

Russian Companies in Autumn 2020: Activities in the COVID-19 Pandemic and Views on the Transition to the Best Available Technologies (BAT)

D. B. Kuvalin^a, Yu. V. Zinchenko^{a, *}, and P. A. Lavrinenko^a

^a *Institute of Economic Forecasting, Russian Academy of Sciences, Moscow, Russia*

^{*}*e-mail: yuvzinch@gmail.com*

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Abstract—The paper analyzes and comments on the results of a regular survey of Russian enterprises in the real sector, which was conducted by the Institute of Economic Forecasting of the Russian Academy of Sciences. Information on the impact of the coronavirus pandemic on the activities of domestic enterprises is provided. The opinions of enterprises on the severity of various macroeconomic problems in Russia are reflected. The data on the relations between Russian enterprises and banks are presented. The degree of demand of Russian enterprises in the modernization of production is determined. Information on purchases of domestic and foreign equipment in Russia is considered. The assessments of enterprises regarding the quality of Russian machinery and equipment are given. The data on delays in the supply of raw materials and components are presented. The opinions of enterprises on the implementation of the best available technologies (BAT) in Russia are reflected.

Keywords: economic consequences of the COVID-19 pandemic, enterprise behavior, enterprise survey, enterprise lending, quality of Russian technology, best available technologies

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In the second half of 2020, the COVID-19 pandemic continued to pose serious problems for the Russian economy. Meanwhile, the weakening of quarantine measures, the actions of the Russian authorities to support the population and enterprises, a certain revival in international markets and some relaxation of the national macrofinancial policy by the end of the year made it possible to significantly reduce the severity of the economic crisis in the country.

While Russia's GDP fell by about 8% in the most acute phase of the crisis in the second quarter of 2020 compared to the same period in 2019, the decline in GDP should not exceed 3.8–4.2% by the end of the year in the opinion of various experts [1–3]. At the same time, according to preliminary estimates of the Federal State Statistics Service, the volume of industrial production for 11 months of 2020 in relation to

the same period of 2019, freight turnover of transport, and the volume of paid services to the population decreased by 3.0%, 5.4%, and 17.7%, respectively. Meanwhile, the volume of production in agriculture increased by 1.5%. The volume of investments in fixed assets for nine months of 2020 fell by 4.1% [4].

The complexity and inconstancy of the situation in the Russian economy are clearly visible in the data of the survey of Russian enterprises, which was conducted by the Institute of National Economic Forecasting of the Russian Academy of Sciences in November–December 2020¹. For example, while in April–May 2020 73.60% of the respondents said that their enterprise was affected by the events associated with the coronavirus pandemic, in November–December there were fewer such answers—69.12%. At the same time, there was an increase in the number of enterprises reporting that they were not affected by the pandemic. The share of such answers increased from 4.80% in April–May 2020 to 11.03% in November–

Table 1. Answers to the question: “Has your enterprise suffered from the events related to the coronavirus pandemic?” (total of answers = 100%)

Period	Yes	No	No, but it may suffer in the future
April–May 2020	73.60	4.80	21.60
November–December 2020	69.12	11.03	19.85

¹ The survey involved 139 enterprises (power industry; water supply; ferrous and non-ferrous metallurgy; chemistry; mechanical engineering; building materials industry; forestry, woodworking and pulp and paper industries; light, food, pharmaceutical and printing industries; agriculture; construction; transport; vehicle repairs; health care; trade; public catering) from 58 regions of Russia.

Table 2. Answers to the question: “What has happened to the sales volume of your enterprise?” (total of answers = 100%)

Period	Sales volume						
	it has increased	it has remained at the same level	It has decreased				
			by 10	by 11–20%	by 21–50%	more than by 50%	down to 0%, the enterprise has almost closed
April–May 2020	3.20	15.90	15.90	23.00	22.20	15.90	4.00
November–December 2020	7.91	19.42	26.62	17.99	20.86	5.76	1.44

Table 3. Answers to the question: “Was your business able to take advantage of the support measures promised by the federal authorities in connection with the coronavirus pandemic?” (total of answers = 100%)

Period	Yes	No	No, but it intends to take advantage of this support in the future
April–May 2020	9.00	70.50	20.50
November–December 2020	24.82	68.61	6.57

December 2020 (Table 1). In addition, the proportion of enterprises that reported growth or stability of their sales volumes increased by the end of the year, and the proportion of enterprises that experienced a deep decline in sales volumes (over 50%) significantly decreased. In particular, the share of reports about a growth in sales volumes increased from 3.20% in April–May 2020 to 7.91% in November–December 2020. At the same time, the share of answers about a drop in sales volumes by more than 50% decreased from 15.90% in April–May 2020 to 5.76% in November–December 2020 (Table 2). Such shifts in the structure of answers confirm that the situation improved in some areas of the Russian economy in the second half of the year.

