

# Race to the bottom

Consequences of massive coal mining  
for the environment and public health of Kemerovo Region



**Race to the bottom: Consequences of massive coal mining for the environment  
and public health of Kemerovo Region**

Environmental group Ecodefense  
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# Translator's note:

This is a report on the impact of extensive coal mining on the public health and environment of Kemerovo Region, an area in southwestern Siberia where some two thirds of Russia's coal is mined and most of the coal produced is shipped to foreign markets.

Kemerovo Region, with the city of Kemerovo as the seat of regional government, is also known as Kuzbass, which in Russian stands for Kuznetsk [Coal] Basin (*Kuznetsky ugolny bassein*) – one of the world's largest coalfields. Kemerovo Region and Kuzbass are mostly interchangeable in Russian, and are used so throughout this report. In some official references or documents cited in this report both names are used.

Given that coal mining and washing is the principal industry of Kuzbass, the term *extractable resources*, meant to refer to any mineral, ore, rock, or fossil fuel extracted for commercial purposes and used to some extent in official documents or other texts focusing on Kemerovo Region, will in the context of Kuzbass almost exclusively imply coal (some clarifying details on this interpretation are provided in Footnote 102 in the section titled "Mining Waste"). Where one would safely assume that coal is meant in place of "extractable resources," *coal* is used for clarity. In other cases, *extractable resources* (or *mineral resources*) may be used either because the context does not specifically refer to Kuzbass or in order to stay closer to the original language of the cited or quoted source.

The following terms denoting administrative, geographic, and other divisions of the Russian Federation are used in this English translation, listed here in descending order of level:

- federal district (*federalny okrug*): one of the eight large entities that are not constituent units of the country but were formed to enhance the efficiency of government and operation of federal bodies of state power; Kemerovo Region is part of the Siberian Federal District;
- subject of the Russian Federation (*subyekt Rossiyskoi Federatsii*): one of the 85 constituent members of the Russian Federation, which include 22 republics, 9 territories (*krais*), 46 regions (*oblasts*), three cities of federal significance, one autonomous region (*autonomous oblast*) and four autonomous areas (*autonomous okrugs*); where capitalized, such as in Kemerovo Region (*Kemerovskaya oblast*), "region" in this report will refer to an administrative division, rather than a geographical area;
- municipal district (*munitsipalny raion*), municipal formation (*munitsipalnoye obrazovaniye*), urban district (*gorodskoi okrug*): a local-level subdivision with local self-government, which may be a town or a district within a city, or an urban or rural settlement, or a group of such; depending on the context and the official name used in the cited documents, such subdivisions within Kemerovo Region will be referred to collectively as "municipalities" – or, individually, as "municipal formation," "urban district," "municipal district," or simply "district," capitalized if the term is part of the locality's official designation.

The following Russian ministries and government agencies are frequently mentioned or cited in this report:

- Ministry of Natural Resources and Environment
- Federal Service for Supervision of Natural Resources: Rosprirodnadzor
- Ministry of Natural Resources and Environment of Kuzbass (formerly, Department of Natural Resources and Environment of Kemerovo Region)
- Federal Service for the Oversight of Consumer Protection and Welfare: Rospotrebnadzor
- Kemerovo Regional Office of the Federal Service for the Oversight of Consumer Protection and Welfare
- Federal Service for State Statistics: Rosstat
- Kemerovo Regional Office of the Federal Service for State Statistics: Kemerovostat

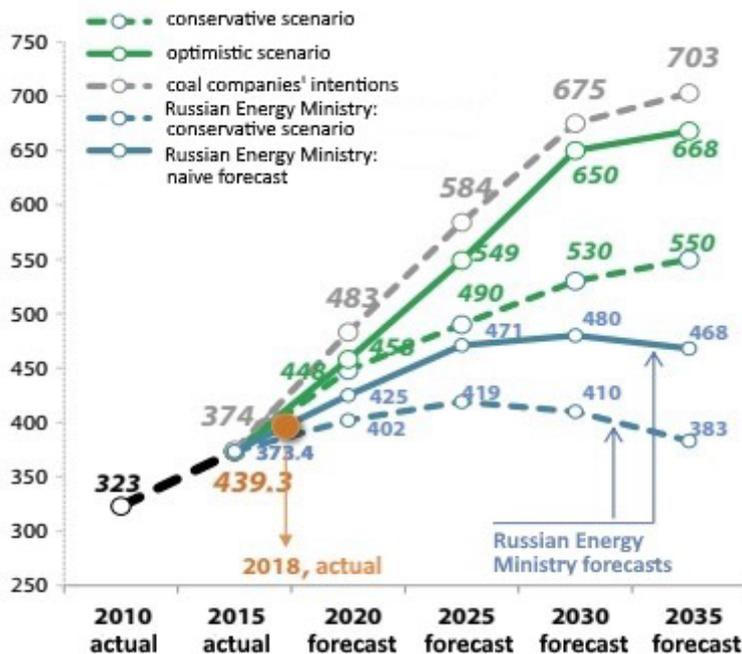
This is the English translation of a report originally compiled and written in Russian. All sources used in the report are Russian-language sources. The titles of media stories, YouTube channels and videos, and scientific papers used as sources for this report are given in transliteration, unless translations or English titles were already provided in the source. In the latter case, the English titles given for citation are represented verbatim in the footnotes (though may be edited slightly for translation accuracy if referenced in the main text). The titles of documents published by the Russian government, Kemerovo Region's government, and federal or regional ministries and agencies are given in translation.

Where charts that originally appeared in a cited source are used in this report, they are represented as images modified for the purpose of translating the Russian-language chart elements; any modifications done to the images are limited solely to this purpose. The titles of such charts are given in translation.

# Foreword

In October of 2019, speaking at the Russian Energy Week International Forum 2019, Russian Deputy Minister of Energy Anatoly Yanovsky said worldwide consumption of coal had increased by 1.6 times between 2000 and 2018. His forecast for coal production and sales was quite optimistic: Even though Europe, the biggest consumer of Russian coal, had cut its coal use from 833.9 m tons in 2000 down to 656 m tons in 2018, Russia’s exports to the European market had risen by 4.2 times. And, according to the Energy Ministry’s long-term projections, even with the European Union’s gradual phaseout of coal factored in, Russia may still be able to grow its global market share of coal sales from 14% as of 2018 to 25% by 2035, as Asia-Pacific countries are expected to become the main consumer.<sup>1</sup>

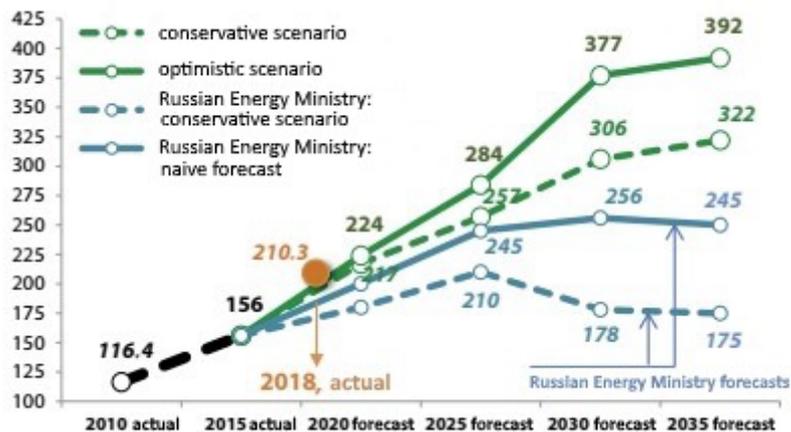
Presented at the same forum by Sergei Mochalnikov, head of the Energy Ministry’s Department of Coal Mining and Peat Industry, was an *Updated Program for the Development of the Coal Industry of Russia for the Period until 2035*, where the stated goal was creating conditions for Russian coal companies to ensure stable domestic supply of coal and to strengthen their positions on the global market. In the Energy Ministry’s forecast, coal production in Russia may grow from 439.3 m tons in 2018 to 668 m tons by 2035 in an optimistic scenario, or even to 703 m tons, in estimates reflecting the coal companies’ own intentions:<sup>2</sup>



1. Glinina O. I. Russian Energy Week International Forum 2019 outcomes. *REW-2019.Ugol' – Russian Coal Journal*, 2020. No. 1, pp. 4-19. (In Russ.) DOI: <http://dx.doi.org/10.18796/0041-5790-2020-1-4-19>. Accessed at <https://cyberleninka.ru/article/n/tretiy-mezhdunarodnyy-forum-rossiyskaya-energeticheskaya-nedelya-ren-2019/viewer>.

2. Ibid. Fig. 23. Projected production of coal up to 2035, in m tons. Stated source: Russian Ministry of Energy.

Of these, up to 392 m tons are expected to shipped for export in an optimistic scenario and 322 m tons in a conservative scenario – compared to the 210.3 m tons exported in 2018<sup>3,4</sup>:



Mochalnikov also said that the share of coal mined in Russia using the open-pit mining method has grown from 70% in 2011 to a current 75%.

For residents of Kemerovo Region, where two thirds of Russian coal is mined, this rise in open-pit mining means that many more times that a poisonous smog brings yet another announcement of “black sky” conditions in the cities and black snow covers the region’s towns and villages, that many more people who die from cancer, and a region leading the country in infectious diseases.

Kuzbass is Russia’s main coalfield. In 2018, 255.3 m tons of coal was produced in the region, of which 165.8 m tons was extracted in open pits and 89.5 m tons in underground mines. (In 2019 results, production totaled 250.1 m tons of coal, including 164.4 m tons mined at open pits and 85.7 m tons produced by mines.)<sup>5</sup> According to the *Strategy for Socioeconomic Development of Kemerovo Region until 2035*, adopted in December 2018, coal production, at 32.8%, accounts for the largest contribution to gross regional product, and around 65% of the coal produced is mined using open pits. As of the end of 2017, coal was mined by 42 underground mines and 51 open-pit mines. Over 100,000 people were employed by the industry. Coal preparation and cleaning was done by 54 washing plants and facilities. Of all the Russian coal exported in 2017, 73%, or 135.8 m tons, was mined in Kuzbass.<sup>6</sup>

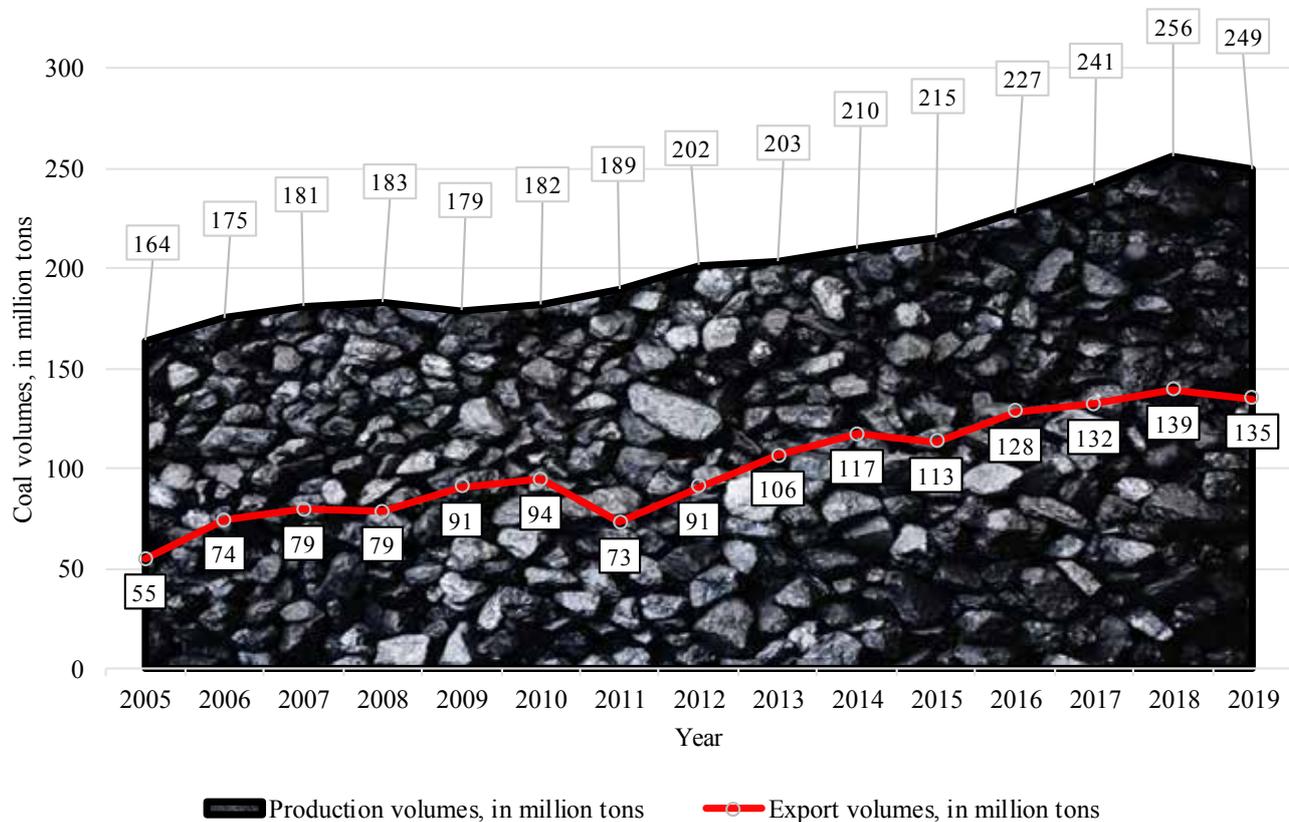
3. Ibid. Fig. 22. Projected export deliveries of coal up to 2035, in m tons. Stated source: Russian Ministry of Energy.

4. The Program for the Development of the Coal Industry of Russia for the Period until 2035 was approved by Resolution No. 1582-r of the Government of the Russian Federation of June 13, 2020, and envisions by 2035 an increase in the production of coal of up to 485 m tons in a conservative scenario and up to 668 m tons in an optimistic scenario. Coal exports are anticipated to increase to 259 m tons and 392 m tons, respectively. Website of the Government of the Russian Federation, <http://government.ru/docs/39871/>.

5. Website of Kuzbass Government Administration. Za 2018 god ugolshchiki Kuzbassa dobyli 255,3 mln ton uglja, January 17, 2019, <https://ako.ru/news/detail/za-2018-god-ugolshchiki-kuzbassa-dobyli-255-3-mln-tonn-uglya>; V 2019 godu ugolshchiki Kuzbassa dobyli 250,1 milliona tonn kamennogo uglja, January 21, 2020, <https://ako.ru/news/detail/v-2019-godu-ugolshchiki-kuzbassa-dobyli-250-1-millionov-tonn-kamennogo-uglya->.

Data by Kemerovostat, the Kemerovo Regional Office of the Federal Service for State Statistics, show that between 2005 and 2019, coal production in the region grew by 1.5 times, and exports grew by almost 2.5 times:<sup>7</sup>

## Production and exports of coal in Kemerovo Region



Yet, after a ten-period boom in mining and shipping, investing and introducing new coal-producing capacities, 2019 demonstrated an exacerbation of the current global challenges affecting the Russian coal industry, which include low-carbon development strategies that are gaining momentum in the world, and, by extension, a fiercer competition among the coal

6. Strategy for Socioeconomic Development of Kemerovo Region until 2035, adopted December 26, 2018, pp. 31, 32. Website of Kuzbass Government Administration, <https://ako.ru/deyatelnost/strategicheskoe-planirovanie-kemerovskoy-oblasti-.php>. According to data provided in addenda to the Program for the Development of the Coal Industry of Russia for the Period until 2035, Kemerovo Region's share in total coal production in the Russian Federation in 2018 was 58.2%. Export shipments using Russian Railways infrastructure amounted to a total of 146.2 m tons, with the overall exports by the Russian Federation totaling 216.9 m tons. Website of the Government of the Russian Federation, <http://static.government.ru/media/files/OoKX6PriWgDz4CnNAxwIYZEE6zm6I52S.pdf>.

7. The graph was built using data provided in the sections "Mining and Quarrying, Manufacturing, Production [and Distribution of Electricity, Gas, and Water]" (production of main types of products) and "Foreign Economic Activities" (main types of exported goods) published in statistical yearbooks for 2009 through 2018, <http://service.kemerovostat.gks.ru/bgd/EJEGOD/Main.htm>, as well as in the following materials: Industrial production, Main indicators, "Manufacture of main types of products in physical terms (2010 to 2016)," publication date September 5, 2017, and "Manufacture of main types of products in physical terms (since 2016)," publication date July 24, 2020, <https://kemerovostat.gks.ru/folder/38696>; Foreign Economic Activities, Official publications, "Kuzbass in figures. Foreign Economic Activities (current data)," publication date May 15, 2020, <https://kemerovostat.gks.ru/folder/38673>. Cited source of export data: the Federal Customs Service of the Russian Federation. *tonn kamennogo uгля*, January 21, 2020, <https://ako.ru/news/detail/v-2019-godu-ugolshchiki-kuzbassa-dobyli-250-1-millionov-tonn-kamennogo-uglya->.

exporting countries and uncertainties in the coal markets.<sup>8</sup> In November 2019, Kemerovo Region Governor Sergei Tsivil'yov announced that because of the slump in global coal prices – which fell by 44% for steam coals and by a quarter for coking coals, in comparison to the previous November – the regional budget was RUR 20 bn short that year and would lose another RUR 8 bn to RUR 10 bn in tax revenue in 2020.<sup>9</sup>

The *Socioeconomic Development Strategy* approved by the region in December 2018 does acknowledge the need to diversify the regional economy: Considering the significant degree of its single-industry slant and vulnerability to price fluctuations on the global coal market, “from the strategic perspective, in case of an adverse price situation, maintaining the existing production structure creates a real threat to ensuring economic security of Kemerovo Region,” the document says. And still, preparations to developing a new economy alone, including in the area of post-carbon energy policies, are expected to take place up to 2025. Furthermore, even with the proposed growth of non-resource exports and a reduction of environmental damage taken into account, coal production, according to the *Strategy*, is expected to grow by almost 1.5 times by 2035, to a target figure of 380 m tons.<sup>10</sup>

The severe competition and the volatility of export prices provide a fertile ground for what could be called “ecological dumping” – in the sense of engaging in or allowing predatory mining practices that strive to maintain price competitiveness at the cost of environmental standards, such as by eschewing spending on land reclamation<sup>11</sup> and up-to-date equipment which would, for example, reduce emissions of coal dust.

In January 2020, satellite images were published in the press that revealed how open pits expanded in Siberia, including, between 1999 and 2016, in Prokopyevsk, Novokuznetsk, and Belovo Districts in Kemerovo Region, and, between 1992 and 2016, near the town of Kaltan. It is quite evident from the imagery how more and more land was being encroached on by the coal mining industry, but no traces of mine reclamation can be seen.<sup>12</sup> Mining enterprises are also trying to avoid social expenditures – compensations to those residents whose houses happened to be in the immediate vicinity of the pits or resettlement costs for those who found themselves living in environmental disaster areas. In Kiselyovsk, which suffered significant ecological

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8. Russian coal production volumes have over the past ten years increased by more than 1.3 times, to a level of over 440 m tons a year, capital investments in coal enterprises have grown by 2.5 times (in current prices), 297 m tons' worth of new coal-producing capacities has been put into operation, and Russia's share in the global coal market has expanded from 9% to 15%. At the same time, since 2016 already, Russia's coal exports have been exceeding domestic consumption, and 2019 saw a dramatic fall in the already declining spot prices for coal at Vostochny Port and Baltic ports. Program for the Development of the Coal Industry of Russia for the Period until 2035, pp. 4, 9, 12. Website of the Government of the Russian Federation, <http://static.government.ru/media/files/OoKX6PriWgDz4CnNAxwIYZEE6zm6I52S.pdf>.

9. A. Ponomaryov. 400 dnei: korrektyrovka planov. Padeniye mirovykh tsen na ugol seryozno skazalos na byudzhete Kemerovskoi oblasti. Ugol Kuzbassa, 2019. No. 6, <http://uk42.ru/index.php?id=9752>.

10. Strategy for Socioeconomic Development of Kemerovo Region until 2035, adopted December 26, 2018, pp. 31, 34, 83, 133. Website of Kuzbass Government Administration, <https://ako.ru/deyatelnost/strategicheskoe-planirovanie-kemerovskoy-oblasti-.php>.

11. The rise in production of coal products in Russia between 2012 and 2018 has led to an increase in harmful air pollutants from 987 thousand tons to 1,110 thousand tons, a 2.5 times increase in the annual area of disturbed lands (from 4,184 hectares to 10,657 hectares), and a 1.7 times reduction in the annual area of reclaimed lands (from 1,018 hectares to 589.5 hectares). Program for the Development of the Coal Industry of Russia for the Period until 2035, p. 15. Website of the Government of the Russian Federation, <http://static.government.ru/media/files/OoKX6PriWgDz4CnNAxwIYZEE6zm6I52S.pdf>.

12. Sergei Kozlovsky. Kak dobycha uglja izmenila Sibir. Vid iz kosmosa. BBC, January 5, 2020, <https://www.bbc.com/russian/features-50896817>.

damage from underground fires in 2019, relocation measures never came through to move people from the territory that proved a hazard to their life and health.<sup>13</sup>

Kemerovo Region is one of the most environmentally troubled in Russia, and ecological conditions in the region do not, of course, remain unnoticed by its residents. In 2019, the Russian real estate search website Domofond.ru conducted a poll of 90,000 users asking respondents to evaluate the level of environmental well-being in their cities. Based on their assessments, as many as four Kemerovo Region cities – Kiselyovsk, Belovo, Prokopyevsk, and Leninsk-Kuznetsky – were included in the poll’s top ten of the most polluted cities in Russia.<sup>14</sup> One factor that plays its contributing role in addition to air pollution per se is the specific climate and geography of the region, which, as the *Socioeconomic Development Strategy* notes, “preclude a major part of the industrial emissions of pollutants from dispersing in the atmospheric air and facilitate their deposit in the Kuznetsk Depression, thus creating a photochemical smog that has an adverse impact on the health of the population.”<sup>15</sup>

Facing the declining demand for coal in Europe and driven by a hope to preserve a competitive position at least on the Pacific and Asian markets, Russia is seeking to ratchet up its coal production and export numbers both in Kuzbass and the country’s eastern regions as well.<sup>16</sup> Will achieving this growth be attempted by softening environmental regulations and compliance oversight, by keeping up propitious conditions for the coal producers and neglecting to protect those who live in the coal mining areas? This, at least, is the course that can be seen behind the massive increase in the volumes of coal mined and shipped from Kuzbass in the past ten years.

For Kemerovo Region, this race to the bottom has already resulted in reduced quality and expectancy of life, rising rates of diseases, loss of forest in protected areas, degradation of natural ecosystems, irreparable damage to the culture and traditional livelihoods of indigenous peoples, social tensions, and – as a long-term consequence – in a diminished economic potential of the region and its residents in the future and a further worsening of prospects.

This Ecodefense report presents official data and testimonies of residents of Kuzbass about the detriment that has already been wrought on the region and that can only grow if Russia presses ahead with its plans of expanding coal mining there in the years to come.

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13. FederalPress editorial office / Yekaterina Sumina, Nina Obelyunas. *Vlasti Kuzbassa ne budut rasselyat zhitel'ei Kiselyovska is raiona podzemnykh pozharov*. FederalPress, November 14, 2019, <https://fedpress.ru/news/42/society/2366122>.

14. *Ekologicheskiy reyting 200 gorodov Rossii za 2019 god*. Domofond.ru, August 13, 2019, [https://www.domofond.ru/statya/ekologicheskiy\\_reyting\\_200\\_gorodov\\_rossii\\_za\\_2019\\_god/100219](https://www.domofond.ru/statya/ekologicheskiy_reyting_200_gorodov_rossii_za_2019_god/100219).

