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Environmental protection of JSC “Arkhangelsk Pulp and Paper Mill” 2020 Report for press

In 2020, JSC “Arkhangelsk Pulp and Paper Mill” continued the participation in the international project for the disclosure of data on greenhouse gas emissions, the Carbon Disclosure Project (CDP)¹. APPM was awarded the highest score “A-“ among Russian companies as a result of the reporting campaign 2019. At the same time, it entered CDP list of top-18 leading world pulp and paper companies, that earned climate score “A-“.

Name	Response	Year	Status	Score
<u>Arkhangelsk Pulp and Paper Mill</u>	Climate Change 2019	2019	Submitted	A-



In 2020, JSC “Arkhangelsk Pulp and Paper Mill” became a winner of the international PAP-FOR Awards in the nomination “Effective strategy in the field of environmental protection”. The awarding ceremony took place for the first time within the PAP-FOR online forum. The PAP-FOR Awards are given to pulp and paper mills and manufacturers, equipment and service suppliers for their successful contribution to the development of pulp and paper industry in Russia and the CIS.

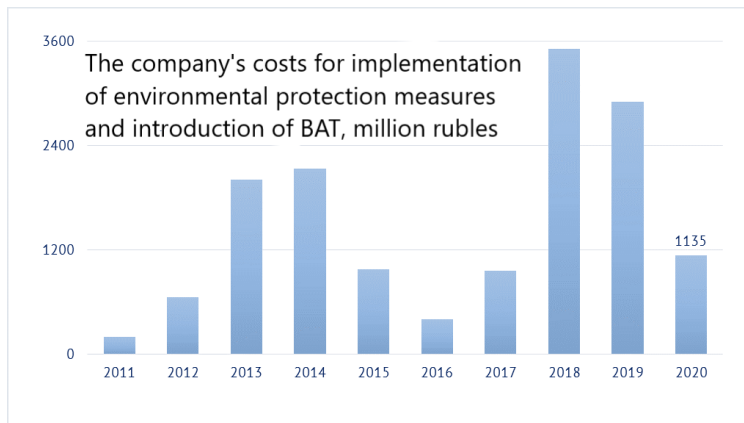
Environmental protection measures, implementation of BAT

JSC “Arkhangelsk Pulp and Paper Mill” spent 1.135 billion rubles for implementation of environmental protection measures and best available techniques (BAT) as part of the Ecological management program in 2020.

¹<https://www.cdp.net/en/responses?utf8=%E2%9C%93&queries%5Bname%5D=&filters%5Bcountries%5D%5B%5D=Russian+Federation&filters%5Byears%5D%5B%5D=2019&filters%5Bprogrammes%5D%5B%5D=Investor&filters%5Bstatus%5D%5B%5D=Submitted>



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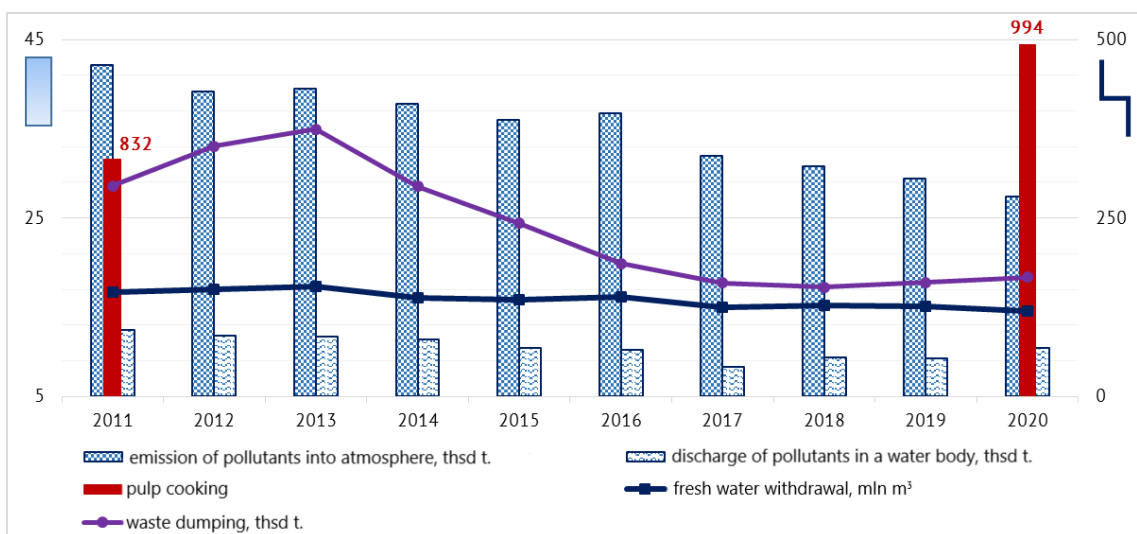