One of the factors that influenced the economic situation for the better was the support of enterprises from the state. The variety of forms of this support and their relatively quick launch into action made it possible to cover a fairly wide range of economic activities and enterprises. As a result, the share of enterprises that were able to take advantage of support measures

from the federal authorities increased from 9.00% in April–May 2020 to 24.82% in November–December 2020. However, the share of enterprises that did not receive such support changed little—from 70.50% in April–May 2020 to 68.61% in November–December 2020 (Table 3).

In other words, most of the Russian enterprises affected by the crisis associated with the pandemic had to make do on their own. This is probably why Russian enterprises as a whole were very cautious in assessing their market prospects. Only 5.76% of the respondents expected an increase in sales volumes in the next 1–2 months in November–December 2020. Even in April–May 2020, the share of such respondents was higher at 14.20%. Admittedly, the share of enterprises that believed that the sales volume would not fall and would remain approximately at the same level increased noticeably, from 29.90% in April–May 2020 to 46.04% in November–December 2020. However, the share of enterprises that expected a reduction in sales volumes did not decrease by the end of the year. In April–May 2020 it was 27.60%, and in November–December 2020 it was 28.78% (Table 4). Thus, enterprises as a whole do not expect a quick recovery of the Russian economy from the current crisis. However, such cautious views of enterprises on the future were also characteristic of all previous crises that had taken place in the Russian economy. Moreover, enterprises were clearly pessimistic about the near future even in situations when the national economy was actually rather quickly (as in the spring of 2009) overcoming the consequences of the crisis.

At the same time, it should be noted that the crisis phenomena generated by the pandemic had relatively little effect on the views of domestic enterprises about

Table 4. Answers to the question: “What, according to your estimates, will happen with the sales volume of your enterprise in the nearest (1–2 months) perspective?” (total of answers = 100%).

Period	The sales volume will begin to grow	The sales volume will remain at approximately the same level	The sales volume will continue to decrease	It is difficult to say, the level of uncertainty in the market is very high
April–May 2020	14.20	29.90	27.60	28.30
November–December 2020	5.76	46.04	28.78	19.42

Table 5. Answers to the question: “What problems of a macroeconomic nature are currently creating the greatest difficulties for your enterprise” (total of answers > 100%)

Period	Insufficient effective demand on the part of consumers	High level of competition from other Russian manufacturers	High level of competition from foreign manufacturers	High level inflation	The inability to obtain a short-term (up to 1 year) loan at a reasonable interest rate	The inability to obtain a long-term (over 1 year) loan at a reasonable interest	High price level for transport and energy resources	High level of taxation of enterprises
July–August 2002	62.64	33.33	25.29	9.20	12.07	35.63	56.32	50.57
February–March 2004	55.19	28.57	20.78	9.09	7.79	24.68	49.35	51.30
July–August 2005	52.15	29.03	20.97	13.98	12.37	28.49	47.85	47.85
August–September 2006	36.59	26.83	27.44	16.46	13.41	24.39	46.95	39.63
2007	31.11	30.56	25.56	14.44	10.56	14.44	38.33	41.11
2008	31.36	30.18	28.40	31.36	10.06	18.93	51.48	34.91
2010	50.00	26.15	19.27	11.47	11.47	22.48	50.46	33.94
October–December 2011	56.52	25.47	16.77	15.53	9.32	14.29	52.80	58.39
November–December 2012	49.11	26.04	26.63	10.65	11.83	14.79	42.01	39.64
2013	51.98	25.99	22.03	14.69	11.86	12.99	46.33	47.46
2014	56.76	27.03	22.97	23.65	14.86	4.73	47.30	38.51
2015	64.64	18.78	8.84	30.94	19.89	29.28	32.01	33.15
2016	68.32	22.98	10.56	19.25	15.53	25.47	38.51	39.75
2017	60.13	28.48	17.09	3.80	8.86	15.82	39.26	39.87
2018	60.99	29.08	21.28	11.35	12.77	17.73	36.17	43.97
2019	65.27	31.14	22.16	7.78	10.18	14.37	37.13	50.90
2020	65.47	23.74	13.67	18.71	6.47	10.79	34.53	43.88

Table 5. (Contd.)