15. *Strategy for Socioeconomic Development of Kemerovo Region until 2035*, adopted December 26, 2018, p. 11. Website of Kuzbass Government Administration, <https://ako.ru/deyatelnost/strategicheskoe-planirovanie-kemerovskoy-oblasti-.php>.

16. In Kuzbass, according to the optimistic scenario outlined in the Program for the Development of the Coal Industry of Russia for the Period until 2035, coal production is supposed to grow from 255.7 m tons as of 2018 to 297 m tons; significant – multifold, in certain cases – increases in production, taking the expected reduction in shipping costs into account, are planned in Novosibirsk, Khakassia, Tyva, Krasnoyarsk Krai, Yakutia, Khabarovsk Krai, Amur Region, and Primorsky Krai. Program for the Development of the Coal Industry of Russia for the Period until 2035, pp. 21, 125-128. Website of the Government of the Russian Federation, <http://static.government.ru/media/files/OoKX6PriWgDz4CnNAxwIYZEE6zm6152S.pdf>.

# Public health

*– This winter, the whole world saw our black snow. We were suffocating in our town from coal dust, from the exhaust of the open-pit trucks. Through almost the entire winter [...], our children could not go outside, even for just a bit of time outdoors. Our kids felt ill from the smog, from the coal dust hanging in the air.*

*– There is a high level of oncological disease in our town. We believe it has to do precisely with the horrible ecological situation. Practically every family has someone who has either died or is sick with cancer at this moment. The realization of the high risk of falling ill with cancer while having no possibility to leave this territory makes it so that we are basically feeling backed into a corner, living in constant depression.*

***From a video address of Kiselyovsk residents to Canadian Prime Minister Justin Trudeau<sup>17</sup>***

Just how unsound the environment of Kemerovo Region is for living there is demonstrated by official statistics. According to Kemerovostat, life expectancy for an average Kuzbass resident in 2014 to 2018 was three to four years shorter than on average across Russia. The rate of natural population decline more than tripled in this period, growing from -1.4 to -4.5 per 1,000 people.<sup>18</sup> In 2019, with the number of deaths in Russia at 1228.1 per 100,000 population, the mortality rate in Kemerovo Region was 1425.7 – the highest in the Siberian Federal District.<sup>19</sup>

The charts below show the differences in the mortality rates per 100,000 population and life expectancies at birth in Kuzbass and in the Russian Federation on average over the past 30 years.<sup>20</sup>

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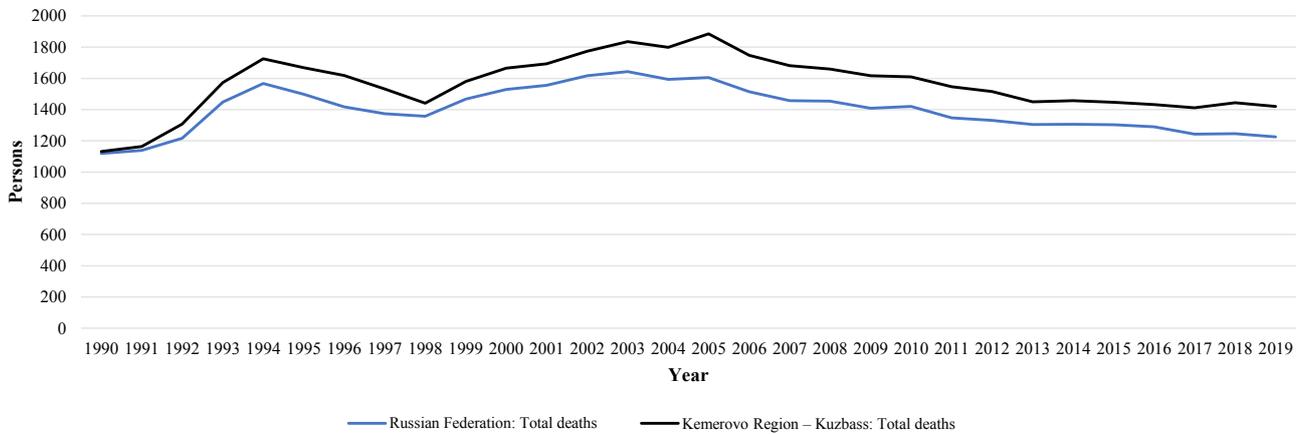
17. Kiselyovsk residents seek asylum from the Prime Minister of Canada. YouTube channel Novosti Kiselyovska, June 8, 2019, <https://www.youtube.com/watch?v=1Hru0InEvD4>. 14. Ekologichesky reiting 200 gorodov Rossii za 2019 god. Domofond.ru, August 13, 2019, [https://www.domofond.ru/statya/ekologicheskiy\\_reyting\\_200\\_gorodov\\_rossii\\_za\\_2019\\_god/100219](https://www.domofond.ru/statya/ekologicheskiy_reyting_200_gorodov_rossii_za_2019_god/100219).

18. Kemerovostat, Statistical Yearbook, Population. Publication date December 13, 2019. Table 4.11: Life expectancy at birth; Table 4.1: Main demographic indicators, <https://kemerovostat.gks.ru/folder/38669>.

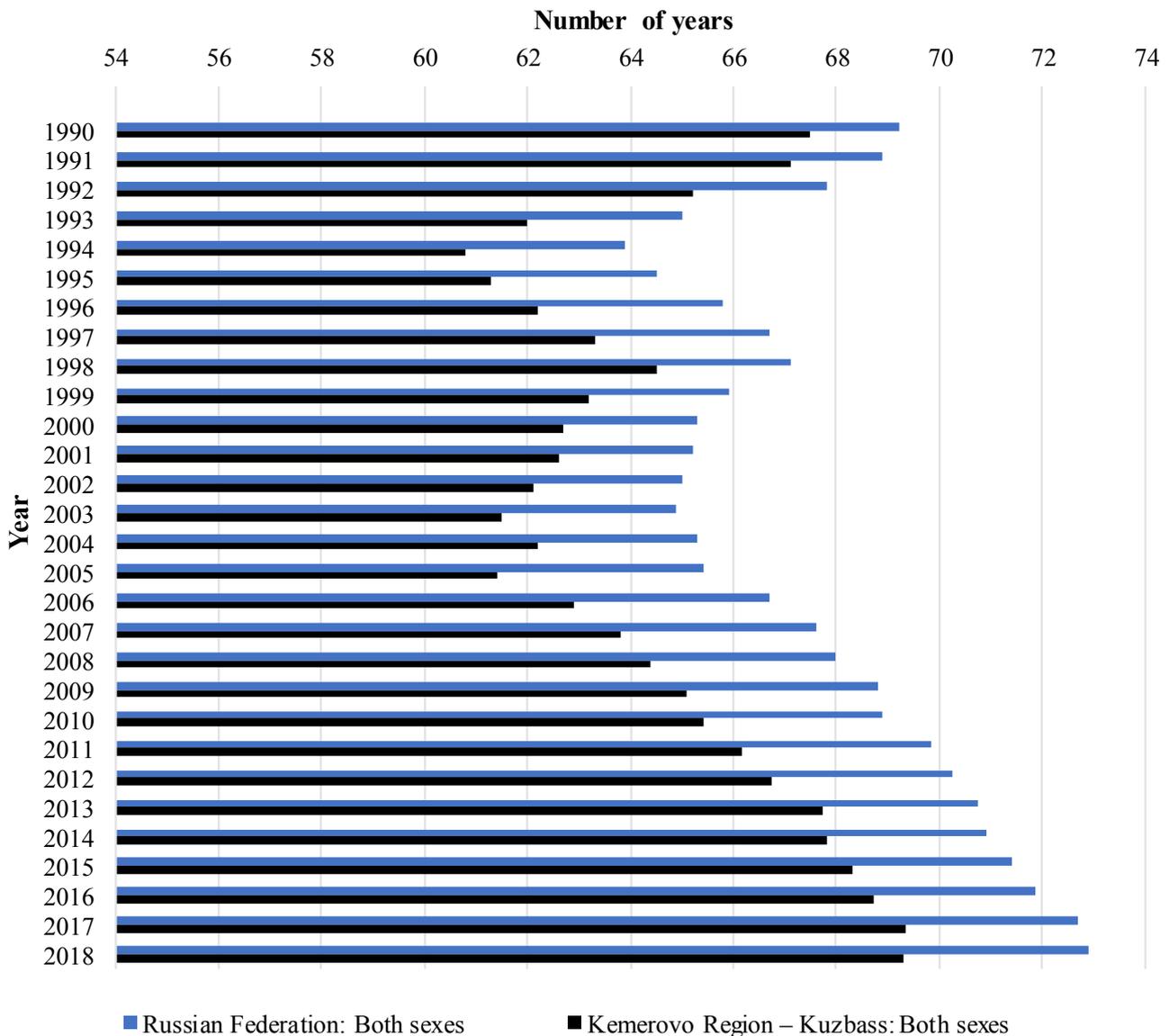
19. Rosstat. Natural movement of population by federal subject of the Russian Federation in January to December 2019 (posted May 5, 2020), [https://rosstat.gov.ru/free\\_doc/2019/demo/edn12-19.htm](https://rosstat.gov.ru/free_doc/2019/demo/edn12-19.htm). Information on mortality by major causes of death per 100,000 population by federal subject of the Russian Federation in January to December 2019.

20. The graphs were built using open data published by Russia's Unified Interagency Information and Statistics System (UIISS) for the indicators "Annual mortality by major causes and specific causes of death per 100,000 population" (<https://www.fedstat.ru/indicator/31270>) and "Life expectancy at birth" (<https://www.fedstat.ru/indicator/31293>). The rates are shown for all the years for which information was available in the source data.

## Mortality by major causes and specific causes of death per 100,000 population in Kuzbass and the Russian Federation: Total deaths from all causes



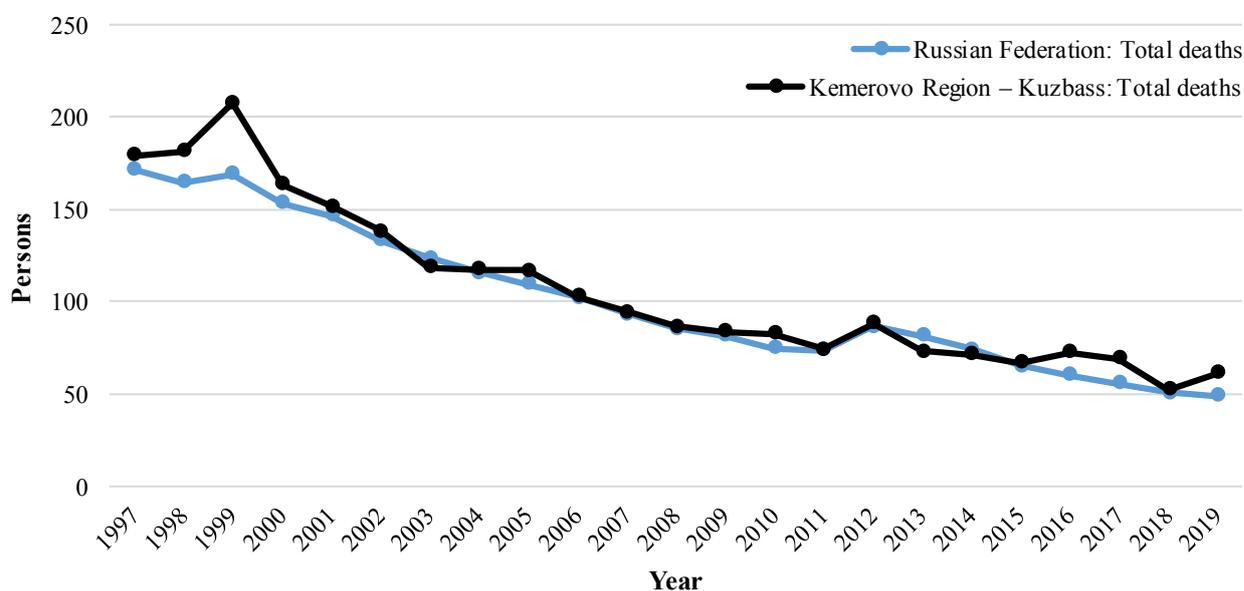
## Life expectancy at birth in Kuzbass and the Russian Federation



Even as overall mortality decreased slightly (there were 1435.6 deaths per 100,000 population in 2018)<sup>21</sup>, infant mortality in the region grew by 13% in 2019 compared to the previous year: 6 infants under 1 year of age died per every thousand of live births (in 2018, the number of infant deaths per 1,000 live births was 5.3). On average in Russia, infant mortality was 4.9 per 1,000 live births in 2019.<sup>22</sup>

Already in 2015, a correlation between infant congenital anomaly rates and the volumes of atmospheric pollutants emitted by coal-mining enterprises was described by specialists with the Hygiene and Epidemiology Center of Kemerovo Region and the Kemerovo State Medical Academy, who noted that the congenital malformation prevalence rate per 1,000 children had doubled in the region between 2005 and 2012. Furthermore, the upsurge was even higher in certain municipalities, reaching 28.2 times the 2005 level in Belovo District, 10.4 times in Tyazhinsky District, and 4.7 times in Novokuznetsk District. By 2015, the average incidence of congenital defects and abnormal development cases among the region’s newborns was 5.3%, and as a cause of death, birth defects accounted for 20.7% of infant deaths (in Russia overall, the average figures for congenital malformations in newborns at the moment of publication were 4% to 6% in annual incidence and 20% to 30% as a cause of death in infant mortality data)<sup>23</sup>. And, with infant mortality generally on the decline in Russia, the annual figures for Kuzbass still frequently exceed the Russian average:<sup>24</sup>

### Infant deaths under 1 year of age by major causes of death per 10,000 annual live births in Kuzbass and the Russian Federation



21. Rosstat. Natural movement of population by federal subject of the Russian Federation in January to December 2019 (posted May 5, 2020), [https://rosstat.gov.ru/free\\_doc/2019/demo/edn12-19.htm](https://rosstat.gov.ru/free_doc/2019/demo/edn12-19.htm). Information on mortality by major causes of death per 100,000 population by federal subject of the Russian Federation in January to December 2019.

22. Ibid. Infant mortality by federal subject of the Russian Federation in January to December 2019.

23. Bachina A. V., Koskina E. V., Glebova L. A., Popkova L. V. The Hygiene and Epidemiology Center of Kemerovo Region and the Kemerovo State Medical Academy, Kemerovo. Ecological and Hygienic Aspects of Congenital Malformation’s Forming in Kuzbass. *Mat i ditya v Kuzbasse*, 2015. No. 1 (60). Accessed at <https://cyberleninka.ru/article/n/ekologo-gigienicheskie-aspekty-formirovaniya-vrozhdennyh-porokov-razvitiya-v-kuzbasse/viewer>.

24. The graph was built using open data published by Russia’s Unified Interagency Information and Statistics System (UIISS) for the indicator “Infant deaths under 1 year of age by major causes of death per 10,000 annual live births”, <https://www.fedstat.ru/indicator/31167>. The rates are shown for those years for which information was available in the source data.



The majority of deaths in the region are attributed to circulatory diseases. According to data for 2017 and 2018, these accounted for over 40% of the region's mortality statistics.<sup>25</sup> In August 2019, Kuzbass media, citing Kemerovostat, reported a dramatic increase in cardiovascular diseases in the first six months of the year: 1,193 more cases were registered compared to the same period in 2018, reaching 8,947 in total.<sup>26</sup> A report published on Kemerovostat's website states the mortality rate due to cardiovascular diseases in the first six months of 2019 was 16% higher than in the same period of the previous year, at 675.6 per 100,000 people.<sup>27</sup>

In June 2019, Kemerovo Region government adopted a regional program titled *Combating cardiovascular diseases in 2019 to 2024*. According to Kemerovostat data cited in the program, following a general decline in cardiovascular disease mortality in all population groups in the region since 2014, the heart disease death rate in 2018 stood at 582 per 100,000 people, a 2.9% increase over the figure of 2017. Cardiovascular disease mortality among working-age adults also saw an increase compared to 2017, rising from 157.5 to 167.1 per 100,000 population. Urban dwellers represent the majority of the region's population, or 86%, and the majority of deaths attributed to circulatory diseases, or 85.6%. At the same time, the cardiovascular mortality rate among those living in rural areas is 2.6% higher than that among the urban population. The program does not mention the adverse ecological conditions as a factor affecting the statistics for cardiovascular diseases in Kuzbass (stating only that the region is characterized by a predominance of heavy industries), and the measures proposed as a solution to the problem focus on improving access to, and quality of, healthcare services.<sup>28</sup>

Doctors, however, do note the link between the level of environmental well-being and the health of a population. Prof. Olga Barabash, chief external specialist in cardiology with the Russian Ministry of Health for the Siberian Federal District, was reported by *AiF-Kuzbass*, the regional edition of the national *Argumenty i Fakty (AiF)*, as saying that 37% in a person's lifespan is

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25. Kemerovostat. *Results of the demographic development of the region in 2018*. Publication date May 14, 2019, p. 21, [http://kemerovostat.old.gks.ru/wps/wcm/connect/rosstat\\_ts/kemerovostat/ru/statistics/population](http://kemerovostat.old.gks.ru/wps/wcm/connect/rosstat_ts/kemerovostat/ru/statistics/population).

26. V Kuzbasse vyroslo smertnost ot boleznei serdtsa i sistemy krovoobrashcheniya. *Argumenty i fakty*. Kuzbass, August 22, 2019, [https://kuzbass.aif.ru/health/v\\_kuzbasse\\_vyroslo\\_smertnost\\_ot\\_bolezney\\_serdca\\_i\\_sistemy\\_krovoobrashcheniya](https://kuzbass.aif.ru/health/v_kuzbasse_vyroslo_smertnost_ot_bolezney_serdca_i_sistemy_krovoobrashcheniya).

27. Kemerovostat. *Socioeconomic situation of Kemerovo Region (report)*. January to July 2019. Publication date August 21, 2019, p. 29, [http://kemerovostat.old.gks.ru/wps/wcm/connect/rosstat\\_ts/kemerovostat/ru/publications/official\\_publications/electronic\\_versions](http://kemerovostat.old.gks.ru/wps/wcm/connect/rosstat_ts/kemerovostat/ru/publications/official_publications/electronic_versions).

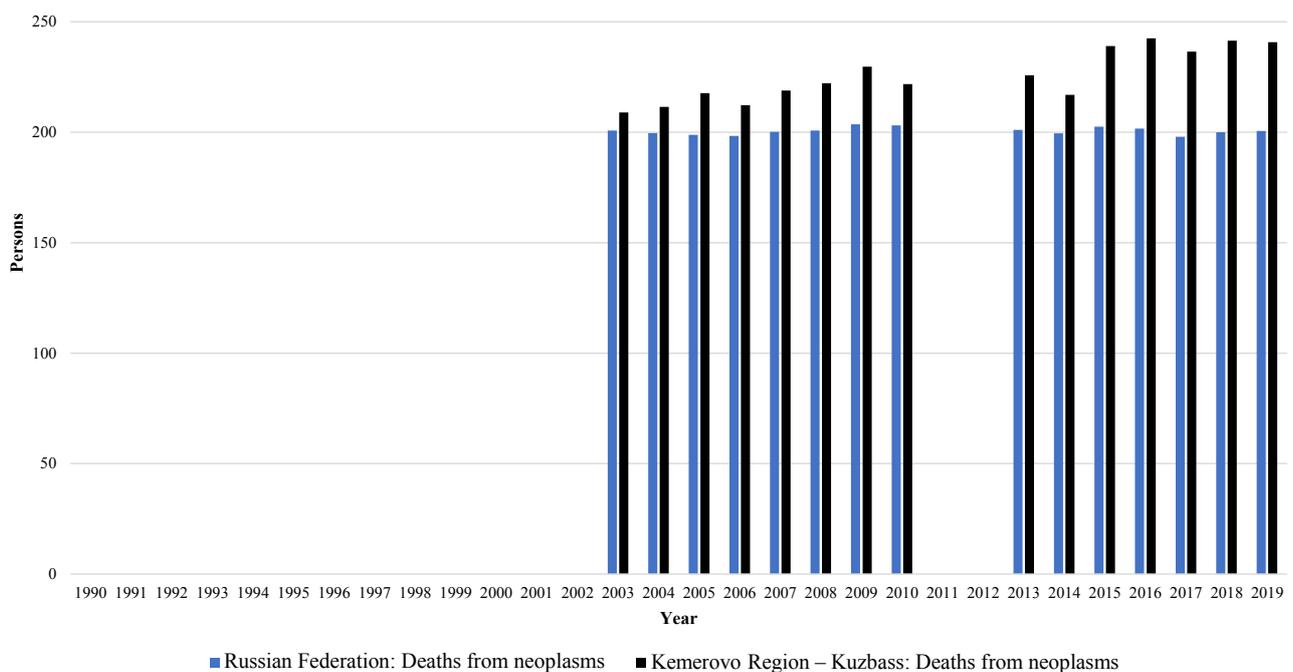
28. Order of the Government of Kemerovo Region – Kuzbass of June 27, 2019, No. 384 on the adoption of the regional program “Combating cardiovascular disease in 2019 to 2024” (with amendments as of January 24, 2020), <http://docs.cntd.ru/document/553392489>.

due to socioeconomic factors, which include the environment, and Siberia ranks the lowest for ecological well-being, with Novokuznetsk taking third place in the ten worst cities and Mezhdurechensk lagging not far behind.<sup>29</sup>

After cardiovascular diseases, the second leading cause of death in Kuzbass is oncological disease. “Cancer-related mortality in Kuzbass is higher than on average in the country. Whereas in Russia 193 people die out of 100,000, in our region it’s 236,” Mikhail Malin, head of the Department of Public Healthcare of Kemerovo Region, told *AiF-Kuzbass*. Viktor Lutsenko, chief physician of the Regional Oncology Clinic, said this to explain the difference: “The higher mortality rate in Kuzbass than on the whole in Russia has to do above all with environmental problems.”<sup>30</sup>

Even with statistical data being unavailable for certain periods, it can be seen clearly from the graph below that the yearly number of deaths caused by malignant tumors in Kuzbass steadily surpasses the Russian average year in year out – and quite noticeably so in recent years:<sup>31</sup>

### Mortality by major causes and specific causes of death per 100,000 population in Kuzbass and the Russian Federation: Deaths from neoplasms



29. Anna Ivanova. *Begstvo ili vymiraniye? Kak ekologiya vliyayet na zhizn kuzbassovtsev. Argumenty i Fakty. Kuzbass, April 1, 2019, [https://kuzbass.aif.ru/health/begstvo\\_ili\\_vymiranie\\_kak\\_ekologiya\\_vliyayet\\_na\\_zhizn\\_kuzbassovcev](https://kuzbass.aif.ru/health/begstvo_ili_vymiranie_kak_ekologiya_vliyayet_na_zhizn_kuzbassovcev). Translator’s note: Olga Barabash’s titles also include doctor meditsinskikh nauk, the highest academic degree in medical sciences (which, being a post-doctoral degree, may be comparable to the German Dr. habil. or, to an extent, to the British higher doctorate and has no equivalent in English) and the highest academic rank of full professor (stated here in translation as Prof.). Chief external specialists in Russia’s federal districts, according to Order of the Ministry of Health of the Russian Federation of September 23, 2013, No. 655, are experts in specific medical fields appointed by the Health Ministry to serve in unsalaried positions with a broad range of functions that include formulating and presenting proposals for the advancement of the medical field under their purview, the corresponding medical technologies, and prevention, diagnostics, treatment, and aftercare methods, participating in the introduction of up-to-date medical technologies, participating in the development and practical application of healthcare standards and regulations and clinical recommendations, etc.*

30. *Ibid.* Translator’s note: The Department of Public Healthcare of Kemerovo Region has since the *AiF* publication been officially renamed the Ministry of Health of Kuzbass.

