ENERGY EFFICIENCY

The goal of the Energy Efficiency Program is to reduce product costs in удалить ZARUBEZHNEFT GROUP's production business segments and enhance its competitiveness on the domestic and global markets.

Zarubezhneft conducts its energy efficiency activities in accordance with the approved Energy Conservation and Energy Efficiency Improvement Program of ZARUBEZHNEFT GROUP for 2020 (Order No. 368 dated December 16, 2019).

62

Measures

implemented in 2020

Core principles of the program:

- Pursue a lean production policy based on the implementation of measures with a payback period of 3–5 years
- Develop measures that aim to reduce specific energy costs per unit of production, prepare oily liquid and pressure maintenance in the 'Exploration and Production' segment, process raw materials in the 'Refining and Marketing' segment, and reduce the annual consumption of energy resources in the 'Service and Other Assets' segment
- Involve all employees in the energy resource conservation process
- Incorporate secondary energy resources and production waste (APG, waste oil, etc.) in the production process

The program is an integral part of the Innovative Development Program[1] (IDP) for 2020–2024 with a view until 2030.

Scope of the program:

Geological exploration and production

Production assets

Russia:
JC RUSVIETPETRO
ZARUBEZHNEFT-Dobycha Kharyaga
ZARUBEZHNEFT-Dobycha Samara
Orenburgnefteotdacha
Ulyanovskneftegaz

Vietnam:
JV Vietsovpetro

Refining and sales

Refining

Bosnia and herzegovina:
Brod Refinery
Modriča Motoril Plant

Service assets

Service assets

Russia:
Arktikmorneftegazrazvedka
Giprovostokneft
VNIIneft

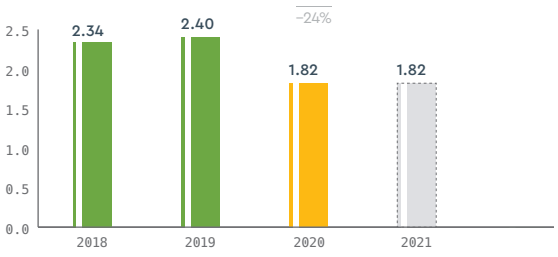
1. The Innovative Development Program was approved by the Interdepartmental Working Group on Technological Development under the Government Commission for the Modernization of the Economy and Innovative Development of Russia (Minutes No. 10-D01 of the IWG dated July 2, 2020) and approved in December 2020 by the Company's Board of Directors (Minutes No. 188 dated December 24, 2020). Reports on the implementation of the IDP in terms of improving energy efficiency at ZARUBEZHNEFT GROUP are annually submitted before May 1 of the year following the reporting year to the federal executive authorities — the Russian Ministry of Energy, the Russian Ministry of Economic Development, and the Russian Ministry of Education and Science.

The program envisages a reduction of at least 5% in the unit costs of energy resources for the production of petroleum-containing fluid (PCF) at subsidiaries of the Russian segment compared with the 2019 level. The Energy Conservation Program for 2020 contains a target for the development and implementation of new measures (along with the measures introduced in 2017–2019), taking into account the specifics of the segmental division of activities, the organizational structure, and the specifics of the Group's operations.

Work to conserve energy resources and implement the program's measures at all the Group's subsidiaries in the reporting year helped to reduce the specific energy costs for the production of oil and gas liquids versus the 2019 level in the 'Exploration and Production' segment and, consequently, to increase the energy efficiency indicators of each separate company and of ZARUBEZHNEFT GROUP as a whole. A total of 62 measures were implemented with an overall economic effect of RUB 1.521 billion (42,885 tons of fuel oil equivalent).

Total fuel and energy resource consumption by the Group in 2020 amounted to 29 million tons of fuel oil equivalent, or RUB 5.363 billion in value terms. The distribution of energy consumption and energy costs for 2020 by production activity segment is shown in the table.

CHANGES IN SPECIFIC CONSUMPTION OF ENERGY RESOURCES FOR THE PRODUCTION OF PCF IN THE OIL PRODUCTION OF ZARUBEZHNEFT COMPANIES, *tons of fuel oil equivalent/thousand m³ (Russian segment)*



In the reporting year, unit costs of energy resources for the production of PCF at the oil producing enterprises of the Russian segment declined by 24% versus the 2019 level.

CONSUMPTION OF FUEL AND ENERGY RESOURCES

Segment	Electric power, thousand kWh/RUB mln	Thermal power, Gcal/RUB mln	Fuel, ton/RUB mln	Ton of fuel oil equivalent/RUB mln	Share of fuel and energy resources, %
Hydrocarbon production	471,023/2,866		68,751/2,267	122,343/5,182	96.6
Oil refining	11,683/31	-	3,511/95	4,814/126	2.4
Service assets	5,862/37	7,529/15.5	62/3	1830/55	1.0
TOTAL	**488,568/2,934**	**7,529/15.5**	**72,324/2,365**	**28,987/5,363**	**100.0**

Key energy efficiency measures in 2020:

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- Organization of external oil transportation facilities (Oil Pumping Station 49, Acceptance Point, Oil Pumping Station 32) of the Oil and Gas Enterprise Energy Efficiency Analytical Information System (OGEEE AIS)
- Optimization of ESP pressure indicators during well workover
- Implementation of a program to overhaul generating equipment (gas turbine unit, gas piston electric unit, diesel electric unit)
- Changing the well operation method and conducting pilot field tests of the installation of an electric screw pump on a highly productive stock
- Optimization of the electrical heating system for process pipelines and process equipment (operation of self-regulating heating cables)

ZARUBEZHNEFT–Dobycha Kharyaga

- Transition of power supply for the EP-1 and EP-2 clusters from external networks to power supply from internal generation
- Use of energy efficient submersible electric motors
- Replacement of imported control stations for well pads EP-2 and NP-1 with domestic stations
- Optimization of the output voltage of the variable frequency drive at the well stock

JV Vietsovpetro

- Provision of power supply for ships (60 Hz, 440 W) from the coastal electric power system during long-term anchorages at port
- Provision of power supply for double banked ships from the coastal electric power system during long-term anchorages at the JV Vietsovpetro port.

Zarubezhneft strives to use heat and electric energy judiciously. In general, work carried out in 2020 contributed to the reduction of energy costs at enterprises and the further development of energy conservation and the increased energy efficiency of ZARUBEZHNEFT GROUP.

Development plan for the energy conservation and improved energy efficiency program in 2021

In an effort to further develop energy efficiency, the Group has drafted and approved the Energy Conservation Program for 2021, which envisages 91 different measures, including six long-term measures. The cost of implementing these measures in 2021 is estimated at RUB 935.3 million, while the estimated economic effect for the calendar year of use will be about RUB 363.5 million, or 10,979 tons of fuel oil equivalent.

The program also envisages a reduction of at least 1% in the unit costs of energy resources for the production of PCF at subsidiary oil-producing enterprises of the Russian segment compared with the 2019 level.