Period	High level of bureaucratic and corruption in government bodies	Lack of normal laws governing economic activity	Inactivity of state power bodies in the economic sphere	Low payment discipline in the market	Lack of quality labor force	Dominance of criminal and semicriminal ways of doing business in the economy	Macroeconomic problems of the country do not create any special difficulties for our company	Other
July–August 2002	21.84	24.71	21.84	20.69	19.54	10.34	0.00	6.32
February–March 2004	24.68	16.88	18.83	13.64	31.17	6.49	0.65	0.00
July–August 2005	24.73	20.97	19.35	19.35	26.88	5.38	0.54	5.91
August–September 2006	22.56	15.24	17.07	12.20	39.02	7.93	1.22	6.71
2007	22.22	14.44	23.33	10.00	53.89	7.22	0.56	8.89
2008	20.71	9.47	20.12	8.28	55.62	5.33	0.00	12.43
2010	23.85	20.18	17.43	16.06	38.99	6.42	0.46	4.58
October–December 2011	20.50	14.29	20.50	14.91	41.61	3.73	0.00	9.32
November–December 2012	23.08	17.16	16.57	13.02	43.20	7.69	1.78	4.73
2013	18.08	20.34	22.60	15.25	39.55	4.52	1.13	7.34
2014	16.22	12.84	17.57	16.22	36.81	5.41	2.70	6.08
2015	14.34	14.92	18.78	18.23	24.31	1.66	1.66	6.08
2016	13.04	17.39	16.15	11.18	22.36	3.11	1.24	4.97
2017	13.92	18.35	19.62	14.56	27.85	5.70	3.16	5.06
2018	12.77	15.60	15.60	22.70	32.62	3.55	3.55	7.09
2019	13.77	14.37	16.17	14.37	39.52	4.19	1.80	7.19
2020	11.51	17.99	17.27	16.55	40.29	4.32	2.16	2.16

Table 6. Answers to the question: “How, in your opinion, has banks fulfilling their obligations to enterprises changed over the past year?” (total of answers = 100%)

Period	It has improved	It has remained at the same level	It has worsened
August–September 2010	20.66	72.30	7.04
October–December 2011	14.19	78.71	7.10
November–December 2012	13.41	78.05	8.54
November–December 2013	10.40	80.35	9.25
November–December 2014	6.38	78.17	15.50
November–December 2015	3.37	76.97	19.66
November–December 2016	6.29	77.99	15.72
November–December 2017	10.26	76.28	13.46
November–December 2018	13.48	78.72	7.80
November–December 2019	13.33	79.40	7.27
November–December 2020	9.63	80.74	9.63

the severity of macroeconomic problems in Russia. As in previous surveys, enterprises most often indicated insufficient effective demand among the most acute problems at the end of 2020 in 65.69% of answers. But this is exactly the same share of answers as in the pre-crisis 2019. Moreover, over the year there was a decrease in the frequency of complaints about problems such as a high level of competition with other Russian manufacturers (31.14% of answers in 2019 and 23.74% of answers in 2020), a high level of competition with foreign manufacturers (22.16% in 2019 and 13.67% in 2020), the inability to obtain a short-term loan (10.18% in 2019 and 6.47% in 2020), and the inability to obtain a long-term loan (14.37% in 2019 and 10.79% in 2020). The frequency of complaints about the high level of taxation also decreased from 50.90% of answers in 2019 to 43.88% of answers in 2020. It is likely that this positive shift is associated with tax incentives that were provided to Russian small and medium enterprises in the second quarter of 2020, as well as a number of large enterprises from the hardest hit industries. In addition, it should be noted that the proportion of complaints about a high level of bureaucracy and corruption in government bodies in 2020 turned out to be the lowest for the entire period of the surveys, 11.51% (Table 5).