31. The graph was built using open data published by Russia’s Unified Interagency Information and Statistics System (UIISS) for the indicator “Annual mortality by major causes and specific causes of death per 100,000 population,” <https://www.fedstat.ru/indicator/31270>. Information for certain years is unavailable in the source data.

In 2019, as per data released by Rosstat, cancer mortality rate grew in Kuzbass to 242.2 per 100,000 people – as the Russian average stood at 201.5 per 100,000 people.<sup>32</sup> Kemerovo Region's cancer death rate is the highest in the Siberian Federal District.

One of the factors associated with the development of both benign and malignant neoplasms, primarily those of the reproductive system – and, consequently, with infertility – is benzo(a)pyrene, says the Russian Health Ministry's chief external specialist in obstetrics and gynecology in Siberia Natalia Artymuk.<sup>33</sup> In 2018, the mean year concentration of this pollutant in the air of the city of Kemerovo was 3.4 times the maximum allowable concentration (MAC); moreover, benzo(a)pyrene concentrations in excess of MAC values were moving up consistently starting with the 2014 level of 1.5 MAC, only abating somewhat to a level of 2.7 MAC in 2019.<sup>34</sup> In statistics cited by *AiF-Kuzbass*, infertility incidence in Kemerovo Region was 20.3% in 2009. “We might add another, shall we say, 2% for the past ten years – this is what we have right now. And, as the WHO says, a region that has an infertility rate of over 15% is doomed to die out,” Artymuk told *AiF-Kuzbass*.<sup>35</sup> Benzo(a)pyrene, formaldehyde, and heavy metals are among the pollutants that form one of the key habitat factors making up health-related demographic losses and are associated with additional morbidity from various illnesses as well as mortality from respiratory diseases, malignant neoplasms, and diseases of the digestive tract.<sup>36</sup>

Predictably, especially prominent in a region with a predominant share of the coal-mining industry and high air pollution levels are diseases of the respiratory system and respiratory disease mortality. As shown in a 2019 study by Novokuznetsk-based pulmonologists, who researched respiratory morbidity data for 2015 and 2016, incidence of respiratory diseases in Kuzbass is several times the rates for other classes of diseases and tens of percent higher than the Russian average. In particular, incidence rates exceed the national levels for community-acquired pneumonia by 25.9%, bronchial asthma and other respiratory allergies by 40.8%, chronic obstructive pulmonary disease by 2 times, tuberculosis, multidrug-resistant tuberculosis, and tuberculosis with HIV infection by 2, 2.4, and 6.75 times, respectively, and malignant respiratory diseases by 5.7%. “Respiratory diseases are the leading cause of morbidity in Kuzbass, which is primarily associated with a high concentration of coal and metallurgical enterprises, which create an unfavorable ecological situation and, accordingly, a high load on the respiratory system of the population living in the region,” the study's authors conclude, pointing out that the shift toward open-pit mining has had an especially detrimental effect on the region's environment.<sup>37</sup> In 2019, in Rosstat data, the number of deaths from respiratory diseases

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32. Rosstat. *Natural movement of population by federal subject of the Russian Federation in January to December 2019* (posted May 5, 2020), [https://rosstat.gov.ru/free\\_doc/2019/demo/edn12-19.htm](https://rosstat.gov.ru/free_doc/2019/demo/edn12-19.htm). Information on mortality by major causes of death per 100,000 population by federal subject of the Russian Federation in January to December 2019.

33. Anna Ivanova. *Begstvo ili vymiraniye? Kak ekologiya vliyayet na zhizn kuzbassovtsev. Argumenty i Fakty. Kuzbass*, April 1, 2019, [https://kuzbass.aif.ru/health/begstvo\\_ili\\_vymiranie\\_kak\\_ekologiya\\_vliyaet\\_na\\_zhizn\\_kuzbassovtsev](https://kuzbass.aif.ru/health/begstvo_ili_vymiranie_kak_ekologiya_vliyaet_na_zhizn_kuzbassovtsev). Translator's note: Natalia Artymuk is also a doctor *meditsinskikh nauk*; for a brief explanation of this title and the position of chief external specialist, see Footnote 29.

34. Ministry of Natural Resources and Environment of Kuzbass. *Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2018*, p. 51; *Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*, p. 51, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. Translator's note: Maximum allowable concentrations (as one variant of translation for this term in Russian) are legally codified threshold values for specific pollutants or hazardous or toxic substances that limit their permissible levels in the environment to exposure levels considered safe for the population.

35. Anna Ivanova. *Begstvo ili vymiraniye? Kak ekologiya vliyayet na zhizn kuzbassovtsev. Argumenty i Fakty. Kuzbass*. April 1, 2019, [https://kuzbass.aif.ru/health/begstvo\\_ili\\_vymiranie\\_kak\\_ekologiya\\_vliyaet\\_na\\_zhizn\\_kuzbassovtsev](https://kuzbass.aif.ru/health/begstvo_ili_vymiranie_kak_ekologiya_vliyaet_na_zhizn_kuzbassovtsev).

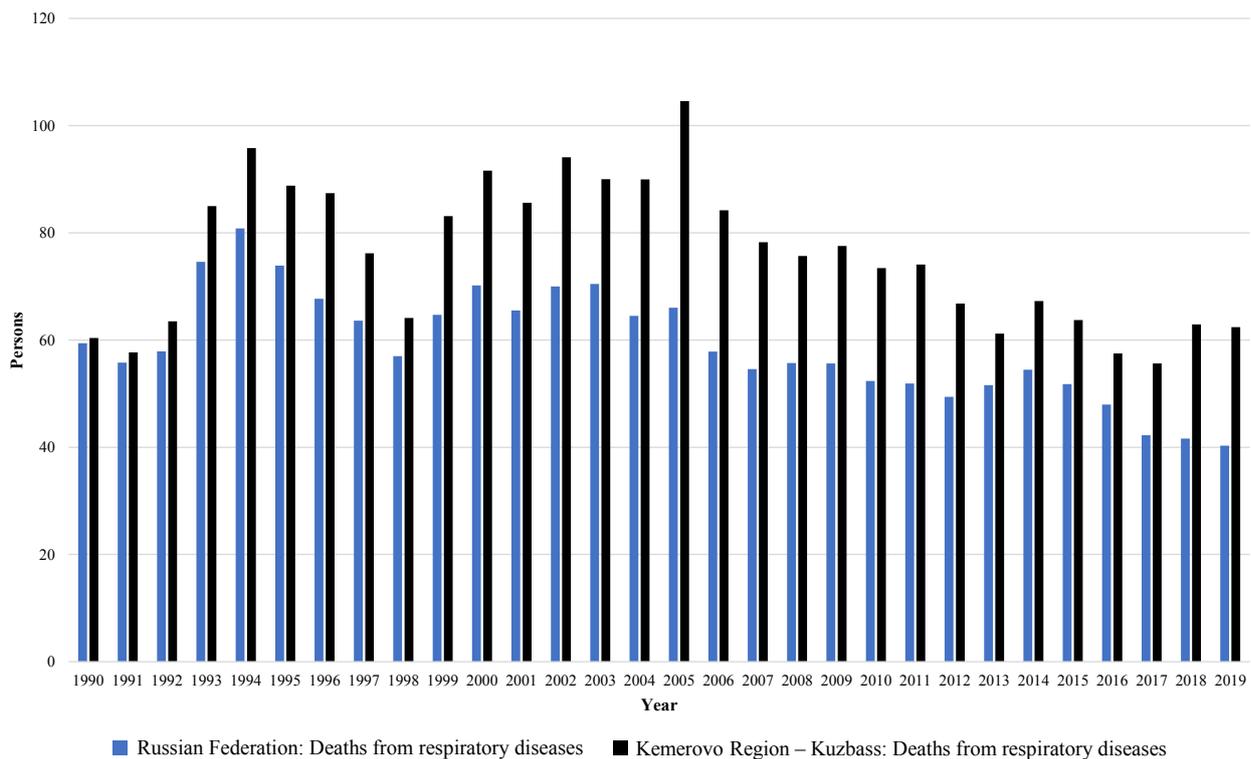
36. Rospotrebnadzor. *State Report “On the State of Sanitary and Epidemiological Welfare of the Population in the Russian Federation in 2019”*, posted June 2, 2020, p. 117, [https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT\\_ID=14933](https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT_ID=14933).

37. A. L. Khanin, O. P. Shabina, I. B. Viktorova. *Respiratory diseases in industrial region of Siberia: morbidity analysis on the example of the Kemerovo region. The Bulletin of Contemporary Clinical Medicine*, 2019; 12 (3), pp. 47-53. Accessed at <https://cyberleninka.ru/article/n/bolezni-organov-dyhaniya-v-promyshlennom-regione-sibiri-analiz-zabolevaemosti-na-primere-kemerovskoy-oblasti/viewer>.

in Kuzbass grew by almost 5% over the 2018 figure and reached 62.5 per 100,000 population, while the Russian average was registered at 39.5 per 100,000 population.<sup>38</sup>

Over the past nearly thirty years, annual respiratory disease mortality in Kemerovo Region has remained significantly and invariably higher than the average rate across the Russian Federation:<sup>39</sup>

### Mortality by major causes and specific causes of death per 100,000 population in Kuzbass and the Russian Federation: Deaths from diseases of the respiratory system



But the situation may be even worse than that.

As the authors of the 2019 study note, a survey earlier undertaken in the region under the guidelines of a Global Alliance against Chronic Respiratory Diseases (GARD) program showed that the real incidence and prevalence rates of respiratory diseases and chronic obstructive pulmonary disease in particular were dozens of times higher than seen in official statistical reports. The research, spearheaded by the Russian Academy of Medical Sciences and conducted in 2009 and 2010 in Mezhdurechensk (where the share of enterprises engaged in coal mining

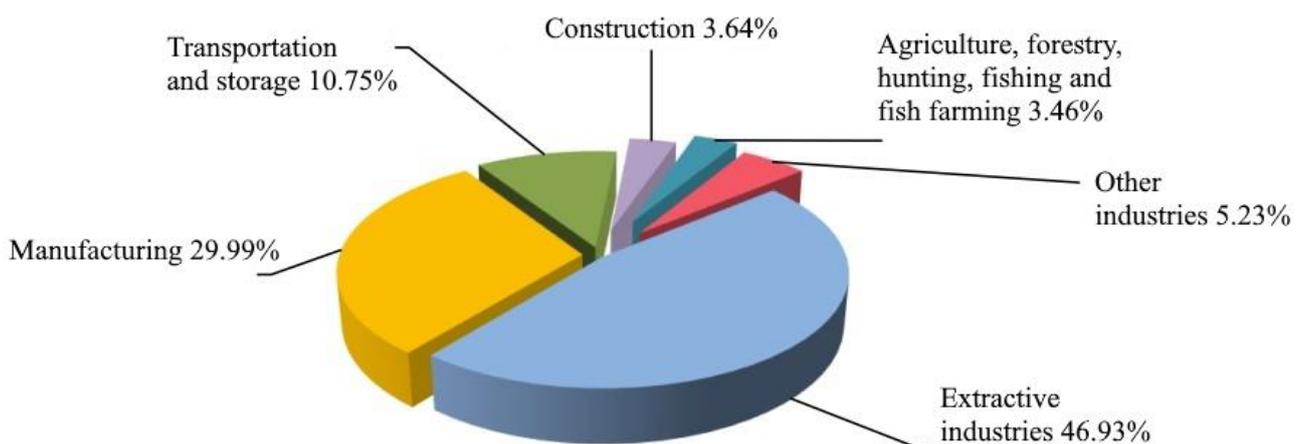
38. Rosstat. Natural movement of population by federal subject of the Russian Federation in January to December 2019 (posted May 5, 2020), [https://rosstat.gov.ru/free\\_doc/2019/demo/edn12-19.htm](https://rosstat.gov.ru/free_doc/2019/demo/edn12-19.htm). Information on mortality by major causes of death per 100,000 population by federal subject of the Russian Federation in January to December 2019.

39. The graph was built using open data published by Russia’s Unified Interagency Information and Statistics System (UIISS) for the indicator “Annual mortality by major causes and specific causes of death per 100,000 population,” <https://www.fedstat.ru/indicator/31270>. The rates are shown for all the years for which information was available in the source data.

and processing is 94%), revealed that almost half of 3,800 respondents reported having chronic lung conditions.<sup>40</sup>

In Rospotrebnadzor's report *On the State of Sanitary and Epidemiological Welfare of the Population in the Russian Federation in 2018*, Kuzbass is listed as a region with one of the highest proportions of enterprises with extremely poor sanitary and epidemiological well-being: 30.26%. This puts Kemerovo Region in second place behind the Republic of Crimea, where that proportion is 31.07%. The figure for the Russian Federation as a whole is 7.13%. "The most adverse working conditions that pose the biggest occupational disability risk are found at a number of enterprises engaged in mining and quarrying, metallurgy, mechanical engineering and shipbuilding, manufacturing of building materials, construction, agriculture, and transport operations," the report says.<sup>41</sup>

Workers employed in extractive industries represented the highest incidence of occupational illnesses across industries in 2018, or 47.59%.<sup>42</sup> In 2019, as shown below in the chart displaying occupational disease incidence by type of economic activity, the basic breakdown of industries by this parameter remained the same, and that proportion only decreased slightly, to 46.93%:<sup>43</sup>



In the 2018 ranking of regions with occupational illness incidence rates above the Russian average – 1.17 per 10,000 employed – Kemerovo Region, with its rate of 9.96 per 10,000 employed, was in third place nationally. In 2019, Kuzbass moved down to fourth place in the rating. Rospotrebnadzor has been registering a gradual decrease of this indicator in Kemerovo Region starting in 2013, but it remains significantly in excess of the average

40. A. L. Khanin, T. I. Chernushenko, G. V. Morozova, I. A. Savelyeva. Prevalence of respiratory symptoms and detection of chronic obstructive pulmonary disease in a mining town of Kuzbass region. *Pulmonologiya*, 2012. No. 3, pp. 59-62. Accessed at <https://journal.pulmonology.ru/pulm/article/view/81/80>. Of those questioned using the GARD Program Protocol, 58% were employed, 40% were exposed to workplace health hazards, 9% lived in houses with stove heating, and 41% were smokers. Among the respondents with respiratory symptoms, the number of smokers and those with exposure to occupational hazards was twice as high (74% and 82%, respectively). Translator's note: The Russian Academy of Medical Sciences was in 2013 merged into the Russian Academy of Sciences.

41. Rospotrebnadzor. State Report "On the State of Sanitary and Epidemiological Welfare of the Population in the Russian Federation in 2018," posted June 3, 2019, p. 104, [https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT\\_ID=12053](https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT_ID=12053).

42. *Ibid.*, p. 108.

43. Rospotrebnadzor. State Report "On the State of Sanitary and Epidemiological Welfare of the Population in the Russian Federation in 2019," posted June 2, 2020, p. 136, Fig. 104. Occupational disease incidence by main type of economic activity, %, [https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT\\_ID=14933](https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT_ID=14933).

Russian level: 8.64 per 10,000 employed in Kuzbass compared to 1.03 per 10,000 employed across Russia.<sup>44</sup>

In 2018, Kemerovostat data show, 67.1% of all workers in the region had exposure to harmful or hazardous conditions in the workplace.<sup>45</sup> The number of workers employed in coal mining that year was 9.2% of all workers in the region.<sup>46</sup>

# Air pollution

*– In the summer, you don't feel the exhaust that much, but in the winter, you can hardly breathe at all, especially in the morning on a frosty day, all that smoke hanging in the air. It sticks to your teeth, even. We wipe our windows and porch clean every morning. We wrote so many letters to the governor's environment deputy. I get my paper, I write to him. They'll send someone, check things out, and then reply: everything's alright in your area, the air is clean, the water is good, cut it out now.*

**Vladimir Peshkov, retiree, the village of Karakan,  
Belovo District**

In December 2018, Kemerovo Region government approved a regional project called *Clean Air*, which envisions by 2025 a 20.25% reduction in the atmospheric emissions of pollutants in Novokuznetsk and lowering air pollution levels in the city from “very high” to “elevated.”<sup>47</sup>

In the 2018 ranking of about 50 cities and urban districts of the Russian Federation characterized by the highest values of the indicator “Emissions of pollutants to the atmosphere from stationary sources,” Novokuznetsk District is in second place (behind Norilsk in Krasnoyarsk Krai). Among the federal subjects constituting the Siberian Federal District – which

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44. Rospotrebnadzor. State Report “On the State of Sanitary and Epidemiological Welfare of the Population in the Russian Federation in 2018,” posted June 3, 2019, p. 109, [https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT\\_ID=12053](https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT_ID=12053); State Report “On the State of Sanitary and Epidemiological Welfare of the Population in the Russian Federation in 2019,” posted June 2, 2020, p. 137, [https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT\\_ID=14933](https://www.rospotrebnadzor.ru/documents/details.php?ELEMENT_ID=14933).

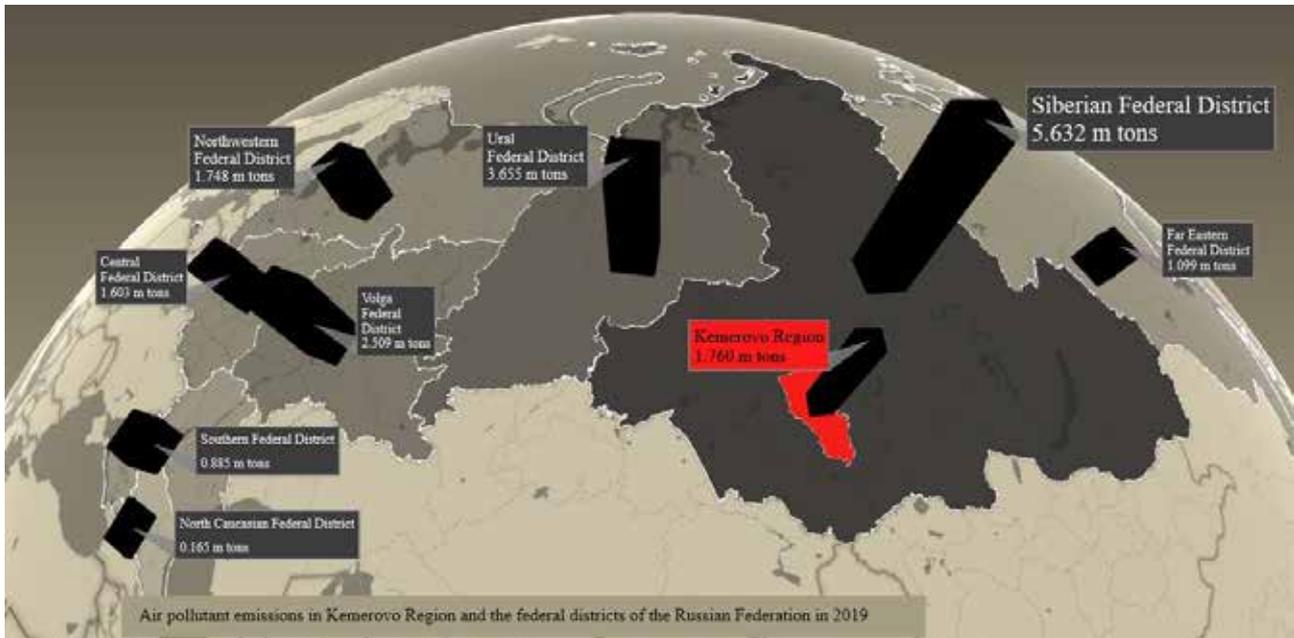
45. Kemerovostat. Number of employees engaged in jobs with hazardous and (or) dangerous working conditions. Publication date April 23, 2020, <https://kemerovostat.gks.ru/folder/38679>. Provided are annual statistics for 2015 through 2019, and the percentage share of those employed in jobs with hazardous and (or) dangerous conditions remained practically unchanged in that period.

46. Kemerovostat. Annual average number of employed by main type of economic activity. Publication date October 15, 2019, <https://kemerovostat.gks.ru/folder/38679>.

47. Clean Air, summary of regional project. Website of the Ministry of Natural Resources and Environment of Kuzbass, publication date September 18, 2019, <http://kuzbasseco.ru/nacionalnyj-proekt-ekologiya/regionalnyj-proekt-chistuj-vozdux/>. Translator's note: In accordance with documentation guidelines developed by the Russian Federal Service for Hydrometeorology and Environmental Monitoring (Rosgidromet) for the purposes of providing urban air pollution information to government agencies, population, and the general public, standardized air pollution assessments, based on a number of calculated indices, are made according to a four-grade scale ranging from “low” to “elevated” to “high” to “very high.”

leads Russia in the volume of pollutants emitted to the atmosphere in 2018 – Kemerovo Region also takes second place, behind Krasnoyarsk Krai.<sup>48</sup>

In 2019, the region’s enterprises released 1.760 m tons of pollutants to the atmosphere – about a third of all of the emissions of the Siberian Federal District and just slightly over the volume emitted by the entire Northwestern Federal District, whose territory is about 18 times the area of Kuzbass:<sup>49</sup>



Novokuznetsk leads the region in air pollution levels, but the situation is not much better in other cities, given, among other reasons, the specific features of the region’s geography and climate. In 2018, unfavorable meteorological conditions alerts – or “black sky” announcements, called so in reference to weather conditions that facilitate accumulation of industrial emissions in the atmosphere, in windless periods especially – were issued in the region’s capital, Kemerovo, 37 times and in Novokuznetsk and Prokopyevsk 18 times.<sup>50</sup> In 2019, “black sky” alerts, which require mandatory emissions decreases at enterprises in the affected cities, were issued 44 times in Kemerovo and 31 times in Novokuznetsk.<sup>51</sup>

48. Ministry of Natural Resources and Environment of the Russian Federation. State report “On the State of the Environment and Environmental Protection in the Russian Federation in 2018,” pp. 58, 592, [https://www.mnr.gov.ru/docs/o\\_sostoyanii\\_i\\_ob\\_okhrane\\_okruzhayushchey\\_sredy\\_rossiyskoy\\_federatsii/gosudarstvennyy\\_doklad\\_o\\_sostoyanii\\_i\\_ob\\_okhrane\\_okruzhayushchey\\_sredy\\_rossiyskoy\\_federatsii\\_v\\_2018\\_](https://www.mnr.gov.ru/docs/o_sostoyanii_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsii/gosudarstvennyy_doklad_o_sostoyanii_i_ob_okhrane_okruzhayushchey_sredy_rossiyskoy_federatsii_v_2018_/).

49. The visualization was built using data published on the website of Rospirodnadzor in statistical reports submitted to the agency’s regional offices in accordance with Form 2-TP (air) by organizations carrying out activities associated with adverse environmental impacts. Website of Rospirodnadzor, Report 2-TP (air) for 2019, update date July 2, 2020, <https://rpn.gov.ru/activity/reports-receiving/air/>. The data used are from the files titled “Balance for Federal Districts,” Section 1. Emissions of pollutants to the atmosphere, their neutralization and utilization, and “Balance by Russian Federation Subject and OKTMO Code,” Section 1. Total for pollutants emitted to the atmosphere in the reporting year. Map sources: <https://mydata.biz/>, OpenStreetMap, Mapzen.com. Note: The map reflects boundaries outlining Russia’s federal districts that were in effect before Zabaykalsky (Transbaikal) Krai and Republic of Buryatia, formerly part of the Siberian Federal District, were included in 2018 in the Far Eastern Federal District. Information on the area of the Northwestern Federal District and that of Kemerovo Region is available on the official websites of the Russian president’s plenipotentiary envoys to the respective federal districts at <http://szfo.gov.ru/district/> and <http://sfo.gov.ru/okrug/KEM/>. Translator’s note: The Russian acronym OKTMO stands for Russian Classification of Territories of Municipal Formations.