In order to decrease the negative impact on the environment, APPM continued to carry out technical re-equipment, pilot testing, that aimed to implement eco-effective technology solutions. From the point of view of reducing the negative impact on the environment and rational use of natural resources, the main points of the technical re-

equipment program of JSC Arkhangelsk PPM are a new evaporation plant construction with the equipment for the disposal of sulphur-containing emissions and foul condensates, a coal boiler construction with the use of low-emission burners and high efficiency gas cleaning equipment, technical re-equipment of filtered water cooling system in cellulose production, technical re-equipment of bleaching workshop in the cellulose production with the establishment of hydrogen peroxide receiving, storage and supplying unit with sodium hypochlorite exclusion from the scheme, organization of local wastewater treatment of wood exchange production, cinder dump reconstruction, installation of fish protection devices in first-stage pumping stations № 1,2,3.

Environmental negative impact assessment of JSC “Arkhangelsk PPM” and environmental management

In 2020, Arkhangelsk PPM took up activities in environmental protection on the basis of issued authorization documents. No violations of the conditions of the issued authorization documents were detected in 2020.



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As a result of the implementation of environmental measures and introduction BAT, the environmental load was reduced by the beginning of 2021, while the production capacity was increased.

In 2020 versus 2019, total water consumption of Arkhangelsk PPM was reduced by 12.6 million m³ (0.8%) and was 144.6 million m³. The withdrawal of water resources from a water body decreased by 7.2 million m³ (5.7%) and was 119.6 million m³. The usage of warm water was reduced by 5.4 million m³ (17.7%) and amounted to 25.0 million m³.

In the end of 2020, wastewater discharge by a scattering water outlet in a water body was reduced by 5.4% (5.7 million m³) and amounted to 100.4 million m³.

The volume of wastewater disposal by a water outlet № 1 (disposal after biological treatment) also increased by 4.9% (3.8 million m³), and the volume of wastewater discharge by an outlet № 2 (process water) decreased by 34% (9.5 million m³). The change in redistribution of wastewater flows was caused by commissioning of a cinder dump in section № 4 in the fourth quarter of 2019.

The volume of wastewater discharge by a water outlet № 3 (after cooling of turbine condensers) increased by 10.6% (2.0 million m³) and was 21.4 million m³.

Purified wastewater disposal into a water body was carried out by scattering water outlet (water outlet № 1). Gross discharges of pollutants increased by 13.2% (1,218 tonnes) and amounted to 10,464.4 tonnes. Specific discharge of pollutants per a tonne of cellulose decreased by 6%. Pollutants disposal significantly increased in the following categories: suspended solids, COD, ammonium ions, phosphates, aluminum, BOD₅ (an increase by 11.3-56.5%, depending on the indicators). Disposal of anionic synthetic surface-active substances, phenols, formaldehyde, BOD_{full}, petroleum products, methanol, nitrite ions decreased.

The company discharges pollutants in accordance with established standards of permissible discharge and limits.

In 2020, total emission of pollutants in the atmosphere decreased by 2069.235 tonnes (7%) and was 27,353.495 tonnes versus 2019. The main contribution to the company's total emission of pollutants was made by emission points of the CHP Plant-1. The total emission of the CHP Plant-1 decreased by 10.5 % and was 23,121 tonnes compared with 2019.

