biodiversity**

None of SUEK's production sites are situated in protected or natural reserve areas, including the territories protected by UNESCO and the Ramsar Convention, and no rare or endangered species of animals, plants or fungi have been identified at our operational sites.

We run extensive reclamation projects on land disturbed by SUEK's mining projects.

Overburden resulting from coal mining is used for filling sinkholes, backfilling and reclaiming land disturbed by mining operations. This is in accordance with approved programmes for the use of mineral resources, including projects to restore the topography and soil, landscaping and gardening programmes. With the Khakassia Research Institute of Agrarian Problems, we have been implementing a unique long-term land reclamation project with the goal of preparing forest reclamation recommendations.

In order to maintain aquatic biological resources, the company also regularly releases various fish species into local water bodies. In 2018, SUEK's environmentalists released more than 2,000 juvenile Siberian sturgeon into the Yenisei river. We also released over 5,500 juvenile carp into a local pond at Tugnuisky. These initiatives enhance the local biodiversity and also improve the condition of the area, which is an important place for employees of Tugnuisky and local residents to rest and relax. In Primorye, company employees released 9,000 carp fingerlings into the Abramovka River.

In the energy business, we completed the construction of fish protection structures at the Kemerovskaya GRES, Kemerovskaya CHPP and Kuznetskaya CHPP. In 2018, we released 300,000 muksun fry, 12,000 grass carp fry and 33,000 silver carp fry into rivers and lakes.

**96%**  
**OF HEAT PRODUCED IN CO-GENERATION CYCLE IN 2018**

**Fuel consumption per unit of electricity**  
 (gram equivalent fuel/kWh)



**Fuel consumption per unit of heat, and heat output % in co-generation cycle**  
 (kg equivalent fuel/Gcal, %)



● Specific fuel consumption  
 — Share of heat output in co-generation cycle of the total heat output (%)