50. Ilya Nikolayev. Rezhim «chernogo neba» prodlii v gorodah Kuzbassa. *Kommersant*, December 3, 2019, <https://www.kommersant.ru/doc/4180077>. See also the following footnote.

51. Ministry of Natural Resources and Environment of Kuzbass. Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019, p. 60, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. The cited number of “black sky” alerts issued in 2018 and 2019 refers to unfavorable meteorological conditions announcements of hazard level 1, which stipulates 15% to 20% emissions decreases at enterprises. See, for instance: On adopting the Procedure of carrying out measures for regulation of emissions of harmful (polluting) substances into the atmosphere during periods of unfavorable meteorological conditions on the territory of Kemerovo Region (with amendments as of February 18, 2019), <http://docs.cntd.ru/document/412803375>.

Until two or three years ago, statistical records of emissions from stationary sources in the region were showing certain improvements starting in 2008, though both emissions figures and those reflecting pollutant capture and neutralization remained less encouraging than in the early 2000s.<sup>52</sup>

Year	Pollutants emitted to the atmosphere, in thousand tons	Pollutants captured and neutralized		Pollutants utilized	
		Total, in thousand tons	Percentage share in total amount of pollutants from stationary sources	Total, in thousand tons	Percentage share in total amount of pollutants captured and neutralized
2001	1,225	4,457	78	1,524	34
2002	1,241	4,679	79	1,474	32
2003	1,208	4,256	78	1,663	39
2004	1,167	4,289	79	1,231	29
2005	1,282	4,829	79	1,282	27
2006	1,311	5,122	80	1,731	34
2007	1,454	4,881	77	2,216	45
2008	1,503	5,040	77	2,201	44
2009	1,408	4,366	76	1,787	41
2010	1,411	4,823	77	2,173	45
2011	1,390	6,321	82	3,751	59
2012	1,360	5,334	80	2,943	55
2013	1,356	4,512	76,9	3,063	68
2014	1,332	4,636	78	3,248	70
2015	1,344	4,683	78	3,168	68
2016	1,349	4,234	76	2,389	56
2017	1,488	4,422	75	2,654	60

In 2018, emissions from stationary sources dropped from 1.488 m tons registered in 2017 to 1.383 m tons. But already in 2019 emissions soared to 1.760 m tons, as evidenced, for instance, by the report *On the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*, issued by the Ministry of Natural Resources and Environment of Kuzbass. Based on the changes in emissions volumes in the decade since 2009, the total amount of emissions from stationary sources has risen by 22.3%, says the report.<sup>53</sup>

Furthermore, where in 2018 72.1% of pollutants was captured and neutralized, the respective figure for 2019 is 65.8% – even as emissions rose dramatically that year.<sup>54</sup>

52. Kemerovostat. *Environment. Major indicators. Emissions and capture of air pollutants from stationary sources*. Publication date May 04, 2018, <https://kemerovostat.gks.ru/folder/38688>. The data shown pertain to emission sources with authorized annual emission limits exceeding 10 tons and, beginning in 2015, of 5 up to and including 10 tons if substances of hazard class 1 and 2 are present in the emissions.

53. Ministry of Natural Resources and Environment of Kuzbass. *Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*, p. 33, 34, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. Translator's note: The Ministry of Natural Resources and Environment of Kuzbass, formerly called the Department of Natural Resources and Environment of Kemerovo Region, acquired its current name as the Russian original of Ecodefense's report was being prepared. Its past annual reports on the state of the environment of Kemerovo Region bear the former name in the title page. For the reader's convenience, the agency will be referred to under its current name irrespective of whether the report focusing on 2019 or any of the previous years is cited.

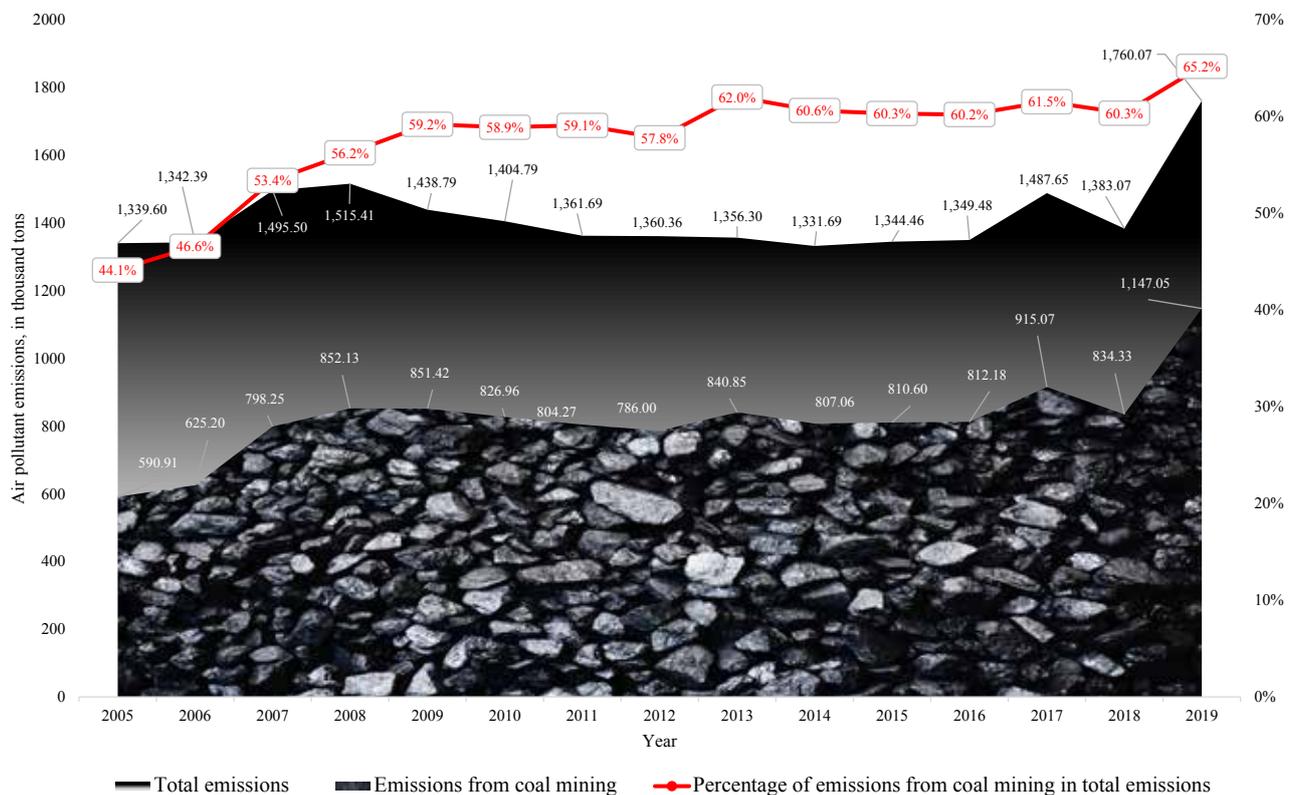
54. *Ibid.*, p. 36.

Altogether, according to the report, the region has 1,745 sites releasing pollutants to the atmosphere, with the overall number of controlled and fugitive stationary emission sources totaling 22,909 and a nomenclature of over 250 pollutants of various hazard classes emitted into the air in 2019.<sup>55</sup>

Stationary sources, as per 2019 data, account for 96.2% of emissions in Kemerovo Region, of which 65.2% – or 1,147,048 tons – are emissions from coal mining. “Coal mining enterprises are leading air pollution sources [in the region],” the report says.<sup>56</sup>

Records of coal mining emissions show that the industry’s share in total emissions from stationary sources in the region has been on a steady rise, growing from 44.1% in 2005 to 65.2% in 2019 – or by nearly a half. The total amount of emissions from coal mining enterprises increased in that period from 590,907 tons to 2019’s 1,147,048 tons – or almost double the figure of 2005:<sup>57</sup>

### Air pollution in Kemerovo Region: Total emissions from stationary sources and emissions from coal mining



55. *Ibid*, p. 35.

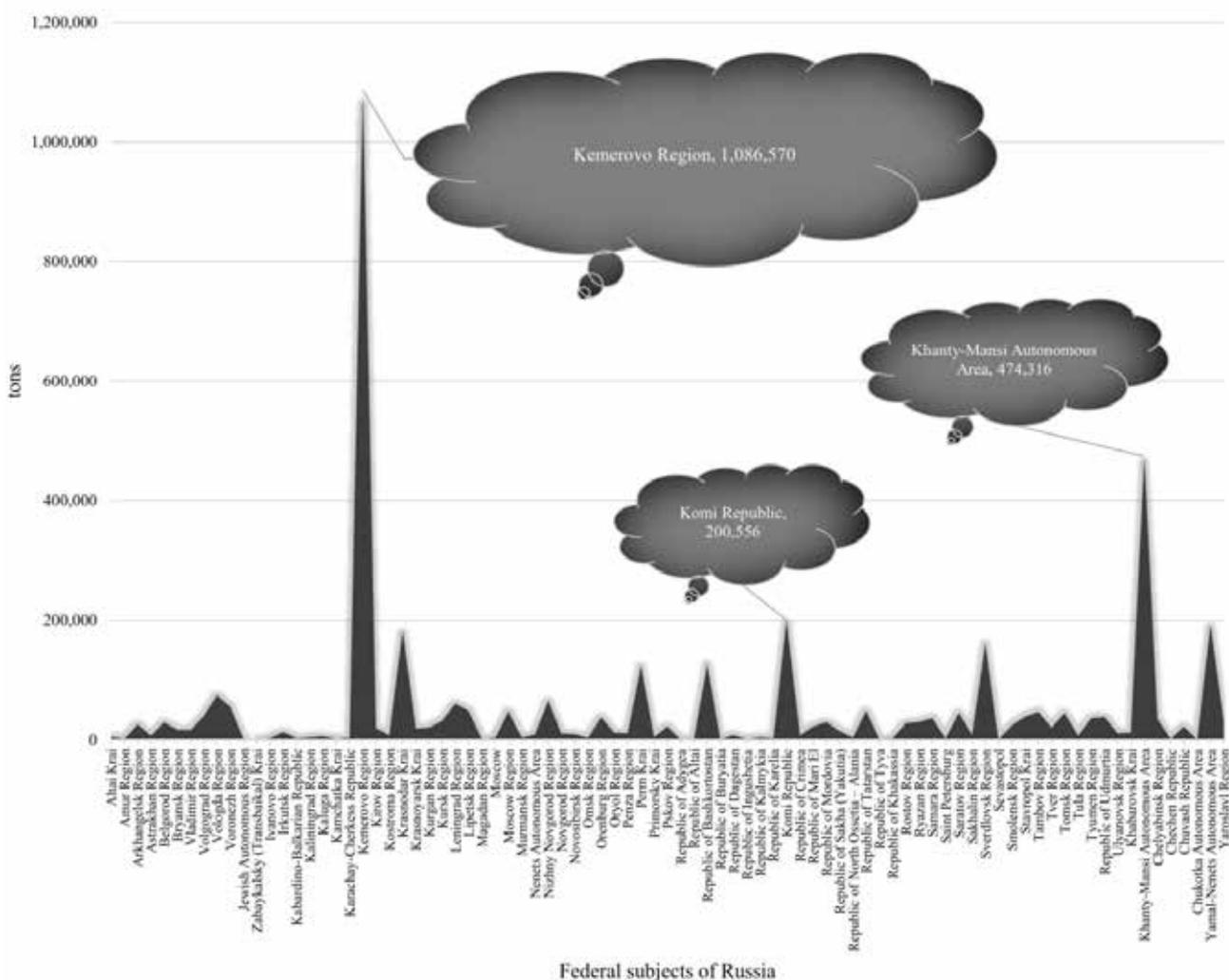
56. *Ibid*, pp. 32, 249. A year earlier, the share of stationary sources in the region’s total emissions was 85.5%. The report notes a considerable decrease in motor vehicle pollution in 2019 due to specific guidelines employed for estimations. At the same time, the share of the coal mining industry in the total volume of emissions from stationary sources showed an increase of about 5%, up from 60.3% recorded in 2018. See: Ministry of Natural Resources and Environment of Kuzbass. Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2018, pp. 32, 245, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

57. The graph was built using data published in annual reports by the Ministry of Natural Resources and Environment of Kuzbass on the state of the environment and environmental protection in Kemerovo Region for the years 2006 through 2019, available at the ministry’s website at <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. Note: Before 2017, emissions from coal mining were referred to in the ministry’s annual reports as emissions from “production of extractable fuel and energy resources.” Additionally, the report for 2019 notes that the “data for 2017 to 2019 do not fully compare with the data for previous years due to a switchover to an updated version of the Russian Classification of Economic Activities (OKVED 2).”

The lead, with over 50% in the total volume of recorded emissions from all stationary sources, belongs to methane, which, in its turn, is mostly released into the region’s atmosphere as a result of coal mining, the report notes. “The main sources of methane emissions at coal mining enterprises are return airshafts, gas suction plants, and gas drainage boreholes,” the authors write, with a reminder that “in its impact with regard to climate warming, methane is dozens of times more aggressive than carbon dioxide.”<sup>58</sup>

In methane emissions, Kemerovo Region is the unequivocal leader among all Russian regions, leaving its closest rivals – the Khanty-Mansi Autonomous Area and the Republic of Komi – trailing far behind:<sup>59</sup>

### Methane emissions in the Russian Federation in 2019



58. Ministry of Natural Resources and Environment of Kuzbass. Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019, pp. 44, 45, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

59. The graph was built using data published on the website of Rosprirodnadzor in statistical reports submitted to the agency’s regional offices in accordance with Form 2-TP (air) by organizations carrying out activities associated with adverse environmental impacts. Website of Rosprirodnadzor, Report 2-TP (air) for 2019, update date July 2, 2020, <https://rpn.gov.ru/activity/reports-receiving/air/>. The data used are from the file titled “Horizontal by Russian Federation Subject,” Section 2. Emissions of specific pollutants to the atmosphere.

In 2019, methane made up 61.7% of total emissions in the region, with carbon monoxide in second place with 16.1%, and solids, sulphur dioxide, and nitrogen oxides (in NO<sub>2</sub> equivalent) taking up 8.8%, 6.8%, and 5.3%, respectively.<sup>60</sup>

The highest amounts of emissions in 2019, as well as in the previous year, were recorded in Novokuznetsk – about 294,000 tons and Novokuznetsk District – about 317,000 tons. Their share of emissions from stationary sources in the region was 34.7%. These two municipalities are followed by Mezhdurechensk and Mezhdurechensk District with 204,329 tons, Leninsk-Kuznetsky District with 120,297 tons, Belovo with 106,607 tons, and Prokopyevsk District with 103,354 tons. Additionally, the largest increases in the volume of pollutants emitted from stationary sources occurred in 2019 in Mezhdurechensk and Mezhdurechensk District, where emissions were up by 145.0%, in Osinniki – by 132.2%, in Polysayevo – by 65.0%, in Myski – by 55.0%, in Belovo – by 53.4%, and in Prokopyevsk District – by 46.3%. To a large extent, the changes in emissions of pollutants in Kemerovo Region’s municipalities were due to an increase or decrease in the emissions of methane.<sup>61</sup>



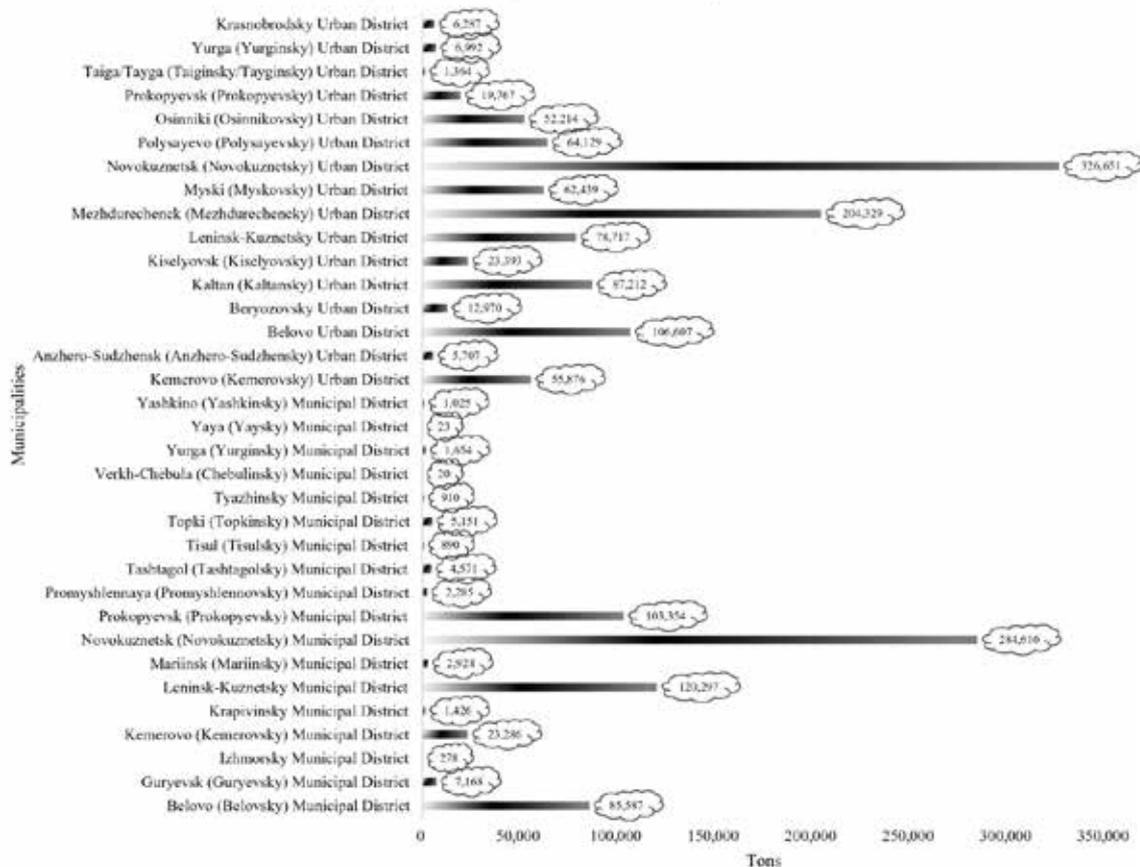
*Considerable amounts of dust are blown into the air during blasting operations.  
Photo: Nikolai Buzmakov.*

60. Ministry of Natural Resources and Environment of Kuzbass. Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019, p. 38, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

61. *Ibid.*, pp. 40-42.

The chart below shows contributions of Kuzbass municipalities to the 1.760 m tons of pollutants released by the region’s stationary sources in 2019:<sup>62</sup>

### Air pollutoin in municipalities of Kemerovo Region in 2019



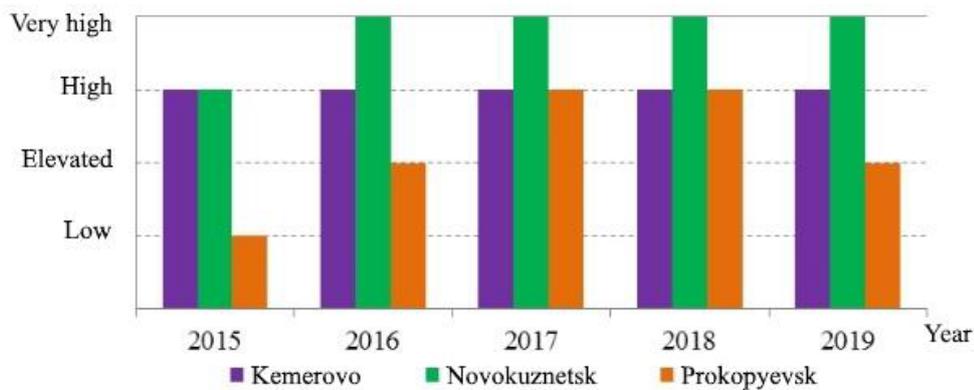
According to the report, the average annual amount of pollutants released per each resident of Kuzbass was 662 kg. The highest anthropogenic load was observed in Novokuznetsk District, or 6,320 kg per person, as well as in Leninsk-Kuznetsky, Prokopyevsk, and Belovo Districts and in the cities of Kaltan and Polysayevo. Over the past five years, emissions of pollutants from stationary sources have increased by 167 kg per one Kuzbass inhabitant and by 4,343 kg per one square kilometer of the region’s area.<sup>63</sup>

62. The graph was built using data published on the website of Rosprirodnadzor in statistical reports submitted to the agency’s regional offices in accordance with Form 2-TP (air) by organizations carrying out activities associated with adverse environmental impacts. Website of Rosprirodnadzor, Report 2-TP (air) for 2019, update date July 2, 2020, <https://rpn.gov.ru/activity/reports-receiving/air/>. The data used are from the file titled “Substances by Russian Federation Subject and OKTMO Code,” Section 1. Total for pollutants emitted to the atmosphere in the reporting year. Data on certain municipalities show small discrepancies with the above-cited data from the Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019, published on the website of the Ministry of Natural Resources and Environment of Kuzbass at <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. In particular, emissions in Novokuznetsk Urban District are registered in the amount of 326,651 tons, whereas the Kuzbass Natural Resources Ministry’s report gives a figure of 294,195 tons (in emission volumes listed by city, in the line “Novokuznetsk”); in Kemerovo Urban District, 55,876 tons are registered versus 55,834 tons in the ministry’s report (provided in the line “Kemerovo”); and Novokuznetsk Municipal District’s emissions are given at 284,610 tons versus 317,066 tons in the ministry’s report (in emission volumes listed by district, in the line “Novokuznetsk District”). Data for the other municipalities match between the documents. In sum total, according to Rosprirodnadzor, the region’s municipalities emitted 1,760,114 tons of pollutants in 2019, compared to 1,760,071 tons in the ministry’s data. The variations may be accounted for by differences in the administrative boundaries used to present data for the mentioned municipalities: In both documents, emissions recorded for the city of Novokuznetsk and Novokuznetsk District yield the same combined total of 611,261 tons. The source cited in the Kuzbass Natural Resources Ministry’s report for the municipalities’ emission data: South-Siberian Interregional Directorate of Rosprirodnadzor. Translator’s note: For the reader’s convenience, the names of Kemerovo Region’s municipalities in the graph are rendered in English using both the names of the municipalities’ current or former administrative centers (which may or may not be part of the respective municipalities) and the transliterated versions of the districts’ names (which in certain cases coincide with those of the administrative centers); the latter are given in brackets.