A distinctive feature of the economic crisis in 2020 was the relative stability in the financial and banking sector. Unlike the crises of 1998, 2008, and 2014–2015, there were no significant disruptions in the payment system, bursts of inflation, or a sharp increase in interest rates in Russia. As the survey data show, relations between Russian enterprises and banks were also quite stable and generally avoided the negative impact of the crisis. In particular, the overwhelming number of respondents—80.74%—answered that banks fulfilled their obligations in 2020 at the same level. At the same time, the shares of answers about the improve-

ment and deterioration of banks' behavior turned out to be the same (Table 6).

In addition, it should be noted that the share of answers about the absence of deliberate delays in payments by banks increased again in 2020. As a result, this share reached its maximum level since 2001 at 84.78% (Table 7).

However, the depth of interaction between Russian enterprises and banks still leaves much to be desired. In particular, the total share of enterprises receiving loans from banks for the implementation of investment projects amounted to only 20.29% in 2020. This is significantly less than, for example, in 2011–2012 (Table 8).

Bringing the Russian economy out of the crisis requires efforts in a number of areas. One of these areas is the technological modernization of production [5–9]. As the survey data show, the current eco-

Table 7. Answers to the question: “Has your company faced a deliberate delay in payments by banks over the past year?” (total of answers = 100%)

Period	Yes	No	It is difficult to judge
August–September 2010	7.55	76.42	16.03
October–December 2011	4.52	71.61	23.87
November–December 2012	4.82	77.11	18.07
November–December 2013	5.23	76.74	18.03
November–December 2014	5.67	78.72	15.61
November–December 2015	11.24	75.28	13.48
November–December 2016	5.63	76.25	18.12
November–December 2017	7.74	76.13	16.13
November–December 2018	7.04	79.58	13.38
November–December 2019	9.03	79.52	11.45
November–December 2020	5.07	84.78	10.14

Table 8. Answers to the question: “What is the cooperation of your enterprise with Russian banks at the present time?” (total of answers = 100%)

Period	Cooperation is limited only to settlement and cash services	Settlement and cash services and lending of turnover means	Settlement and cash services, lending of turnover means and lending of investment projects for a period of 1–2 years	Settlement and cash services, lending of turnover means and lending of investment projects for a period of 3–5 years and more
August–September 2010	40.38	35.68	9.86	14.08
October–December 2011	43.71	30.46	13.91	11.92
November–December 2012	41.57	33.13	11.45	13.85
November–December 2013	50.57	27.84	9.09	12.50
November–December 2014	41.50	34.01	10.88	13.61
November–December 2015	47.75	33.15	6.18	12.92
November–December 2016	50.94	31.45	6.92	10.69
November–December 2017	51.61	27.75	6.45	14.19
November–December 2018	52.48	34.04	2.13	11.35
November–December 2019	46.38	35.54	4.22	13.86
November–December 2020	47.10	32.61	6.52	13.77

Table 9. Answers to the question: “How great is your enterprise’s need for modernization of production and technological innovations at the moment?” (total of answers = 100%)

Period	Special modernization is not required; the renewal will be made as the need arises	Partial modernization is required (renewal of a part of equipment, structures, communications, some technological processes)	A radical modernization is required
March–April 2011	21.21	58.08	20.71
November–December 2012	21.08	57.23	21.69
April–May 2014	15.76	55.15	29.09
November–December 2015	26.26	58.10	15.64
April–May 2017	23.97	61.64	14.39
November–December 2018	26.76	57.04	16.20
November–December 2020	25.36	63.04	11.59

economic crisis has somewhat changed the views of enterprises regarding the need to modernize production. About a quarter of the surveyed enterprises (and this is almost the maximum for the period of the survey) believe that they do not need modernization at the moment; about two-thirds of the respondents think that partial modernization is sufficient, and only 11.59%—less than ever before—believe that they need a radical technological modernization (Table 9). Apparently, such a decrease in the need for modernization efforts is associated with a rather pessimistic view of enterprises on the medium-term prospects of the Russian economy. Why must money be spent on modernization if demand for additional products is either falling or growing very slowly?