As a result of commissioning of the new evaporation plant of the board production (the former evaporation plant was decommissioned), methanethiol and hydrogen sulfide emissions decreased by 50% and 80%, respectively, compared with the beginning of its construction. In 2020 versus 2019, methanethiol emission reduced by 8.5 tonnes (47.9%) and was 9.25 tonnes, and hydrogen sulfide emission decreased by 45.8 tonnes (79%) and was 12.2 tonnes. By the end of 2020, the company achieved the established air quality standards (MPC) concerning these chemicals.

Compliance with MPC of chemicals in the atmosphere of Novodvinsk (according to Roshydromet)	hydrogen sulfide		methanethiol	
	2019	2020	2019	2020



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maximum one-time MPC/ average daily MPC mg/m ³	0.008/-		0.006/-	
Maximum MPC exceedance	5.13	1.9	-	-
Number of MPC exceedances	26	1	-	-

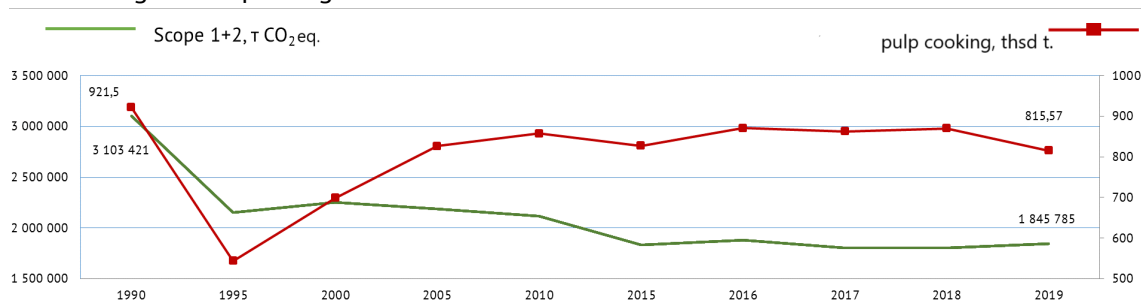
In 2020, the list of wastes of JSC Arkhangelsk PPM was significantly reduced and, accordingly, the volume of waste generation decreased, as a result of waste inventory.

According to the primary waste records, the waste production amounted to 170.925 tonnes in 2020. In 2020, bark and wood wastes, waste (sludge) of mechanical and biological wastewater treatment, wood scraps, rubble concrete and rubble reinforced concrete and secondary raw materials, materials that realized to consumers (scrap metal, polyethylene, waste paper) were excluded from waste category in compliance with established requirements.

In 2020, undercooked pulp of production was used on a full scale in the technological cycle of cardboard production, as a result of implementation of the environmental protection measures. The generation of the waste “wood and mineral wastes in pulp sorting process during its production (undercooked pulp)” was excluded.

Climate policy 2019-2020

In 2020, the company's Report on greenhouse gas emissions 2019² was successfully verified on the International Standard on Assurance Engagements (ISAE) 3410. As part of the verification, statements about emissions of the production sites of JSC Arkhangelsk PPM and its affiliates were checked. The verification was carried out by an audit organization JSC KPMG. The greenhouse gas emission report 2019 was produced with compliance with the standards “The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard”.



Note: since 2012, the inventory has been carried out taking into account the emissions of all affiliates.

According to the data for 2019, the volume of direct and energy indirect GHG emissions (Scope 1 + 2) of JSC Arkhangelsk PPM (including all affiliates and their branches) was 1,845,785 tonnes CO₂-eq. The volume was:

- decreased by 1,257,636 tonnes CO₂-eq or 40.5% versus 1990;

² In the report, GHG emission data is presented for 2019, as the GHG emission report verification 2019 was carried out in 2020.