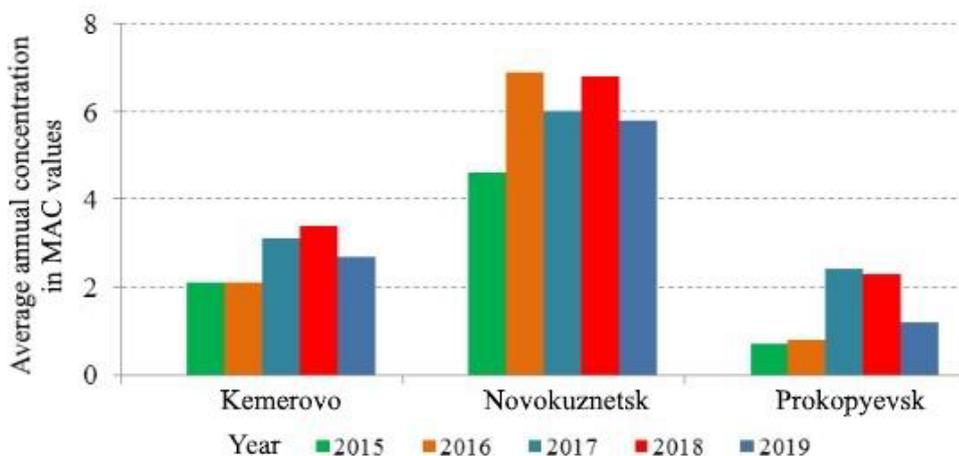
63. In 2018, the mean annual anthropogenic load in Kuzbass was 517 kg per person, and the highest value was also observed in Novokuznetsk District: 5,581 kg per person. Ministry of Natural Resources and Environment of Kuzbass. Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019, pp. 42, 44, Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2018, p. 42, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

To put this into perspective, on average in Russia, the specific value of emissions of the most common pollutants from both stationary and mobile sources as calculated per capita was in 2018 220 kg per person and the same calculated per unit of the country’s area was 1,888 kg per square kilometer.<sup>64</sup>

The report provides data on atmospheric air quality monitoring in Kemerovo Region received from the state air pollution network – eighteen stationary sites in Kemerovo, Novokuznetsk and Prokopyevsk – with information on mean annual concentrations, in values expressed in MAC, of such substances as benzo(a)pyrene, nitrogen dioxide, ammonia, formaldehyde, carbon monoxide, suspended particulates, soot (black carbon), sulphur dioxide etc. In 2019, the level of air pollution was assessed as “high” in Kemerovo, “elevated” in Prokopyevsk, and “very high” in Novokuznetsk. In Prokopyevsk, the “elevated” pollution level was assessed based on the concentration of dust (suspended particulates), and the “high” level in Kemerovo and “very high” in Novokuznetsk based on the content of benzo(a)pyrene:<sup>65</sup>



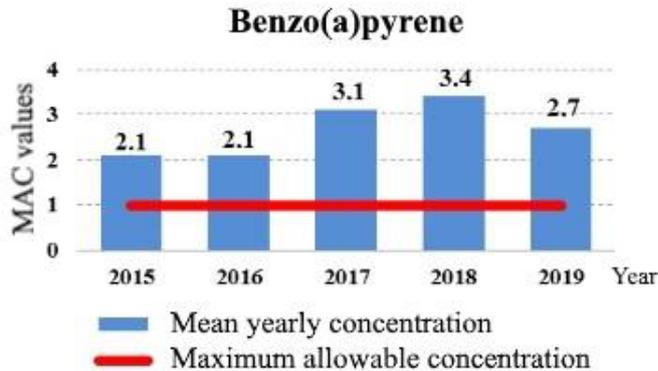
Data for 2019, as well as for the previous few years, show the dirtiest was the air of Novokuznetsk: year after year, the average annual concentrations of benzo(a)pyrene in this city exceed MAC by 4 to 7 times, as demonstrated by the chart of benzo(a)pyrene pollution below:<sup>66</sup>



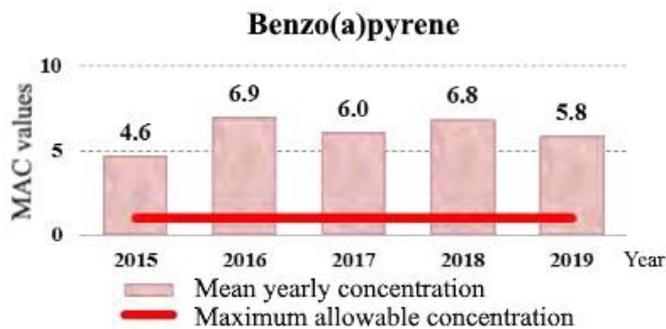
In Novokuznetsk, Kemerovo, and Prokopyevsk, the levels of benzo(a)pyrene in the air decreased slightly in 2019 compared to the previous year. In Kemerovo, the MAC value for benzo(a)pyrene was exceeded by 2.7 times against 3.4 times in 2018, and, as in the previous year, the maximum mean monthly concentrations of benzo(a)pyrene were recorded in Kirovsky District of the city – 14.6 MAC in February 2019 and 20.5 MAC in December 2018.<sup>67</sup>

However, as seen in the charts below, despite the decrease of 2019, benzo(a)pyrene statistics cannot be said to be revealing a steady downward trend.

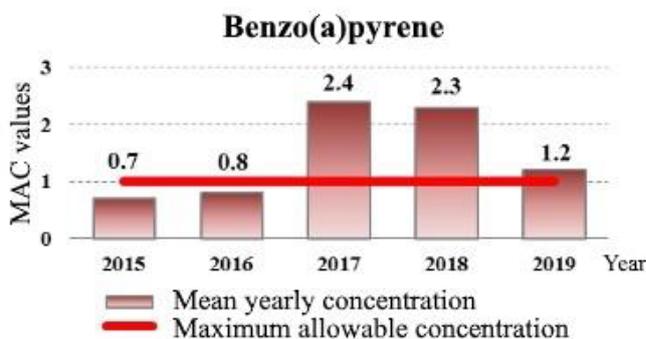
Mean yearly benzo(a)pyrene concentrations in Kemerovo in 2015 to 2019, in MAC values:<sup>68</sup>



Mean yearly benzo(a)pyrene concentrations in Novokuznetsk in 2015 to 2019, in MAC values:<sup>69</sup>



Mean yearly benzo(a)pyrene concentrations in Prokopyevsk in 2015 to 2019, in MAC values:<sup>70</sup>



68. Ibid, p. 53. Fragment of Fig. 2.10. Changes in mean annual concentrations of main pollutants in the city of Kemerovo, in MAC values. Cited source: data from Kemerovo Center for Hydrometeorology and Environmental Monitoring, branch of Federal State Budgetary Institution West-Siberian Office for Hydrometeorology and Environmental Monitoring.

69. Ibid, p. 56. Fragment of Fig. 2.11. Changes in mean annual concentrations of main pollutants in the city of Novokuznetsk, in MAC values. Cited source: data from Kemerovo Center for Hydrometeorology and Environmental Monitoring, branch of Federal State Budgetary Institution West-Siberian Office for Hydrometeorology and Environmental Monitoring.

70. Ibid, p. 59. Fragment of Fig. 2.12. Changes in mean annual concentrations of main pollutants in the city of Prokopyevsk, in MAC values. Cited source: data from Kemerovo Center for Hydrometeorology and Environmental Monitoring, branch of Federal State Budgetary Institution West-Siberian Office for Hydrometeorology and Environmental Monitoring.

The Ministry of Natural Resources and Environment of Kuzbass does not provide in its report data on whether and to which extent air pollutants exceed MAC values in other cities and municipalities of the region, but a somewhat more comprehensive picture of air pollution in Kuzbass can be obtained from a 2018 study by Kuzbass scientists who classed different areas of the region according to the observed pollution levels and self-cleaning ability of the atmosphere.<sup>71</sup>

The basis for their assessment of atmospheric pollution in the region was statistics on emissions and information on pollutant concentrations in the air received from air monitoring sites – including route sites stationed along highways, in areas where observation at stationary sites is not carried out. These data are from the periods between 2003 and 2014 (emissions statistics) and between 2007 and 2014 (concentrations exceeding MAC values). However, as was shown above, the situation with pollution in Kemerovo Region – where emissions from stationary sources are concerned in any case – has not improved significantly since 2014. And, in terms of the highest pollution levels, based on the results of the typing analysis described in the article, the leader, as might be expected, is the territory comprising Prokopyevsk, Novokuznetsk, and Mezhdurechensk Districts (in the central part of the region). Here, typical for a number of localities and for certain pollutants are concentrations exceeding MAC levels by 5 or 6 times, including concentrations significantly in excess of MAC of carcinogenic substances (black carbon (soot), benzo(a)pyrene, lead, etc.). Here, also, because of the specific formation of the settlement system – with company towns organized around their single industrial employer as the planning principle – is where about 70% of the region's population lives.

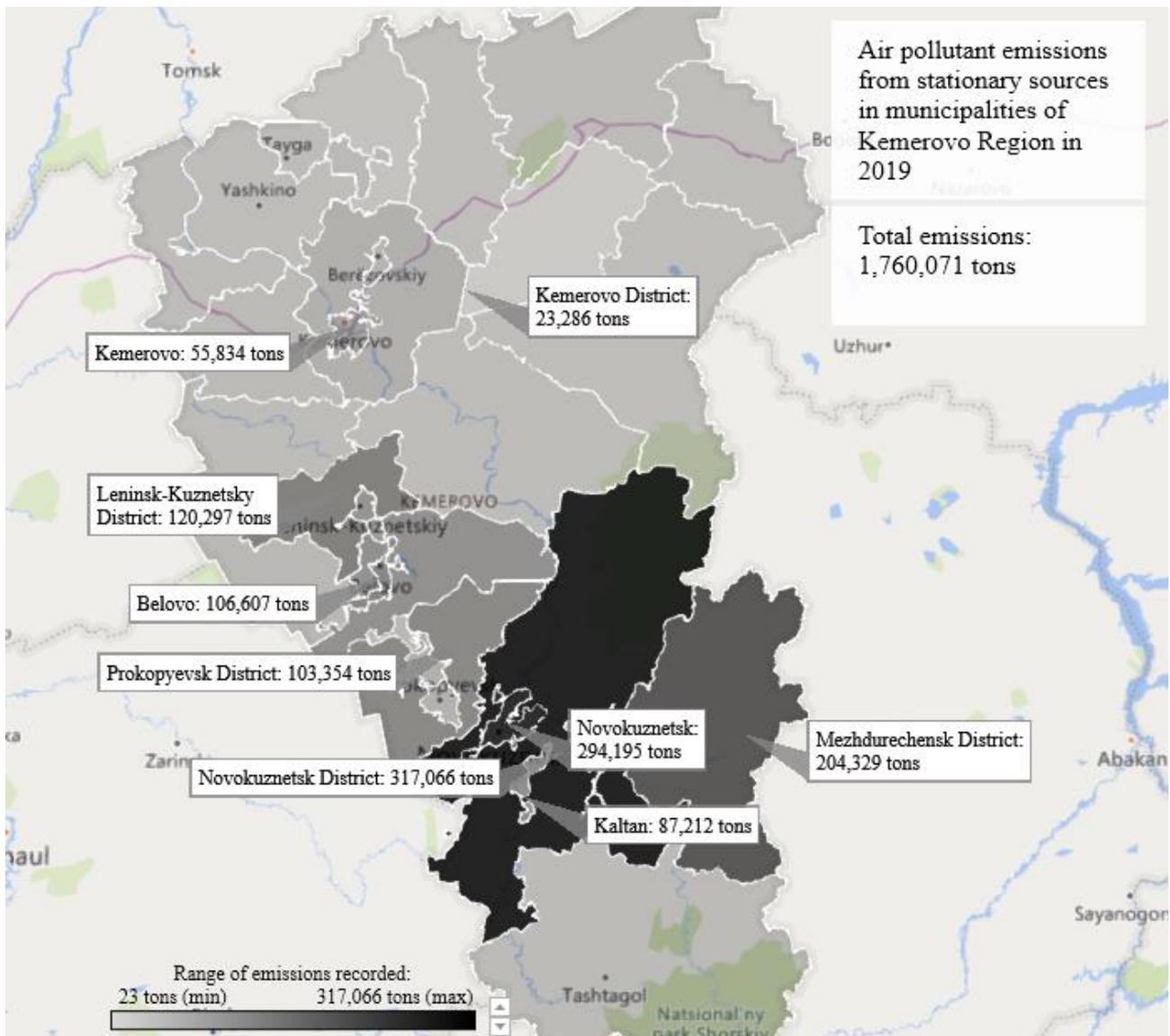
More specifically, in Leninsk-Kuznetsky, Guryevsk, and Belovo Districts – the second most polluted area of the region, in the north of the central part – MAC values, according to monitoring conducted along the highways, were exceeded for suspended particulates, carbon monoxide, nitrogen dioxide, phenol, formaldehyde, black carbon (soot), and lead and its compounds. In neighboring Prokopyevsk, Novokuznetsk, and Mezhdurechensk Districts, added to this list were sulphur dioxide and – taking stationary observations into account – fluoride compounds and benzo(a)pyrene. The authors note, furthermore, that a major part of the most populated area, much like the primary industrial complexes, is located within the geological depression, and harmful substances emitted by enterprises do not dissipate and are not carried away by the wind, but settle here, in the basin, creating a photochemical smog.

The air pollution overview of the region described in the study can be observed today, as well, on a map of Kuzbass compiled based on the distribution of emissions from stationary sources across Kemerovo Region's municipalities in 2019, where the darkest areas reflect the highest emissions values:<sup>72</sup>

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71. T. V. Leshukov, Yu. V. Lesin. *Estimation of pollution and self-cleaning ability of the atmosphere of the Kemerovo region. Vestnik Kuzbasskogo gosudarstvennogo tehnikeskogo universiteta (Bulletin KuzSTU/Bulletin of the Kuzbass State Technical University)*, 2018. No. 6, pp. 20-28. Accessed at <https://cyberleninka.ru/article/n/otsenka-zagryaznennosti-i-samoochischayuscheysya-sposobnosti-atmosfery-kemerovskoy-oblasti/viewer>.

72. The visualization was built using data published in the Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019, pp. 41, 42, Table 2.6. Emissions of pollutants from stationary sources by administrative territory; cited source: South-Siberian Interregional Directorate of Rosprirodadzor. Website of the Ministry of Natural Resources and Environment of Kuzbass, <http://kuzbassec.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. Map sources: <https://mydata.biz/>, OpenStreetMap, Mapzen.com. Data provided in the ministry's annual reports on the state of the environment and environmental protection in Kuzbass (available at <http://kuzbassec.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>) detailing information on emissions in the region's administrative territories in the period of 2014 to 2018 show an almost unvarying pattern of distribution of atmospheric pollution across the region's municipalities, where, year in and year out, the worst pollution occurs in the south-central part of the region, which includes Prokopyevsk, Novokuznetsk, Mezhdurechensk, Leninsk-Kuznetsky, and Belovo Districts.



Worse, Novokuznetsk District sees overlapping of emissions from towns located in this area, and on top of that, the territory is affected by emissions from neighboring Prokopyevsk and Mezhdurechensk, say researchers from the Novokuznetsk branch of Kemerovo State University in their study *Anthropogenic Environmental Load as a Factor Shaping the Quality of Life of the Population of Industrial Kuzbass*. As in the study described above, the paper’s authors ranked the region’s municipalities based on pollution levels, and the assessment they made for the anthropogenic load in Novokuznetsk and Novokuznetsk District was “critical.” In absolute gross emissions figures (about 40% of Kuzbass’s total), “the area is unparalleled in the region”, the authors say. In addition to the area’s main polluters – metallurgical companies – significant contributions to atmospheric pollution are made by the energy sector (combined heat and power plants and coal-fired power plants) and the growing coal production. Belovo, Leninsk-Kuznetsky, Prokopyevsk, and Mezhdurechensk Districts were placed in the group with a “severe” anthropogenic load due to the emissions from the coal mining and power generation industries (as well as, in the case of the latter two, emissions from small boiler houses). A number of municipalities that do not have large industrial centers suffer from emissions released by their neighbors with higher pollution levels.<sup>73</sup>

73. V. A. Ryabov, P. S. Mamasyov, N. T. Egorova. *Anthropogenic load on the environment as a factor forming the quality of life of the population of the industrial Kuzbass. Ekologiya urbanizirovannykh territoriy*, 2018. No. 2, pp. 84-90. Accessed at <https://cyberleninka.ru/article/n/antropogennaya-nagruzka-na-prirodu-sredu-kak-faktor-formiruyuschiy-kachestvo-zhizni-naseleniya-industrialnogo-kuzbassa/viewer>.

As was mentioned earlier, the study by the Hygiene and Epidemiology Center of Kemerovo Region and the Kemerovo State Medical Academy – which noted a twofold increase in the incidence of congenital malformations and developmental abnormalities in newborns from 2005 to 2012 (the high-risk area, in the authors' estimation, were the cities of Kemerovo, Kiselyovsk, Novokuznetsk, Prokopievsk, and Yurga, as well as Kemerovo, Krapivinsky, Mariinsk, and Tashtagol Districts) – concluded that there were “credible correlational dependencies with a strong direct link between the congenital anomaly rates and the total volumes of atmospheric emissions of pollutants from stationary sources,” including emissions of gaseous and liquid substances, hydrocarbons, and methane. In particular, the authors wrote, a correlation was established between the congenital malformation prevalence rate and emissions from mining enterprises.<sup>74</sup>

Another indicator of high pollution levels in the air of Kuzbass is black snow, which regularly appears in the cities and districts of the region. In February 2019, the newscast *Vesti. Kuzbass*, a local segment of the federal Russia 1 television channel's news broadcast, aired a story about black snowfall in Kiselyovsk, a town also located in the central part of the region, near Prokopyevsk. The story named the coal preparation plant Cherkasovskaya as the culprit responsible for the severe environmental situation in the town.<sup>75</sup> In mid-March, the Kemerovo Regional Prosecutor's Office said that after reports in the media about black snow falling in Kiselyovsk and also in Prokopyevsk – which was attributed to coal dust pollution in these areas – inspections were carried out at the coal preparation plant Cherkasovskaya in Kiselyovsk and central coal preparation plant Prokopyevskaya in Prokopyevsk. Earlier, two criminal cases had been initiated by the police under Part 1, Article 251 of the Criminal Code of the Russian Federation, “Pollution of the Atmosphere.” The two enterprises, the prosecutors' statement said, “are conducting their business operations within the bounds of a residential area, including those of taking delivery and shipping of coal. As they are, exceedance is being permitted of standards for emissions of harmful (polluting) substances to the atmosphere set for enterprises with regard to suspended particulates (dust), as well as black carbon (soot).”<sup>76</sup>

In June 2019, a video address recorded by despondent Kiselyovsk residents made headlines worldwide as they asked Canadian Prime Minister Justin Trudeau to grant them environmental asylum. In a town where nine opencast coal mines are operating within city limits, the residents said in their appeal, people are forced to live inside a permanent environmental disaster zone, are perishing from illnesses, and are unsuccessful in their attempts to secure sufficient resettlement compensations from the coal mining companies. The companies are relying on obsolete environmental norms, which had been adopted before coal production volumes increased many times over, the residents said. “We can be useful to Canada, because in Russia, we have been simply forgotten, we have become unnecessary people, unneeded by anyone,” the video address said.<sup>77</sup>

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74. Bachina A. V., Koskina E. V., Glebova L. A., Popkova L. V. *The Hygiene and Epidemiology Center of Kemerovo Region and the Kemerovo State Medical Academy, Kemerovo. Ecological and Hygienic Aspects of Congenital Malformation's Forming in Kuzbass. Mat i ditya v Kuzbasse, 2015. No. 1 (60). Accessed at <https://cyberleninka.ru/article/n/ekologo-gigienicheskie-aspekty-formirovaniya-vrozhdennyh-porokov-razvitiya-v-kuzbasse/viewer>.*

75. *Zhiteli Kiselyovska zhaluyutsya na cherny sneg iz-za OF «Cherkasovskaya».* YouTube channel *Vesti. Kuzbass*, February 12, 2019, [https://www.youtube.com/watch?v=ar\\_PnV5brjs](https://www.youtube.com/watch?v=ar_PnV5brjs).

76. *On the results of an inspection carried out with respect to black snowfall in Kiselyovsk and Prokopyevsk.* Website of the Prosecutor's Office of Kemerovo Region – Kuzbass. Publication date March 12, 2019, <http://www.kemprok.ru/38688.htm>.

77. *Kiselyovsk residents seek asylum from the Prime Minister of Canada.* YouTube channel *Novosti Kiselyovska*, June 8, 2019, <https://www.youtube.com/watch?v=1Hru0InEvD4>.

In Kiselyovsk, according to data from the Federal Service for Supervision of Natural Resources (Rosprirodnadzor), cited by the Ministry of Natural Resources and Environment of Kuzbass in its 2018 annual report, the total volume of atmospheric emissions of pollutants from stationary sources went up by 73.9% (or 9,973 tons) compared to 2017, soaring to 23,471 tons from the previous year's 13,498 tons. In 2019, the overall volume of stationary pollutant emissions in the city decreased only slightly, to 23,393 tons.<sup>78</sup>

Notably, whereas statistics on pollution in the region's larger cities are available in official sources, finding pollution data is a more challenging task when it comes to smaller localities. Many villages and small towns are being affected by coal mining operations in their vicinity – such as, for instance, Belovo District's village of Karakan, which is surrounded by three opencast coal mines: Permyakovsky, Vinogradovsky, and Karakansky. The villagers believe their well-being is suffering from the impact of the coal mining conducted nearby, but the lack of concrete data makes it very difficult to assess the degree of environmental risk exposure for the people living here.

Atmospheric pollution in the region apparently has its effect on the well-being of forests as well – in particular, those in the Kuznetsk Alatau Nature Reserve, one of Kuzbass's best-known protected natural areas, where, according to the annual report by the regional Ministry of Natural Resources, monitoring studies continued in 2019 evaluating the health of cedar and fir stands, with tests sampling the content of toxic pollutants in the needles.

The studies showed that healthy trees constituted 15% and 16% for the firs and the cedars respectively. Most of the trees – 38.7% of the firs and 42% of the cedars – were classified as “weakened.” Just like in 2018, a common characteristic noted for all the fir sites – including the young growth – was the presence of branches with rust-colored needles in the crowns. A slow decline in the health of the stand-forming species can be observed, the report says.

In 2019, just like the year before, chemical tests were conducted of three samples of cedar needles and two of fir needles. In the previous year, sulphur content in all samples was, despite a slight decrease, still significantly in excess of the permissible level. “In 2018, the state of the environment at all the sites in the studied area has been assessed as “critical.” The considerable degree of deviation from the norm this year has to do with the general depressive trend in the condition of the environment,” the Kuzbass Natural Resources Ministry's report for 2018 said. In 2019, sulphur content in all samples rose dramatically and exceeded the maximum permissible level by 3.6 to 5.4 times.<sup>79</sup>

The website *Protected Areas of Russia*, a nature reserve directory and information resource run by the nonprofit non-governmental Biodiversity Conservation Center, offers in its section on the Kuznetsk Alatau a fragment of a 2000 publication where the state of the reserve's forests was estimated as “far from normal,” with forest degradation of various degrees observed across a considerable area of the reserve. Sporadic degradation, trees drying up, and yellowing needles started to show in the reserve already in the late 1980s. In the 1990s, scientists summed up the

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78. Ministry of Natural Resources and Environment of Kuzbass. *Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2018*, p. 309, *Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*, p. 309, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

79. Ministry of Natural Resources and Environment of Kuzbass. *Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2018*, pp. 215, 216; *Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*, pp. 221, 222, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

results of forest health monitoring studies by concluding that the forests were deteriorating due to the impact of air emissions from the industrial clusters of Kuzbass: “Air masses, polluted with phytotoxic substances (mainly, sulphur and nitrogen oxides), are transported by the prevailing winds to the western macroslopes of the mountain ridges, but rather than rolling over them, they get caught in what could be termed “orographic traps” at the sources of the hydrological network.”<sup>80</sup>

# Water pollution

– *We don't drink water in the village, we each bring water from some place. I buy water in the city, twenty five-liter bottles. But those who don't have a car, what will they do? Local water, it's not just stinky and rusty. It bubbles, and it has oily film on top.*

**Vladimir Peshkov, retiree, the village of Karakan,  
Belovo District**

– *So, OK, there's this pond near the summer houses, people swim there. But then you get out of the water, and it's like you're covered with dark particles all over. They're a bit oily. They get washed off alright, though.*

**From conversations with Kuzbass residents**

According to the data cited in the study *Anthropogenic Environmental Load as a Factor Shaping the Quality of Life of the Population of Industrial Kuzbass*, Kemerovo Region accounts for 25% of all the polluted and partially treated effluents generated in the Siberian Federal District (taking second place among the district's regions) – or 3.21% of the total volume of wastewaters generated in Russia.