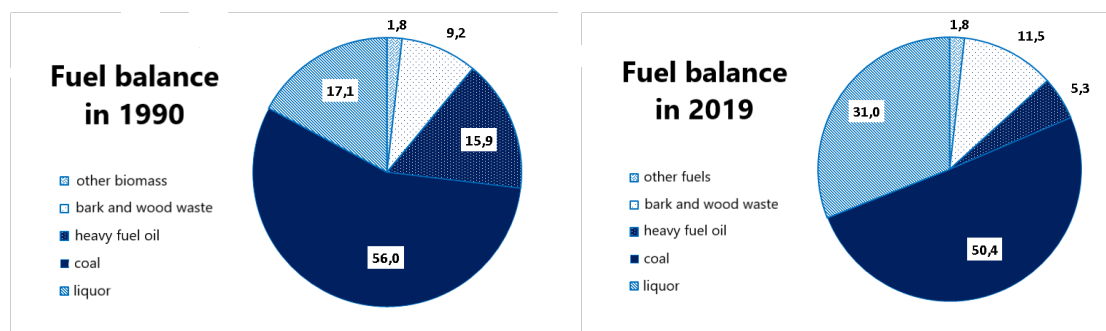
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- on the same level as in 2015 (1,819,368 tonnes CO₂-eq);
- 16.1% lower than voluntary established commitment on GHG emissions in the period up to 2020 (2,200,000 tonnes CO₂-eq p. a.).

Compared with 2018 total volumes of direct and energy indirect emissions increased by 40,386 tonnes CO₂-eq. or by 2.2% in 2019. Specific GHG emission volume per a tonne of cellulose³ was 2.263 tonnes of CO₂-eq/a tonne of cellulose, that is 2.9% more the level established by voluntary commitment (2.2 tonnes of CO₂-eq./ a tonne of cellulose).

The key factors that contributed to reduction in total direct and energy indirect GHG emissions from JSC Arkhangelsk PPM in 2019 as against 1990 base year are as follows:

- larger proportion increase of biomass in the fuel balance which raised from 28.1% to 43.5%;
- a reduction in energy intensity of production at JSC “Arkhangelsk PPM” (in terms of heat consumption – by 30.5%, and in terms of power consumption by 15.3%);
- 11.5% decline in pulp cooking, from 921,500 tonnes down to 815,570 tonnes;
- reduction in electricity consumption from outside sources by 86.4%, from 23,2721 MWh down to 31,709 MWh.



The key factors that determined the increase in GHG emissions at JSC “Arkhangelsk PPM” in 2019 as compared to the previous year 2018 are as follows:

- reduction in the volume of bark and wood waste generation by 61,013 tonnes or 12.3% due to a decrease in the supply and processing of wood raw materials at the plant;
- a disproportionate decrease in total fuel consumption and cooking volumes at the plant (1.9% versus 6.3%, respectively);
- operational commissioning of the Voronezh branch of JSC “Arkbum” and LLC “Arkbum Tissue Group”.

Other indirect GHG emission volume (Scope 3) in 2019 was 440,641 tonnes of CO₂-eq., which is by 34,348 or 7.2 % lower versus 2018. The other indirect GHG emission that

³ Direct (Scope 1) and energy indirect (Scope 2) GHG emissions are taken into consideration only in calculation of specific GHG emissions per a unit of product.



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related to production and transportation of outside resources used in production (raw materials, fuel, chemicals) to the company's production site in Novodvinsk were also estimated.

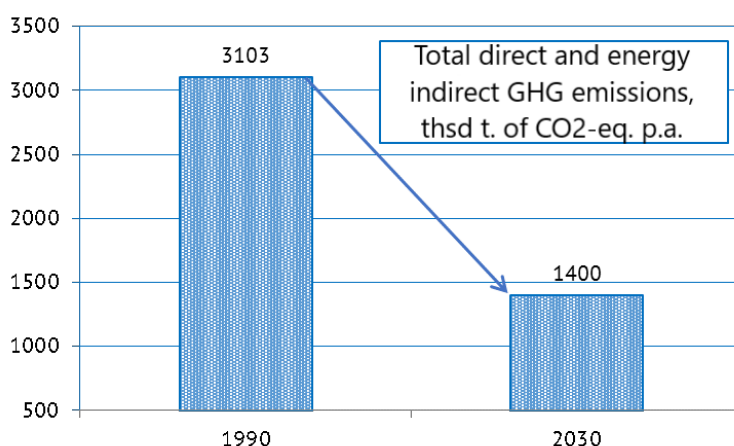
Total direct and indirect GHG emissions (Scope 1+2+3) of JSC Arkhangelsk PPM in 2019 were 2,286,426 tonnes of CO₂-eq.