To put this in perspective, the territory of Kemerovo Region constitutes 1.9% of the area of the Siberian Federal District and 0.6% of the total area of the Russian Federation.<sup>81</sup>

“The many years of polluted effluent discharges have reduced to a minimum the self-purification

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80. Website of the Protected Areas of Russia nature reserve information resource and directory of the nonprofit non-governmental Biodiversity Conservation Center. The Kuznetsk Alatau, State of the ecosystems, <http://oopt.info/kalatau/ecosys.html>. Cited source: A. A. Vasilchenko, P. V. Baranov, T. E. Buko, Al. A. Vasilchenko, Z. A. Vasilchenko, T. N. Gagina, L. A. Gorshkova, N. V. Demidenko, N. V. Skalon. Zapovednik «Kuznetsky Alatau». Zapovedniki Rossii. Zapovedniki Sibiri. II. – M., Logata. 2000, pp. 110-121.

81. Information from the official website of the Russian president's plenipotentiary envoy to the Siberian Federal District, <http://sfo.gov.ru/okrug/KEM/>.

capacity of many rivers and water bodies and have resulted in a deficit of clean water; certain bodies of water have been taken out of economic use,” the authors of the 2018 study write. In 2016, data shown in the study reveal, discharged with wastewaters in the region were some 280 m cubic meters of pollutants, including the main ones – sulphates, chlorides, nitrates, ammonium nitrogen, phenol, suspended solids, readily oxidizable organic substances (BOD<sub>5</sub>), nitrogen compounds, oil products, and metal compounds, as well as specific pollutants – acetone, formaldehyde, methanol, cyanides, and rhodanides, among others. Just as they did with air pollution, the researchers classed the region’s municipalities into four groups: those with a “minimal,” “adverse,” “severe,” or “critical” anthropogenic load on water bodies. Mezhdurechensk District was placed into the group characterized by a “severe” anthropogenic load, while Kemerovo and Novokuznetsk Districts were included in the group where the anthropogenic load was deemed “critical.” The principal polluters in Mezhdurechensk District were the coal industry and the housing and utilities infrastructure, the study said, and those in Kemerovo and Novokuznetsk Districts were the coal, metallurgy, and energy sectors.

“Coal operations within the areas of industrial and transport infrastructure have an especially pronounced detrimental effect on the region’s surface waters and groundwaters,” the study says. “Mining of coal deposits leads to the destruction of forests, reduction in the depth and density of fertile soils, redirection or elimination of river channels due to the construction of roads, sludge impoundments, settling ponds, and refuse piles formed at coal storage yards, and disruption of the groundwater regime.” The main pollutants released by coal enterprises are oils and petroleum products, nitrogen-containing compounds, chloride ions, sulfate ions, and heavy metals (nickel, copper, zinc, manganese, iron, and cobalt). The study names the rivers Tom and Inya as the most polluted and points out that as a result of discharges of insufficiently treated effluents into the region’s principal river, the number of substances with concentrations that exceeded MAC values either periodically or on a regular basis ranges between 4 and 13. As to the Inya, the authors say, that river has practically lost its properties as a natural water source.<sup>82</sup>

In the section describing the condition of Kemerovo Region’s surface waters and groundwaters of its annual report for 2019, the Ministry of Natural Resources and Environment of Kuzbass, likewise, states that the largest volume of effluent, passthrough, and other waters is discharged into the basin of the Tom:<sup>83</sup>

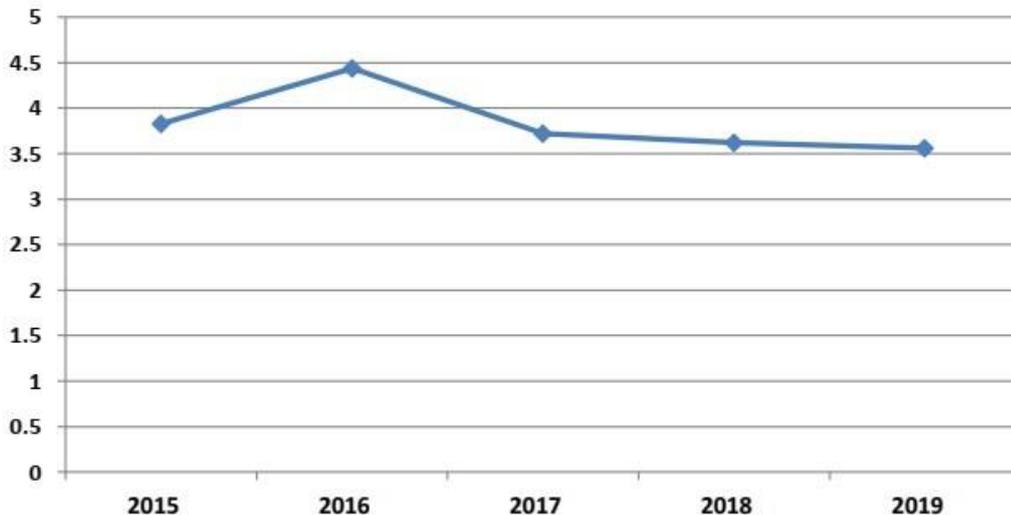
### Discharges of effluent, passthrough, and other waters into surface water bodies, by river basin

Water body name	Wastewater discharges by year, in million cubic meters			
	2016	2017	2018	2019
Tom	1,532.32	1,547.06	1,386.66	1,357.49
Inya	94.91	96.59	101.08	106.94
Chumysh	12.13	13.73	11.61	10.51
Chulym	41.62	46.20	40.20	39.49
<b>Total</b>	<b>1,680.98</b>	<b>1,703.58</b>	<b>1,539.55</b>	<b>1,514.43</b>

82. V. A. Ryabov, P. S. Mamasjov, N. T. Egorova. *Anthropogenic load on the environment as a factor forming the quality of life of the population of the industrial Kuzbass. Ekologiya urbanizirovannyh territoriy*, 2018. No. 2, pp. 84-90. Accessed at <https://cyberleninka.ru/article/n/antropogennaya-nagruzka-na-prirodnuyu-sredu-kak-faktor-formiruyuschij-kachestvo-zhizni-naseleniya-industrialnogo-kuzbassa/viewer>.

83. Ministry of Natural Resources and Environment of Kuzbass. *Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*, p. 131, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. Table 3.8. Cited source: data from the Kemerovo Region Water Resources Department of the Upper Ob Water Basin Directorate.

Near the village of Slavino, downstream from Novokuznetsk, water in the Tom – despite its quality improving from Class 4A, “dirty,” as of 2018, to Class 3B, “very polluted,” as of 2019 – remains the most polluted within the controlled river stretch, the report says. Provided also is a graph showing changes in the Normalized Combinatory Water Pollution Index (NCWPI) of the Tom downstream from Novokuznetsk over the past five years:<sup>84</sup>



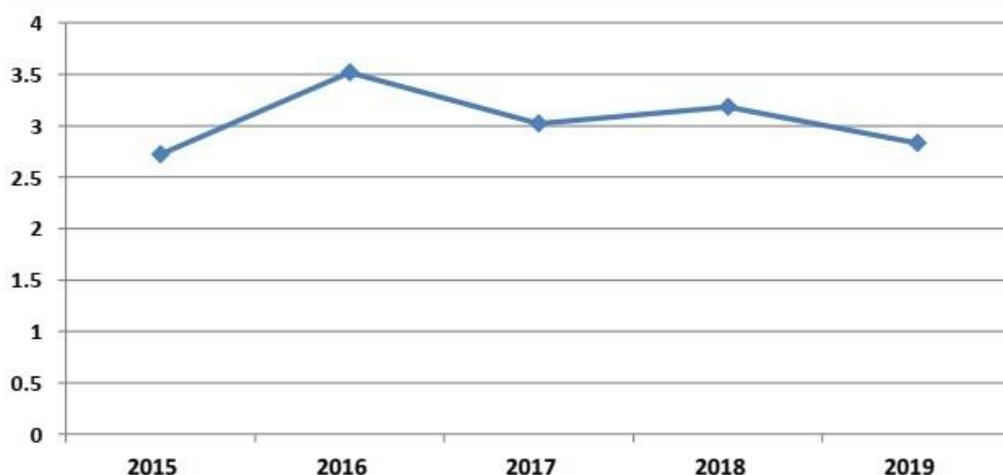
The largest share in the overall assessment of the degree of water pollution at this monitoring site is provided by ammonium nitrogen, nitrite nitrogen, total iron, oil products, and manganese. In 2019, the average annual concentrations of ammonium nitrogen exceeded MAC values by 2 times, the same for nitrite nitrogen by 3.4 times, oil products by 1.4 times, total iron by 2.1 times, and manganese by 1.9 times. In spot samples, maximum concentrations were registered at 8 MAC for ammonium nitrogen, 9.95 MAC for nitrite nitrogen, 3 MAC for phenols, 2.4 MAC for oil products, 4.3 MAC for manganese, and 6.6 MAC for total iron.

The most polluted tributaries of Tom in 2019 were the rivers Aba (downstream from Prokopyevsk) and Kondoma (near the city of Tashtagol), where the water was rated as “dirty,” Water Quality Class 4A.

As for the Inya, water quality in this river at the monitoring section upstream from Leninsk-Kuznetsky did not change compared to 2018, with the water characterized as “very polluted,” Water Quality Class 3B. At the site downstream from Leninsk-Kuznetsky, water quality improved to Class 3A, “polluted.” Changes in the NCWPI of the water in the Inya downstream from Leninsk-Kuznetsky over the previous five years are shown in the graph below:<sup>85</sup>

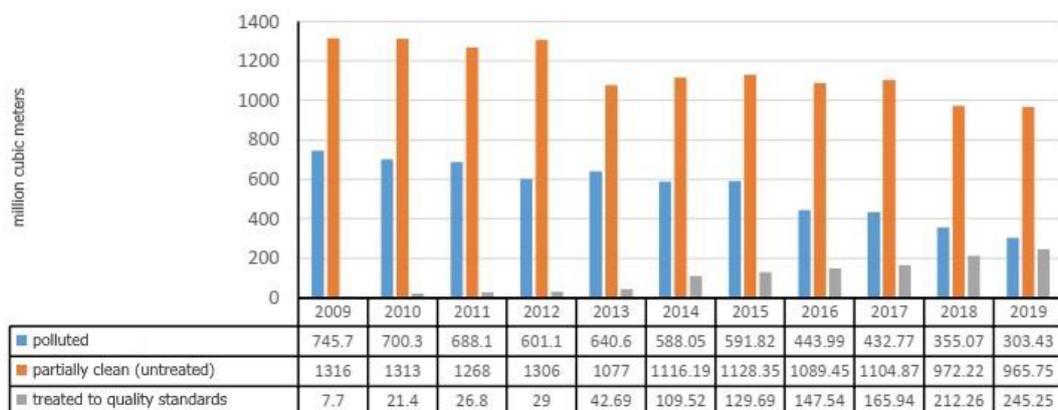
84. Ibid. P. 79. Fig. 3.1.2.2.1 Changes in NCWPI values in the river Tom below Novokuznetsk over five years. As the Federal State Budgetary Institution “Hydrochemical Institute,” of the Federal Service for Hydrometeorology and Environmental Monitoring, explains, the NCWPI “is an aggregated relative measure of the degree of pollution of surface waters that, serving as a reference indicator, assesses in the form of a dimensionless number the share of the polluting effect introduced into the water’s overall level of pollution – which is produced by the simultaneous presence in the water of a range of polluting substances – by one of the ingredients and water quality indicators whose average is taken into account when calculating the combinatory index.” The classification of water pollution degrees represents a breakdown, for reference purposes, of the entire range of natural water properties and water composition in the context of anthropogenic impact into a number of intervals that correspond to different values of the combinatory pollution index with additional factors taken into consideration. The water quality classes are as follows: Class 1 – “deemed clean,” Class 2 – “slightly polluted,” Class 3 – “polluted,” Class 4 – “dirty,” and Class 5 – “extremely dirty.” Source: <http://gidrohim.com/node/61>.

85. Ibid, p. 82. Fig. 3.1.2.2.3 Changes in NCWPI values in the river Inya below Leninsk-Kuznetsky over five years.



In 2019, water use and disposal reports were received from 180 enterprises in the region that have water discharges. The total discharge of effluent, passthrough, and other waters into surface waters was 1,514.43 m cubic meters; the volume of wastewater requiring treatment was 548.68 m cubic meters, of which 99.47 m cubic meters was wastewater discharged without treatment (or polluted) and 203.96 m cubic meters was partially treated (or polluted) wastewater.<sup>86</sup>

It is stated in the Kuzbass Environment Ministry’s report that the throughput capacity of water purification facilities increased in 2019, while the overall volume of polluted water discharged into surface waters has been declining in the region in the past years:<sup>87</sup>



Nevertheless, the report notes that “the majority of purification plants do not provide treatment quality that satisfies wastewater treatment quality standards. Of the total 548.68 m cubic meters of effluent water that requires treatment, treatment quality meeting regulatory standards is only achieved for 245.25 m cubic meters (44.7%).” Most of the polluted effluents – 27.61% – are discharged into surface water bodies from coal mining enterprises. In 2019, they discharged 261.426 m cubic meters. This is slightly more than in 2018, with 257.312 m cubic meters discharged that year. But the proportion of polluted water in total discharges has been decreasing in the last five years and in 2019 amounted to 32% (in 2018, it was 53%).<sup>88</sup>

86. *Ibid*, p. 129. Cited source: data from the Kemerovo Region Water Resources Department of the Upper Ob Water Basin Directorate.

87. *Ibid*, p. 142. Fig. 3.6. Wastewater discharges by water quality. Cited source: data from the Kemerovo Region Water Resources Department of the Upper Ob Water Basin Directorate.

88. *Ibid*, pp. 147, 267, 269. Data on the percentage share of polluted water in the total volumes of water discharged by the coal mining enterprises of the region for 2014-2019 can be found in the earlier annual reports by the Ministry of Natural Resources and Environment of Kuzbass on the state of the environment and environmental protection in Kemerovo Region available at the ministry’s website at <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

Water withdrawal by coal mining enterprises primarily occurs from underground water sources during mine drainage, while wastewater – to a total of 293.224 m cubic meters in 2019 – is mainly discharged into surface water bodies, the report says.<sup>89</sup>

In the section titled “Hydrochemical Condition of Groundwaters,” just as the year before, the report offers data on the characteristics of groundwaters at two sites located in areas of heavy water withdrawal occurring with development of hard mineral resources: Pikhtovsky, at Kedrovsko-Krokhalyovskoye Coal Field in Kemerovo District, and Mohovskoye Field in Leninsk-Kuznetsky Geologic and Economic Area in Belovo District, where 16 coal mining enterprises, both operational and undergoing closure, are based on a territory of 391 square kilometers. The hydrogeochemical properties of groundwater at both sites were assessed using samples taken from monitoring wells by the geological survey service of the coal company Kuzbassrazrezugol. At the Pikhtovsky site, of the components that exceed regulatory limits, the following were found: iron in one sample at a level of 5.6 MAC, manganese in two samples at levels ranging between 2.6 and 8.9 MAC, and arsenic in three samples at levels of 1.3 to 3.8 MAC. In 2018, MAC-exceeding values were recorded at the site for lithium, barium, phenols, and ammonium compounds. At Mokhovskiy Open-Pit Mine in Mohovskoye Field, in the same year, lithium – a Hazard Class 2 component – was present in all water samples in quantities of up to 0.047 mg per cubic decimeter, or 1.57 MAC, whereas in 2019, the report says, data on the chemical composition of groundwaters at Mohovskoye Field were not provided by the mine owner.

“[...] the groundwaters in the area adjacent to the coal development sites,” the report concludes, “are under anthropogenic pressure and have a modified – relative to natural – chemical composition.”<sup>90</sup>

The report also provides data on the properties of groundwaters in areas of intensive water withdrawal for potable water supply, with iron, manganese, and silicon content recorded at values in excess of MAC, as well as groundwaters in areas with mines undergoing closure. Prior to 2018, the above-mentioned section of the annual reports released by the Kuzbass Natural Resources Ministry included also a general assessment of the region’s groundwaters.<sup>91</sup> In 2017, for instance, the ministry’s report stated that the pollution recorded in groundwaters of Quaternary deposits (of Hazard Class 2 components, detected in groundwater were lithium, boron, sodium, and fluorides; the main pollutants at all testing sites were Hazard Class 3 and Class 4 components: iron, manganese, magnesium, phenols, and ammonium compounds) was observed on the territory of the most densely populated central part of the region.

Man-made pollution of groundwater, the ministry’s reports for previous years said (or, in the wording of the annual report for 2011, “the manifoldly augmented anthropogenic pressure on the aquifer system”) emerges with the operations of mining enterprises and during their closure, with mine closure by flooding accompanied with increased content in groundwaters of many components.

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89. *Ibid*, p. 271.

90. *Ibid*, p. 121. Data on the above-mentioned sites current as of 2018 are given in the Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2018, p. 115. Website of the Ministry of Natural Resources and Environment of Kuzbass, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

91. A general assessment of the hydrochemical characteristics of the region’s groundwaters can be found in almost every (up to 2018) report issued by the Ministry of Natural Resources and Environment of Kuzbass on the state of the environment and environmental protection in Kemerovo Region and available at the ministry’s website at <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. In some of the annual reports, a company called Krasnovoyarskaya Gidrogeologicheskaya Partiya is cited as the source for such assessments.

In natural groundwaters, many of the detected components are either not present or are present in trace amounts, the ministry's report for 2017 says. Furthermore, the components described in the properties of groundwater sampled at water intake facilities are not found consistently in all water wells. A cautious conclusion given in the report is that the cause for these components' presence in groundwater is difficult to establish and "one can assume that for such industrially dense localities as Novokuznetsk, Kemerovo, Belovo, Leninsk-Kuznetsky, and others, such pollution has an anthropogenic origin."<sup>92</sup>

# Disturbed lands

*– Lots of promises were made to lots of people when they were just starting with the open pits, and then they'd just dig all over, and there's no stopping them. First thing you do, you don't let them start, they should be controlling the ones that are working already. 'Cause when they dig, they mess things up more than anything, then they abandon the pits and do no remediation. They say: "No coal, no Kuzbass." But what they do is dig up all the land and only take the coal from the surface, then launder the money and then flood the pit on purpose. They could have a coal shaft go to, say, 500 meters, and scoop up more coal, no problem. But it's cheaper to dig a new [pit]. Where we live, it was like this: They said there'd be a new pit, it'd all been decided. But people rose up, there was picketing, people took to blocking the highways. Fought them off of our land.*

**Andrei Yelagin, farmer, village of Mencherep,  
Belovo District**

According to the Strategy for Socioeconomic Development of Kemerovo Region until 2035, which was published at the end of 2018, 102,000 hectares of land was disturbed in Kuzbass, and 98% of that land was disturbed as a result of development of mineral deposits. The proportion of disturbed lands in Kuzbass, the document says, is 12.5 times larger than that in Russia on average (0.75% of the total area compared to 0.06% on average in Russia), and in certain districts, man-made disturbances affect up to 20% of farmland.<sup>93</sup>

Mining enterprises are responsible for a considerable adverse contribution into the processes of degradation and destruction of the topsoil on the territory of Kemerovo Region, with

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92. Ministry of Natural Resources and Environment of Kuzbass. Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2017, pp. 113, 114, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

93. Strategy for Socioeconomic Development of Kemerovo Region until 2035, adopted December 26, 2018, p. 13. Website of Kuzbass Government Administration, <https://ako.ru/deyatelnost/strategicheskoe-planirovanie-kemerovskoy-oblasti-.php>.

technogenic landscapes created at the sites of the operations, especially where opencast mining takes place, says the report *On the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*. According to Rosprirodnadzor data, the total area of disturbed lands as of January 1, 2020, was 114,726 hectares, of which 108,074 hectares was disturbed during coal mining. Equally worrying are land reclamation data provided in the report: “In the course of 2019, 5,443 hectares of land was disturbed (including 4,863 hectares due to mining for extractable resources and 414 hectares disturbed by construction), and 711 hectares was reclaimed, which constituted 13.1% of the area of land disturbed in the reporting year.”

Furthermore, even as the percentage of the reclaimed lands increased in 2019 – up from 2.6% as of the end of 2018 – the area of land disturbed by mining during the year increased more than fivefold compared to the same figure of 2018 (when it accounted for 933 hectares out of 1,076 hectares of the total area disturbed over the year).<sup>94</sup>

The report also points out a significant increase between 2015 and 2019 in the extent of acidic soils in the farmland and a decrease in the content of mobile phosphorus. The progressing acidification of soils is due to calcium removal with harvest coupled with a lack of liming, as well as to air pollution by industrial emissions.<sup>95</sup>

A study published in 2016 in the Kemerovo-based *Industrial safety*, a scientific journal specializing in issues of safety in the coal mining industry, says that taking constantly new parcels of land out of land use and disturbing the taken lands – a process essential for coal mining – is especially aggressive where surface mining is concerned and that between 2006 and 2015, the specific land disturbance rate (calculated as one hectare of land per one million tons of coal produced) increased by 10% at underground mines, by 2.4 times on average across the coal mining sector, and by 2.7 times at surface mining sites. The authors also provide the following data illustrating how the proportions of the surface mining and deep mining methods in coal production changed in that period: Coal production at open pits grew in those years by 34%, while decreasing by 4.7% at underground mines, and the share of opencast mining in the total volume of production increased from 65% to 72%; in 2015, 2.6 times more coal was mined using opencast mining than in underground mines. The study adds that specific land reclamation costs, calculated per one ton of coal mined, are 3.7 times higher with lands disturbed during opencast mining than when coal is produced at underground mines.<sup>96</sup>

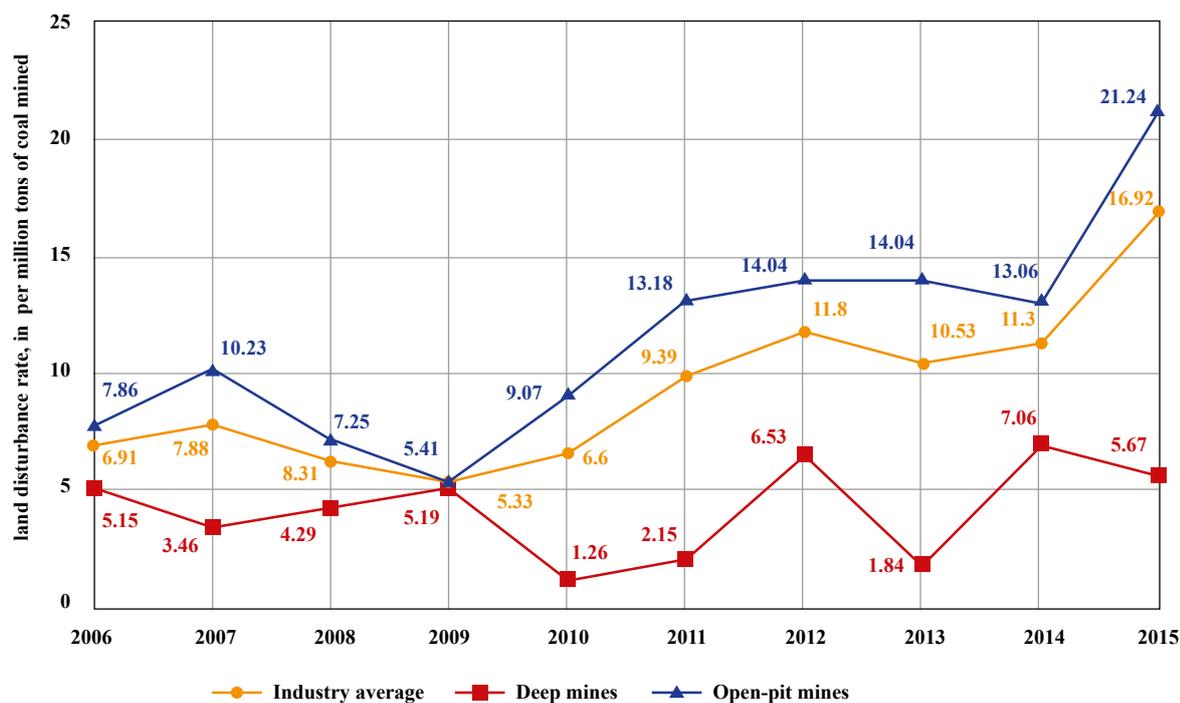
The graph below shows how specific land disturbance rates changed between 2006 and 2015 on average in the industry, in coal production using opencast mining, and in coal production using deep mining.<sup>97</sup>

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94. Ministry of Natural Resources and Environment of Kuzbass. *Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*, p. 170, *Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2018*, p. 159, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

95. Ministry of Natural Resources and Environment of Kuzbass. *Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019*, p. 171, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

96. A. A. Kharionovsky, A. R. Litvinov, M. Yu. Danilova, T. Mahmud. *Estimation of influence on environment open cut and underground mining coal. Industrial Safety scientific-technical magazine*, 2016. No. 4, pp. 113-138, <https://ind-saf.ru/arkhiv>. The article's summary specifies that the presented comparative evaluation of environmental impacts of the surface mining and deep mining methods in coal production was done using analysis of statistical data of coal companies on wastewater discharges into water bodies and pollutant emissions to the atmosphere, volumes of overburden and host rock accumulated in spoil heaps, and area of disturbed lands. Data from Lomonosov Moscow State University's Department of Nature Management Economy were used as a reference parameter to calculate specific land reclamation costs.



This, however, is not the only problem associated with land use in coal mining. Lands neighboring opencast mining sites are subjected to severe contamination. As the *Strategy for Socioeconomic Development of Kemerovo Region until 2035* says, the ground in the towns and cities located in the areas where mining enterprises operate is poisoned with chromium, lead, zinc, manganese, and cadmium, in concentrations that in 6.1% to 35% of cases exceed maximum allowable levels.

Another serious problem posed by mining coal using the opencast method is the noise and vibrations caused by the explosions and the heavy machinery constantly working at the sites. The scientific journal *Russian Mining Industry* in 2018 published a paper on occupational patterns associated with mineral extraction by surface mining, vibration syndrome, at 48.3%, is the most frequently occurring diagnosis.

According to 2018 data by the Kemerovo Regional Office of Rospotrebnadzor, in total occupational disease morbidity in Kuzbass, sensorineural hearing loss (22.9%) and vibration syndrome (25.44%) take second and third place, respectively.

morbidity among workers employed by mining enterprises, which said that in occupational morbidity patterns associated with mineral extraction by surface mining, vibration syndrome, at 48.3%, is the most frequently occurring diagnosis.<sup>99</sup>

According to 2018 data by the Kemerovo Regional Office of Rospotrebnadzor, in total occupational disease morbidity in Kuzbass, sensorineural hearing loss (22.9%) and vibration syndrome (25.44%) take second and third place, respectively.<sup>100</sup>

97. Ibid. Fig. 4. Changes in specific land disturbance rates.

98. *Strategy for Socioeconomic Development of Kemerovo Region until 2035*, adopted December 26, 2018, p. 13. Website of Kuzbass Government Administration, <https://ako.ru/deyatelnost/strategicheskoe-planirovanie-kemerovskoy-oblasti-.php>.

99. A. G. Chebotaryov. *Sostoyaniye usloviy truda i professionalnoi zabolevaemosti rabotnikov gornodobyvayushchikh predpriyatij. Gornaya promyshlennost*, 2018. No. 1 (137), p. 94. Accessed at <https://cyberleninka.ru/article/n/sostoyanie-usloviy-truda-i-professionalnoy-zabolevaemosti-rabotnikov-gornodobyvayuschih-predpriyatij/viewer>. Translator's note: Given the context, it stands to reason that conditions arising from long-term exposure to whole-body vibration are meant here.

100. Kemerovo Regional Office of Rospotrebnadzor. *On the state of occupational disease incidence in Kemerovo Region in 2018*. Publication date March 1, 2019, [http://42.rospotrebnadzor.ru/content/777/83287/?sphrase\\_id=158216](http://42.rospotrebnadzor.ru/content/777/83287/?sphrase_id=158216).

# Coal mining waste

*– I don't know what will happen here, I know I won't be here, because I want to live. Here's the funny thing that will happen: They have a license up to 2029. At the hearing that was here, what, a week and a half ago, they're presenting these really nice plans, that they're going to plant 186,000 trees.*

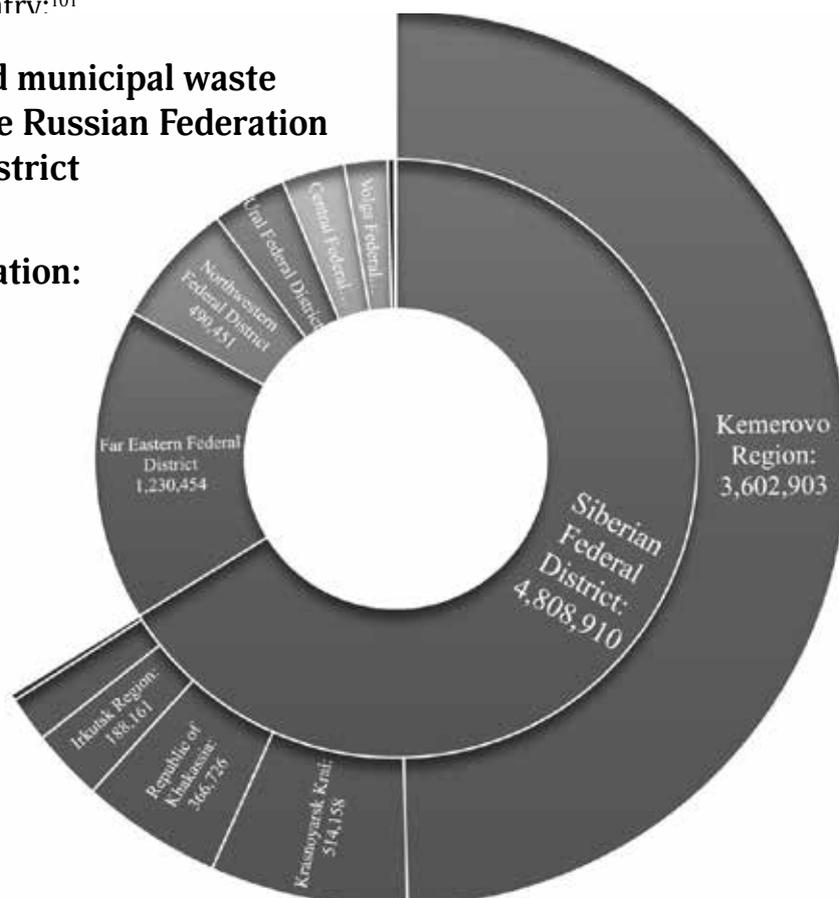
*When? In 2031. I'm sorry, you ever seen open pits here that, once they're done digging, would start doing something? I didn't think so. So here they are with their song and dance. The whole hearing, I was just laughing.*

***Lyudmila Sokolova, resident of the village of Kostenkovo***

Kemerovo Region leads the Russian Federation in the amount of industrial and municipal waste. In 2018, 3.6 billion tons of waste was generated in the region – almost half of the 7.3 billion tons generated in the entire country.<sup>101</sup>

## Generation of industrial and municipal waste in the federal districts of the Russian Federation and the Siberian Federal District in 2018, in thousand tons

**Total for the Russian Federation:  
7,266,054 in thousand tons**

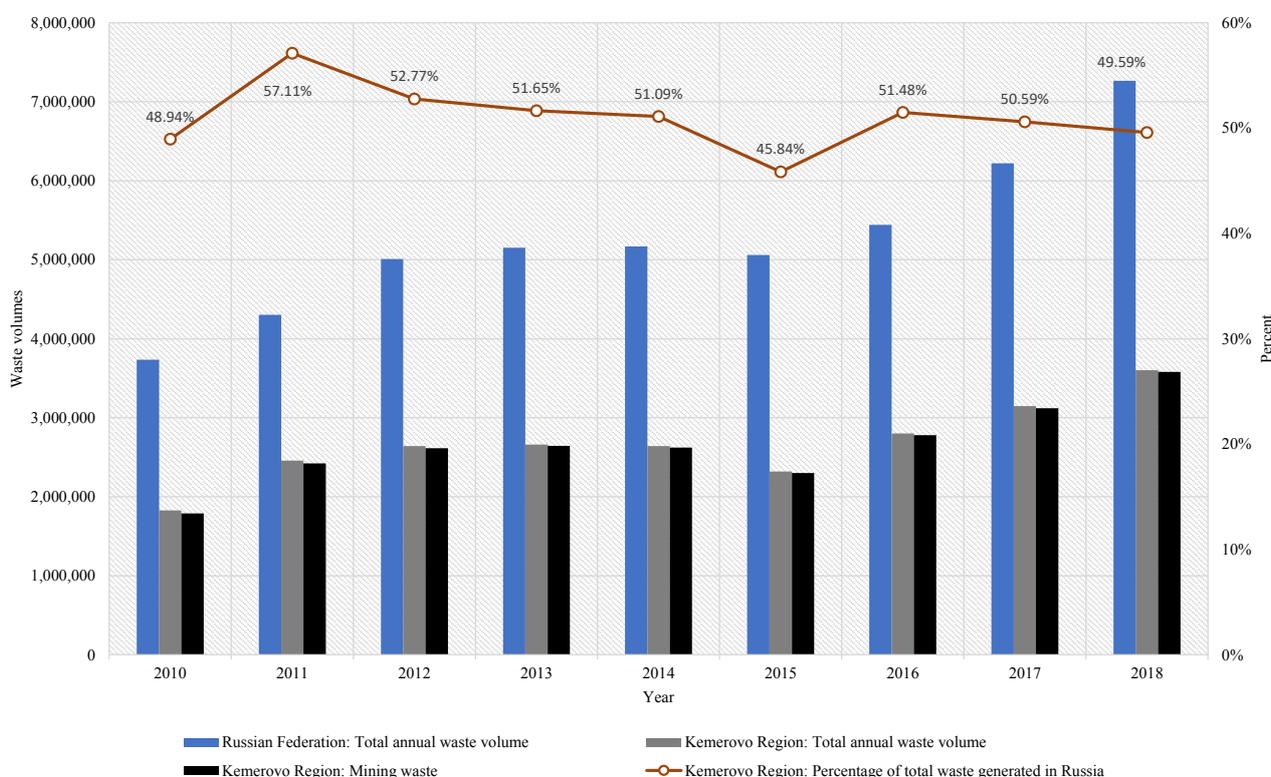


<sup>101</sup> The diagram was built using data released in the online version of the State Report “On the State of the Environment and Environmental Protection in the Russian Federation in 2018” by the Ministry of Natural Resources and Environment of the Russian Federation. Section “Indicators,” Generation of Industrial and Municipal Waste, data for the Russian Federation, at <http://gosdoklad-ecology.ru/2018/pokazateli/otkhody-proizvodstva-i-potrebleniya/obrazovanie-otkhodov/russia/>; for the federal districts of the Russian Federation, at <http://gosdoklad-ecology.ru/2018/pokazateli/otkhody-proizvodstva-i-potrebleniya/obrazovanie-otkhodov/fo/>; and for the Siberian Federal District, at <http://gosdoklad-ecology.ru/2018/pokazateli/otkhody-proizvodstva-i-potrebleniya/obrazovanie-otkhodov/sfo/>. Note: Zabaykalsky (Transbaikal) Krai and Republic of Buryatia, formerly part of the Siberian Federal District, were in 2018 included in the Far Eastern Federal District. Data on these federal subjects are given at zero values for 2018 and can be found in the section detailing data on the Far Eastern Federal District for the same year.

Of these, 99% is waste produced by coal mining.<sup>102</sup>

And, as the graph below demonstrates, almost one half of the billions of tons of industrial and municipal waste of an immense country – an amount that almost totally consists of waste generated by coal mining enterprises and that is accounted for by a region making up just 0.6% of that country’s territory – is far from an anomaly of a given year. Rates of waste generation in Russia and Kuzbass between 2010 and 2018, including, in the case of the latter, mining waste, show that the share of waste produced by Kemerovo Region in the overall volume of waste generated in Russia ranges between 49% and 57%:<sup>103</sup>

### Generation of industrial and municipal waste in the Russian Federation and Kemerovo Region and generation of mining waste in Kuzbass, in thousand tons



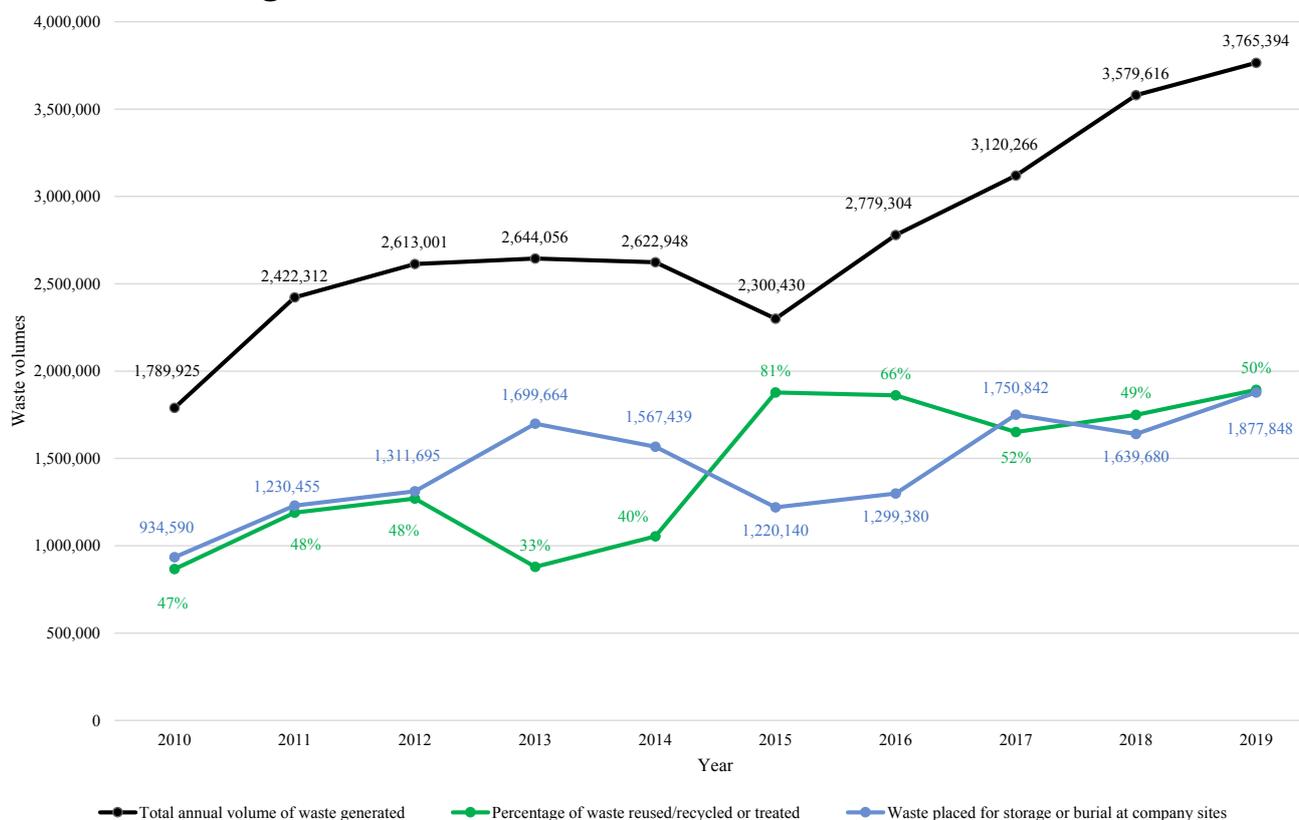
102. Ministry of Natural Resources and Environment of Kuzbass. Report on the State of the Environment and Environmental Protection in Kemerovo Region in 2018, p. 273, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>. Note: Data detailing distribution of waste volumes by type of economic activity provided in the ministry’s annual reports show that an absolutely predominant share of the waste – within a range of 97% to 99% or more – is each year accounted for by activity referred to as “mining and quarrying.” However, of the extractable resources mined in Kuzbass, coal – which far exceeds any other in production volumes – is the main one (see, for instance, data on production of various extractable resources in the region in 2015 to 2019 in the ministry’s annual report for 2019, p. 186). Prior to 2012, the reports on the state of the environment and environmental protection in Kemerovo Region showed information for “production of extractable fuel and energy resources” and “production of extractable resources other than fuel and energy resources” as separate items in the waste generation data. The latter was responsible for between approximately 15,000 tons (in 2006) and approximately 37,000 tons of waste (in 2011).

103. The graph was built using data from the following sources: the online version of the State Report “On the State of the Environment and Environmental Protection in the Russian Federation in 2018” by the Ministry of Natural Resources and Environment of the Russian Federation. Section “Indicators,” Generation of Industrial and Municipal Waste, data for the Russian Federation, at <http://gosdoklad-ecology.ru/2018/pokazateli/otkhody-proizvodstva-i-potrebleniya/obrazovanie-otkhodov/russia/>; reports by the Ministry of Natural Resources and Environment of Kuzbass on the state of the environment and environmental protection in Kemerovo Region for 2014 through 2019, available at the ministry’s website at <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

In 2019, the amount of waste generated in Kemerovo Region grew by another 5.2% over the figure of 2018 and reached 3.79 billion tons, of which 3.77 billion tons was waste produced by coal mining.<sup>104</sup>

Save for certain years, reuse or recycling and treatment of waste generated by coal mining in Kuzbass stays, as follows from data published in the annual reports on the state of the environment and environmental protection in Kemerovo Region, on average at a level of about 50%. The same is true for the rate of accumulation of waste placed for storage and burial at the mining companies' sites. As coal production grows, so do the volumes of waste generated by the industry and the volumes of waste amassing on the territory of the coal companies:<sup>105</sup>

### Generation, reuse or recycling, treatment, storage, and burial of mining waste in Kemerovo Region, in thousand tons



In the nine years between 2010 and 2019, the yearly volume of waste generated by coal mining grew in Kuzbass from 1.8 billion tons to 3.8 billion tons – or more than twofold. Likewise, a more than twofold increase is seen in the annual volumes of waste remaining for storage or burial at the mining companies' sites: from 0.9 billion tons in 2010 to 1.9 billion tons in 2019.

“A critical component of the [natural] resource management system is the recycling and utilization of waste. With economic activity increasing, it is necessary to reduce the area of land used to house waste,” said the Ministry of Natural Resources and Environment of Kuzbass in its report for 2019.

104. Ministry of Natural Resources and Environment of Kuzbass. Report on the State of the Environment and Environmental Protection in Kemerovo Region – Kuzbass in 2019, pp. 275, 276, <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

105. The graph was built using data from reports by the Ministry of Natural Resources and Environment of Kuzbass on the state of the environment and environmental protection in Kemerovo Region for 2014 through 2019, available at the ministry's website at <http://kuzbasseco.ru/doklady/o-sostoyanii-okruzhayushhej-sredy-kemerovskoj-oblasti/>.

The authors of the *Strategy for Socioeconomic Development of Kemerovo Region until 2035* call the issue of waste disposal “a most acute environmental problem of the region,” saying that waste, including hazardous wastes, has been accumulating at the sites of many industrial enterprises – primarily, those of the mining, chemical, and metals industry – for dozens of years. “In expert assessments, the perennial negative impact of these wastes on the environment (past environmental damage) results in losses of up to 11% to gross regional product due to an increased population disease burden alone. Located in the vicinity of mining industry enterprises are sites housing industrial waste of Hazard Class 3 and Class 4, to a combined mass of about 13.3 million tons,” the document says.<sup>106</sup>

According to a study in the Kemerovo-based *Industrial safety*, between 2010 and 2017, owing to the explosive growth of opencast mining and the increasing mining depths, the area of land disturbance, in annual figures, grew by 2.9 times, while the volume of generated waste grew by 1.6 times. Specific indicators worsened as well, though to a lesser degree: The specific rate of land disturbance increased from 7.8 to 16.4 hectares per million tons of coal produced, or by 2.1 times, and specific waste generation rate from 10 to 11.7 tons of waste per ton of coal produced, or by 1.2 times (by comparison, the industry-wide waste generation rate grew from 6.5 to 8.8 tons per ton of coal produced in that period). The authors note an increase in the volumes of overburden and other waste rock accumulated in spoil tips, which necessitates taking more land out of land use to house them.<sup>107</sup>

The earlier publication in the same journal points out that overburden – the barren rock that forms the top layer covering the coal seam and that is removed during surface mining – and the host rock, which encloses the deposit, constitute 99% of the industry’s wastes. The authors of that study also provide the following data on the specific anthropogenic impact indicators of opencast mining compared to deep mining, as of 2015: 21.24 hectares of land disturbed per one million tons of coal produced during surface mining against 5.67 hectares during deep mining, and 6.74 tons of waste placed in spoil tips per ton of coal mined at open pits against 1.56 tons of waste generated at underground mines.<sup>108</sup>

Between 2006 and 2015, waste accumulation in spoil tips grew by 80% at open pits, by 99% at underground mines, and by 95% on average across the industry, the researchers write, showing the year-on-year changes in the graph below:<sup>109</sup>

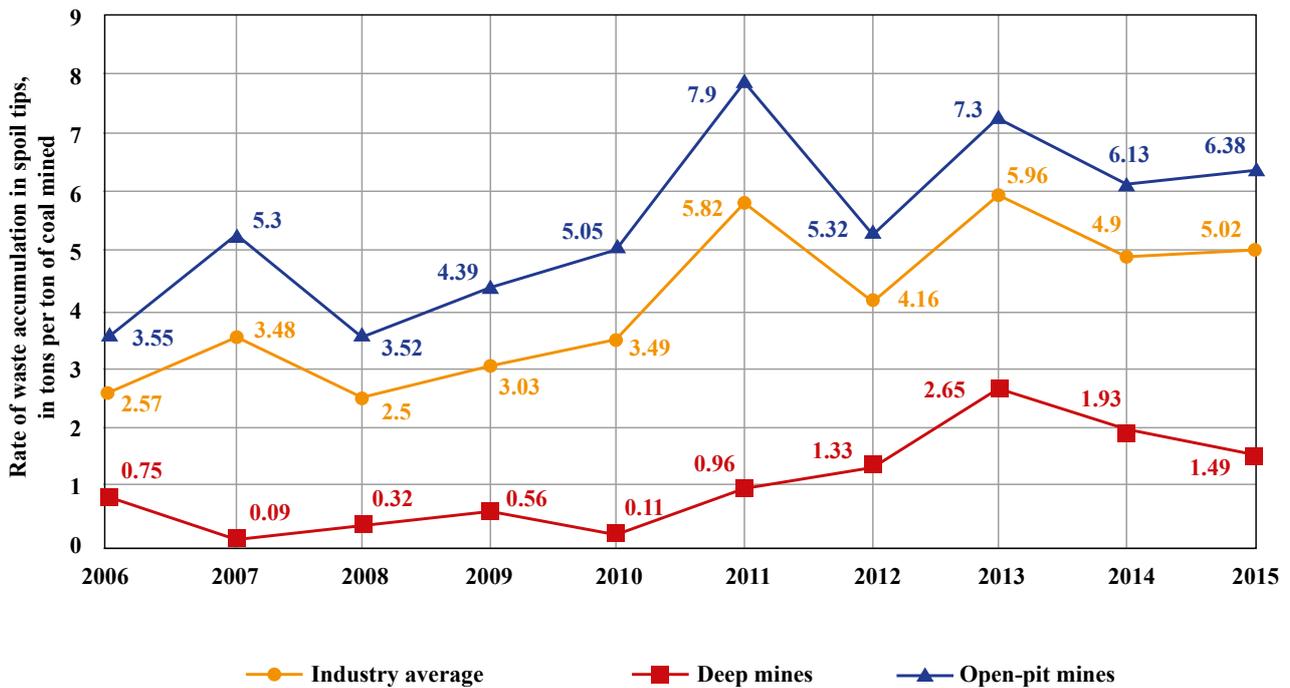
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106. *Strategy for Socioeconomic Development of Kemerovo Region until 2035*, adopted December 26, 2018, pp. 13, 14. Website of Kuzbass Government Administration, <https://ako.ru/deyatelnost/strategicheskoe-planirovanie-kemerovskoy-oblasti-.php>.