The largest volume of total direct and energy indirect GHG emissions in 2019 was, as earlier, from the company's production site in Novodvinsk and amounted to 1,813,447 tonnes of CO₂-eq. or 98,2% of total emissions.

The direct GHG emissions were the largest part of the total direct and energy indirect GHG emissions, and were 1,827,233 tonnes of CO₂-eq. (99.0% of total emissions) in 2019, 1,793,286 tonnes of CO₂-eq. (99.3%) in 2018, 3,008,936 tonnes of CO₂-eq. (97.0%) in 1990. At the end of 2019, the total reduction in GHG emissions in 2019 due to the implementation of carbon projects amounted to 327.8 thousand tonnes of CO₂-eq.

In 2020, JSC Arkhangelsk PPM calculated the carbon intensity (carbon footprint) of produced goods and services in 2019 in compliance with requirements of standards ISO/TS 14067:2018 and GOST R P 56276-2014/ISO/TS 14067:2013, and as well as with recommendations, methodology instructions and guidelines, set forth in the standards PAS 2050:2011, GHG Protocol Product Life Cycle Standard and etc. In total, JSC Arkhangelsk PPM determined the carbon intensity for 18 types of its products made in 2019 on the production site in Novodvinsk (including sewage water treatment of external organizations, heat generation for external needs and other services) with 7 of them (6 types of pulp and paper products and thermal energy supplied to external consumers) defined as the main ones. Furthermore, the carbon intensity of commercial products of branches of JSC Arkhbum, situated in Podolsk, in Istra district of Moscow region, in Voronezh region and as well as products of LLC "Arkhbum Tissue Group" (Kaluga region), were also estimated.

In 2020, Arkhangelsk PPM continued to work on establishment of the scientifically based



GHG emission reduction target for the period up to 2030 in the Arkhangelsk PPM, JSC in compliance with the SBTi manual for setting scientifically based targets in economic branches. Along with obligations of absolute GHG emission reduction by 2030, the APPM undertakes a voluntary commitment to establish the scientifically based GHG emission

reduction target per a unit of product in accordance with sectoral decarbonization



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recommendations (SDA), to verify and approve it in an appropriate Initiative body (SBTi)⁴ that serves purposes and objectives of the Paris Agreement mitigate climate change.

Eco-educational, voluntary initiatives

In 2020, Arkhangelsk PPM continued implementation of the project “EcoKids” that involve children of 4 primary school classes and a kindergarten. During the year, the company organized for them environmental voluntary cleanup days, waste paper collection, contests and educational environmental classes with participation of experts from Arkhangelsk PPM. The company became an organizer of the third regional ecological conference for “EcoKids” participants. The APPM conducted traditional action “5 ecological days” to celebrate the Ecologist’s Day.

Arkhangelsk PPM develops human resources management in order to improve its environmental performance. In particular, Arkhangelsk PPM provided an opportunity of getting master’s degree in “Industrial ecology and rational use of natural resources” of the Northern (Arctic) Federal university to specialists of production departments, engineering services. As a result of implementation of a set of strategic measures, that aimed at training of subject-matter experts, the company expects the increase in efficiency of technological and energy process management of the company from the perspective of modern environmental management.

**First deputy CEO
Production Director
Kostogorov**

Nikolay M.

⁴ Science based targets initiative (SBTi) is a collaboration between CDP, the United Nations Global Compact, World Resources Institute and WWF, that helps companies to make more ambitious decisions and commitments connected with climate change.



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