107. A. A. Kharionovsky, M. Yu. Danilova. Present ecological condition of Kuzbass. *Industrial Safety scientific-technical magazine*, 2018. No. 3, pp. 34-38, <https://ind-saf.ru/arkhiv>.

108. A. A. Kharionovsky, A. R. Litvinov, M. Yu. Danilova, T. Mahmud. Estimation of influence on environment open cut and underground mining coal. *Industrial Safety scientific-technical magazine*, 2016. No. 4, pp. 113-138, <https://ind-saf.ru/arkhiv>. The article’s summary specifies that the presented comparative evaluation of environmental impacts of the surface mining and deep mining methods in coal production was done using analysis of statistical data of coal companies on wastewater discharges into water bodies and pollutant emissions to the atmosphere, volumes of overburden and host rock accumulated in spoil heaps, and area of disturbed lands.

109. *Ibid.* Fig. 3. Changes in specific rates of waste accumulation in spoil heaps.



Some 50% of overburden produced through opencast mining is used in Russia to backfill the mined-out area; utilization of other types of the coal industry’s waste, including those from coal processing and burning, amounts to no more than 7% or 8% of their annual generation, says a 2018 paper published in the Russian scientific and technical journal *Mining Informational and Analytical Bulletin*. Importantly, storage of the coal industry’s solid waste is associated with such adverse environmental effects as dust and gas pollution; spontaneous combustion of spoil heaps, which causes air pollution both at the site and in surrounding areas; deterioration of the living conditions of the population residing near waste storage sites; potential outbreaks of diseases and mutations of living organisms that inhabit areas of reclaimed spoil heaps and feed on vegetation growing there; pollution of water bodies via surface waters and groundwaters contaminated with effluents leaking out of the spoil tips and ash ponds; removal from economic use of lands – including lands suitable for farming and agriculture – to house coal refuse and other coal-related waste.

The coal industry’s waste may contain, in varying concentrations, combustible carbonaceous materials, minerals, sulphur, ash-forming elements, and potentially environmentally hazardous trace elements, including the naturally occurring radionuclides radium-226, thorium-228, and potassium-40, as well as their fission products.<sup>110</sup>

110. S. A. Silyutin. General provisions of classification of coal mining and processing refuse as an origin of environmental impact when stored and as a source of process raw materials when recycled. *Gornyi informatsionno-analitichesky byulleten (Mining Informational and Analytical Bulletin)*, 2018. No. 1, pp. 5-11. © S. A. Silyutin. 2018. Accessed at <https://cyberleninka.ru/article/n/osnovnye-polozheniya-klassifikatsii-tverdyyh-otvodov-dobychi-i-pererabotki-ugley-kak-istochnika-neblagopriyatnogo-vozdeystviya-na/viewer>.

# Sanitary protection zones and public resistance

*– The roads to population centers are literally drowning in this coal mud, farmlands, covered with snow, have a thick layer of coal dust on top. The assertion that there is a sanitary protection zone that would guarantee a clean environment is nothing more than a myth, the negative impact of the operations of the Stepanovsky Open Pit extends for many kilometers around the site. [...]*

*The roads are being ruined, the state of the environment has worsened, and it's people who live here, not the businessmen, who are paying for it.*

***From an open letter by residents of Sosnovskoye rural settlement of Novokuznetsk Municipal District to Governor of Kemerovo Region Sergei Tsiviliyov<sup>111</sup>***

Hundreds of thousands of Kuzbass residents live in areas exposed to the impact of coal surface mining, which affects negatively their living conditions and violates their constitutionally guaranteed right to a healthy environment.

Before development of a new coal deposit starts, calculations are carried out to assess the needed number of earthmoving machines, the frequency and explosive yield of blasts, and so on, which then serve as a basis for what is called “projected sanitary protection zones,” whose precise area, by law, is to be adjusted once the enterprise has begun operations at the site and the results obtained from monitoring its work are taken into account. According to regulations set within Russian Health and Hygiene Rules and Standards (SanPiN 2.2.1/2.1.1.1200-03 “Sanitary Protection Zones and Sanitary Classification of Enterprises, Facilities, and Other Sites”) the area of a sanitary protection zone established (that is, actually existing) around a functioning enterprise may not be less than 1,000 meters for sites categorized as Hazard Class I, which includes open-pit coal mines.<sup>112</sup> In Kuzbass, this requirement is routinely disregarded

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111. *Spasite nas ot razreza! nk-tv.com, March 12, 2019, <https://nk-tv.com/220282.html>.*

112. *Order of Chief State Sanitary Inspector of the Russian Federation of September 25, 2007, No. 74, Moscow, On Bringing into Effect an Updated Edition of Sanitary and Epidemiological Rules and Standards SanPiN 2.2.1/2.1.1.1200-03 “Sanitary Protection Zones and Sanitary Classification of Enterprises, Facilities, and Other Sites.” Section VII. Sanitary classification of industrial sites and production facilities of thermal stations, warehousing buildings and structures and size provisions for the assumed sanitary protection zones for them, 7.1.3. Production of ores and non-metallic minerals, <https://rg.ru/2008/02/09/sanitar-dok.html>. Translator’s note: So-called sanitary protection zones are areas with specific zoning restrictions serving as buffer areas around facilities and production sites whose operations are deemed hazardous for the environment and human health in order to mitigate the facilities’ air pollution impact to values established by health standards.*



throughout the region, especially in such cities as Kiselyovsk and Prokopyevsk, where the distance between residential houses and the edge of an open-pit mine may be less than 200 meters.

The report by the Kuzbass Regional Office of Rospotrebnadzor *On the state of Sanitary and Epidemiological Welfare of the Population of Kemerovo Region – Kuzbass in 2019*, notes that of the 1,818 enterprises and production facilities functioning in the region whose operations require an established sanitary protection zone, only 198 have the necessary ordinances or directives.<sup>113</sup>

Today, up to 200,000 people in Kemerovo Region reside in areas where such buffer zones should be.<sup>114</sup> However, obtaining documentation on the real size and boundaries of the established sanitary protection zones is impossible, as coal companies, citing a need to protect commercially sensitive information, refuse to grant citizens access to layout designs with boundaries of the sanitary protection zones plotted and mapped to the location in question.

One of the cases illustrating this tendency took place in Novokuznetsk District in 2017. A citizens' action group formed by residents of the village of Gavrillovka addressed a commission that was preparing a decision titled *On Amending the Land Use and Development Regulations of the Municipal Formation Sosnovskoye Rural Settlement*. The changes involved rezoning some of the agricultural land as industrial and handing that land over to a company called Razrez Stepanovsky (Stepanovsky Open-Pit Mine) to accommodate spoil heaps. The residents in their address spoke against the rezoning, calling it impermissible, but the municipality's administration decided otherwise and recommended that the company expand its buffer zone to 1,000 meters. The Regional Office of Rospotrebnadzor in Kemerovo Region carried out an administrative inquiry and established that coal was being mined at the Stepanovsky mining plot at a distance of 290 meters to the east and 400 meters to the southeast from the residential

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113. Kemerovo Regional Office of Rospotrebnadzor. State Report "On the State of Sanitary and Epidemiological Welfare of the Population in Kemerovo Region – Kuzbass in 2019," p. 31, <http://42.rospotrebnadzor.ru/upload/iblock/ffc/ffcbe30110e690010e27c89a01bb26e2.pdf>.

114. Ecodefense's own estimates based on the geographical location of open-pit mines operating in the region and size of the population residing in immediate proximity to the mining areas.

houses of the villages of Gavrilovka and Novomoskovka. Residents were complaining about the pollution and spread of coal dust, vibrations and noise from the explosions and heavy machinery working even at night, about cracks in the foundations and walls of their houses. The negative effects on the living conditions in Gavrilovka – the depletion and pollution of rivers and the damage caused to wildlife – had already been documented a year earlier in a preliminary environmental assessment conducted on the instruction of the administration of Novokuznetsk District. After numerous media reports, the company decided in August 2017 to increase its sanitary protection zone to 1000 meters from the mining operations and 500 meters from the spoil heaps.<sup>115</sup>

Already in October, however, the conflict flared up anew because of the ongoing blasts taking place on agricultural land.<sup>116</sup> In March 2019, residents of Sosnovka, as well as the villages of Krasinsk, Uchul, Gavrilovka, and other localities, appealed to Kemerovo Region Governor Sergei Tsivilyov with a demand to bring pressure on the coal company, which, they said, was engaged in falsification of permits, and, among other items, “to compel the management of the open pit to eliminate the spoil tip illegally housed on agricultural land, to compensate the damage caused to the land, which has irretrievably lost its intended use as farmland, and to carry out reclamation of the lands already disturbed.”<sup>117</sup>

This standoff is not an isolated case. Residents of Kuzbass are increasingly vocal in their indignation at the unrestrained actions of coal companies. More optimistic was the story of resistance to coal mining near the village of Mencherep in Belovo District. Local residents, with the support of environmentalists from Ecodefense and lawyers of Team 29, were for two years fighting in court against plans to transfer agricultural lands to be used for coal mining by a company called Stroipozhservis. The lands were to be taken from their private owners under the pretext of “public use.” In April 2018, the landowners won their lawsuit disputing the decision to seize the land: The court, agreeing with the plaintiffs’ position, found that coal mining did not constitute “public use.”<sup>118</sup>

In December 2019, another appeal was addressed to Governor Tsivilyov by residents of Novokuznetsk District’s rural settlement of Zagorskoye, who demanded to stop the illegal construction of the Apanasovsky open-pit mine and warned that a conflict would be inevitable if the citizens’ rights were neglected. According to the activists, the management of Apanasovsky had reported them to the police and also sent a letter to the governor with a request to open the mine and signatures of some of the local residents. The authors of the video address insist that a number of the signatories are not residents of the village of Apanas, while the signatures of those who actually live in Apanas were forged.<sup>119</sup>

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115. E. Yu. Balayan, O. Yu. Treshcheva. *Several issues of ensuring and protecting human rights by local authorities. Teoriya i praktika obshchestvennogo razvitiya*, 2018, No. 7, [http://teoria-practica.ru/rus/files/arhiv\\_zhurnala/2018/7/law/balayan-treshcheva.pdf](http://teoria-practica.ru/rus/files/arhiv_zhurnala/2018/7/law/balayan-treshcheva.pdf).

116. Yaroslav Vlasov. *Antiugolnye protesty v Kuzbasse: «Pochemu my dolzhny bezhat? Eto nasha zemlya!»*. *tayga.info*, October 19, 2017, <https://tayga.info/137030>.

117. *Gubernator – poslednyaya nadezhda. Kuzbassovtsy prosyat Sergeya Tsivileva obratit vnimaniye na razrez «Stepanovsky»*. *IA «Gorod Novostei»*, March 12, 2019, <https://www.city-n.ru/view/422801.html>; *Spasite nas ot razreza!* *nk-tv.com*, March 12, 2019, <https://nk-tv.com/220282.html>.

118. *V Kemerovskoi oblasti sud zapretit izyatie zemelnykh uchastkov pod ugolny razrez*. *Interfax*, April 13, 2018, <https://www.interfax.ru/russia/608387>. Note: The litigation ended a year later at appeal stage with a decision released by the Federal Agency for Mineral Resources that revoked the orders issued for the removal of the land plots. See: *Rosnedra otmenilo prikazy, iz-za kotorykh v Kuzbasse sobiralis izyati uchastki pod ugolny razrez*. *Interfax*, March 21, 2019, <https://www.interfax.ru/russia/655204>.

119. *Obrashchaites – i vam otvetyat!*. YouTube channel AKTSENTY KUZBASS, December 13, 2019, [https://www.youtube.com/watch?v=JATxiSVYJPw&feature=emb\\_logo](https://www.youtube.com/watch?v=JATxiSVYJPw&feature=emb_logo).

In December 2019, the authorities were forced to acknowledge subterranean fires at abandoned open-pit mines near Novokuznetsk after environmental activists released a video showing coal waste heaps with smoke coming off of them.<sup>120</sup> The problem of burning spoil banks may lead to both new wildfires and carbon monoxide poisoning of the people living nearby. In mid-April 2020 – for the first time in the history of Kuzbass – a state of emergency was declared at two sites where spoil tips were burning: in Novokuznetsk District and Kiselyovsk Urban District. Ecodefense welcomed the step as a sign that the problem had been recognized by the authorities, but called on Kuzbass’s governor to turn his attention to other burning coal waste heaps in the region.<sup>121</sup>

Kuzbass is gradually becoming a region of burgeoning protest, where the people’s growing desire to exercise their right to a clean and safe environment, to reliable information about its condition and to compensation for the damage caused to their health or property, comes into conflict with the interests of the authorities, which want to boost coal production, and coal mining companies, which are trying, in all possible ways, to reduce costs, including by saving on environmental safety.

# Indigenous peoples

*– They don’t let us do anything, live our way of life. Festivals and booze – that’s what their care for the small peoples amounts to. So much for cultural conservation.*

*Valentina Boriskina, a Shor village of Chuvashka*

Mountainous Shoria, in southern Kuzbass, extends 170 kilometers north to south and 100 kilometers east to west. This is an area of coal fields, and that means a constant threat of destruction for the villages where the indigenous people of Shor live.

The residents of Chuvashka in Mountainous Shoria say that as a result of open-pit mining and coal operations fish is now gone from the rivers, and harvesting berries and mushrooms is impossible because of the layer of coal dust covering them. A serious problem is posed by the explosions at the nearby surface mines: It is not just the noise coming from them, but the shattering of houses, heating stoves, and outbuildings. The nearest mine is 1.5 kilometers from the village; no one warns the residents of the upcoming blasts. The Shor believe that

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<sup>120</sup>. Vlasti Kuzbassa priznali podzemny pozhar na broshennykh ugolnykh razrezakh. Sibir.Realii, December 31, 2019, <https://www.sibreal.org/a/30353759.html>; Apanas khochet zhit. YouTube channel STOPCOAL, December 27, 2019, [https://www.youtube.com/watch?v=ithiLF\\_wuxA&feature=emb\\_logo](https://www.youtube.com/watch?v=ithiLF_wuxA&feature=emb_logo).

<sup>121</sup>. V Kuzbasse vvedyon rezhim ChS iz-za goryashchikh otvalov ugledobychi. Website of the environmental group Ecodefense, April, 14 2020, <https://ecodefense.ru/2020/04/14/kuzbass-emergency/>.



*M. Tannangasheva, resident of the village of Chuvashka, in traditional Shor attire.  
Photo: Ecodefense.*

with land allocation and the creation of a functioning system of self-government, there is still a chance for their people to survive. If that happens, young villagers could return to the traditional Shor industries – hunting and farming, instead of mining for coal and destroying their own habitat.

According to the article titled *The “Resource Curse” with a Shade of Anthracite: Indigenous Peoples and Extractive Companies of Kuzbass in a Conflict Situation*, problems stemming from the impact of the coal mining industry on the habitat and traditional way of life of the Shor people date back to the 1970s, when villages that fell within the boundaries of license areas began to be forcibly resettled – including Shor settlements, such as the village of Kuriya, which used to exist on the territory of today’s Myski Urban District and whose residents were relocated with the start of construction of the Sibirginsky Open-Pit Mine.

But one of the most tragic stories happened not so long ago. In 2012, the study recounts, an oldest Shor village, Kazas, ended up in close proximity to a mining area developed by the Yuzhnaya Coal Company. By then, the villagers had already been forced to use drinking water brought in from elsewhere as the water bodies and groundwaters had become polluted. “The dust and noise pollution as a result of blasting operations [...] at the open pit were beyond all acceptable limits. Even access to Kazas was restricted, with security at a checkpoint set up by the coal company examining personal belongings and identification papers of all those wishing to enter the village [...],” the authors say, describing the situation in Kazas. Yuzhnaya’s mine development license included the territory of the village, too, which meant it would soon have to be resettled. Negotiations began on buying out the houses and land plots, and in late 2013 and

early 2014, a strange series of fires destroyed the houses of those villagers who refused to sell them for teardown and move away.<sup>122</sup>

In January 2020, the UN Committee on the Elimination of Racial Discrimination, in its assessment of the situation of the Shor people in Kemerovo Region, noted that despite earlier statements by the Russian government that 90 million roubles in compensation was paid to the Shor who had lived in Kazas, not all the residents of the village had received their compensation. UN experts said that the Russian government needed to provide adequate compensation to the Shor for the loss of their lands and houses and to adopt a resettlement plan for them. In addition, the committee noted that the Shor from Kazas still did not have access to their village and the local cemetery, stating that this was unacceptable and that access should be provided immediately.<sup>123</sup>

Chuvashka, one of the last surviving Shor communities, is today surrounded by surface mines on all sides, and its residents have for years spoken of the steadily worsening quality of water, air, and living conditions in general.<sup>124</sup>

Places of traditional residence of the Teleuts in Belovo District are, too, in a state of environmental disaster, says a report by the Anti-Discrimination Center (ADC) Memorial on the violations of the rights of indigenous peoples resulting from coal mining in southern Siberia. In 2017, an agricultural enterprise with 800 hectares of land in ownership found itself surrounded by open pits; the road to the land was blocked off, disrupting the sowing season. The grave ecological situation has forced many residents of Teleut villages to abandon their homes and move to areas with better conditions; they were not offered any compensation for their abandoned property, the report says, citing activists' statements.

“Living and engaging in traditional farming on native lands is the foundation of the identity and culture of indigenous peoples,” write the authors of ADC Memorial’s report, noting that the inability to withstand the devastating activities of powerful corporations supported by and often affiliated with the state and, as a result, the destruction of traditional indigenous habitats and natural resource use practices and a change of lifestyle lead to a loss of identity and culture of indigenous peoples.<sup>125</sup>

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122. V. V. Poddubikov, S. A. Artsemovich. *The “Resource Curse” with a Shade of Anthracite: Indigenous Peoples and Extractive Companies of Kuzbass in a Conflict Situation. Sibirskiye istoricheskiye issledovaniya (Siberian Historical Research)*, 2018. No. 2, pp. 142-163, [http://journals.tsu.ru/siberia/&journal\\_page=archive&id=1719&article\\_id=38078](http://journals.tsu.ru/siberia/&journal_page=archive&id=1719&article_id=38078).

123. UN CERD assessed the situation of Shors in Kemerovo region. Website of ADC Memorial, January 10, 2020, <https://adcmemorial.org/en/news/un-cerd-assessed-the-situation-of-shors-in-kemerovo-region/>.

124. See, for instance: Yelena Solovyova, Nikita Pivovarov. *Spetsproyekt «7X7». Ugol. Ogon i voda. Blog-tur v Kuzbass. Chast 2. 7x7 – Horizontal Russia*. December 15, 2016, <https://lr.7x7-journal.ru/ugol2/>.

125. ADC Memorial. *“I Won’t Have Any Life Without This Land”: Violations of the Rights of Indigenous Peoples Resulting from Coal Mining in Southern Siberia*, 2020, pp. 7, 56, <https://adcmemorial.org/wp-content/uploads/indigenouseng2020-1.pdf>.

# Afterword

The massive upsurge in the production and exports of Russian coal from Kuzbass in the last decade has been primarily driven by the vast and varied support rendered by the Russian government. Provided as part of this support was, apparently, a tacit permission granted to the region's authorities to ignore the negative aspects of coal mining, such as the damage wrought to the environment and public health. The consequence of this policy is the continuing deterioration of living conditions in Kuzbass and extraordinary levels of pollution and rates of illnesses.

Even though Russia ratified the Paris Agreement – a treaty aimed at reducing greenhouse gas emissions – the focus of the official development strategy of the country that ranks fourth in the world in anthropogenic emissions continues to be on increasing its production and exports of coal, which is one of the main culprits of the accumulation of carbon dioxide in the atmosphere and, as a result, the global climate crisis. Kuzbass, then, seems to stay in line with the vector of development set by the country's leadership – a course that neglects to take into account the efforts the international community is undertaking toward an expedited phaseout of coal. In April 2020 alone, coal use was completely discontinued in Sweden and Austria, and the association of countries and regions that have a date by which they intend to go coal-free enshrined in their policy includes more than 30 members.

This short-sightedness of the authorities hoping to secure new markets for Russia's coal may cost dearly to the population of Kuzbass, where a great number of jobs depend directly on coal mining. Given that the leadership in Moscow is failing to adequately assess the decarbonization processes taking place in the global energy industry, the time is now for the government of Kuzbass to show resolve in identifying measures necessary to diversify the local economy. Unless they do, already within the current decade the region may find itself in a situation of widespread unemployment, without means for development of non-coal-related areas of the economy.

Rampant, barely lending itself to any legal constraints to control it, coal mining in Kuzbass has caused a sharp deterioration of air and water quality, which has a severe impact on the health of the population. This is one of the main driving forces behind the growing environmental protest activity that has been observed in Kuzbass in the past three years. Since, under the current economic course, the causes of the protests cannot be eliminated, the active engagement of the citizens and political instability will only increase further. Therefore, the first thing to do in this situation in Kuzbass, in addition to embarking on a shift toward economic diversification, is to introduce a total ban on transfers of agricultural land for coal mining. The second is to force coal companies to strictly comply with the regulations on sanitary protection zones. The third is to forbid selling open-pit mines without an assessment of the buyer's ability to carry out reclamation work. The fourth is to perform a full-scale and comprehensive evaluation of the environmental situation in the region, the results of which would include not only the official emissions and wastewater statistics – which are composed of data reported by coal companies themselves and data obtained through sample analyses – but also the pollution testified to by residents, who are suffering daily from coal dust and lack of usable water. The fifth is, rather

than using only public funds to remediate the environmental and health effects of coal mining in the region, to force coal companies to accept responsibility for the damage inflicted. The money to tackle the catastrophic consequences of this coal race must first and foremost come from the companies whose activities have led to these consequences. The sixth is to prohibit mining or reloading coal within the limits of population centers.

In the spring of 2020, for the first time in the history of Kuzbass, an emergency was declared in two areas where spoil heaps accumulated from coal mining are burning. The billions of tons of overburden in the old spoil tips, including those burning from within, are yet another disaster in addition to the large-scale pollution of air and drinking water, the destroyed agricultural lands, and the harm caused by irresponsible surface mining operations to public health.

But while the recognition of the problem of the burning spoil heaps by the regional authorities is a step forward, far more sweeping measures are required to not even solve, but only begin to address this and many other problems that have accumulated in the region due to unrestrained coal mining. The magnitude of these problems is so enormous that it defies hope that they can be solved in the foreseeable future, but that does not mean that they should be ignored.