However, regardless of the need to modernize production, the enterprises’ own resources, which they

can spend on technological innovations, remain generally insufficient. Only 13.43% of the respondents reported that the current volume of investments allowed them to carry out a full modernization. At the same time, another 35.07% of the respondents can carry out partial modernization. Thus, about half of Russian enterprises cannot finance the modernization of production and the introduction of technological innovations as before. This state of affairs established at the end of the 2000s and has barely changed since then (Table 10).

A key element of technological modernization is the purchase of machinery and equipment [10, 11]. Under the conditions when sanctions restrictions are overlapped on a severe economic crisis, it is very important that the competitiveness of domestic technology be gradually growing. On the one hand, this

Table 10. Answers to the question: “Does the current level of production investments of your enterprise provide a solution to the problem of a full modernization of production?”, % (total of answers = 100%)

Period	Yes, it provides quite fully	It is able to provide only some partial improvements	It is able to maintain production at the existing technological level and no more	It does not even ensure the preservation of the existing technological level of production
March–April 2011	11.73	34.69	34.69	18.89
November–December 2012	18.40	28.22	35.58	17.80
April–May 2014	15.43	30.86	29.63	24.08
November–December 2015	11.36	32.95	38.64	17.05
April–May 2017	15.86	24.14	43.45	16.55
November–December 2018	20.00	29.63	34.07	16.30
November–December 2020	13.43	35.07	41.04	10.45

Table 11. Answers to the question: “What machinery and equipment has your company purchased during the last 2–3 years?” (total of answers > 100%)

Period	Machinery and equipment of Russian production, new	Machinery and equipment of Russian production, used	Machinery and equipment produced in the CIS countries, new	Machinery and equipment produced in the CIS countries, used	Machinery and equipment produced in the far abroad, new	Machinery and equipment produced in the far abroad, used
February–March 2010	62.89	15.09	15.72	1.89	62.29	13.84
October–December 2011	64.19	17.57	10.81	1.35	68.92	11.49
April–May 2013	47.97	13.51	11.49	0.68	70.27	11.49
November–December 2014	56.72	17.16	13.43	2.99	64.18	10.45
April–May 2016	50.00	14.08	11.27	2.82	63.38	11.27
November–December 2017	67.83	15.38	11.89	2.10	53.85	9.79
April–May 2019	53.68	20.59	12.50	2.94	58.09	8.09
November–December 2020	53.96	15.11	9.35	0.72	51.80	9.35

will make it possible to increase the technological independence of the Russian economy through import substitution. On the other hand, this will give the opportunity of increasing the rate of economic growth due to the advanced development of the national engineering industry.

As for the purchases of machinery and equipment, the frequency of reports on the purchase of new domestic equipment in 2020 again exceeded the frequency of reports on the purchase of new equipment from the far abroad (Table 11). This is generally a pleasant fact, but it is largely due to the recent depreciation of the ruble and the rise in the cost of imports.

Meanwhile, the assessments of Russian enterprises in relation to the quality of domestic equipment unfor-

tunately did not improve in 2020. Only 7.26% of the respondents considered that the quality of Russian machinery and equipment had improved in most cases (Table 12).

Only 11.81% of enterprises reported that there was a lot of domestic equipment on the market that was not inferior in quality to foreign alternatives (Table 13). In addition, the share of answers that the gap in quality between Russian and foreign technology is decreasing turned out to be less than the share of answers about an increase in this gap, 15.20% compared to 28.00% (Table 14).

As part of the survey, a study was also carried out on the situation with the terms of the delivery of raw materials and components to Russian enterprises. The

Table 12. Answers to the question: “Has the quality of Russian machinery and equipment improved?” (total of answers = 100%)

Period	Yes, it has improved in most cases	It has improved for some types and has remained at the same level for others	It has in general remained at the same level	The quality has in general worsened
February–March 2010	8.12	34.38	26.25	21.25
October–December 2011	6.62	38.24	48.53	6.62
April–May 2013	7.59	31.03	46.21	15.17
November–December 2014	8.80	31.20	56.00	4.00
April–May 2016	7.91	35.25	53.24	3.60
November–December 2017	18.12	33.33	43.48	5.07
April–May 2019	10.69	33.59	48.85	6.87
November–December 2020	7.26	33.06	52.42	7.26

Table 13. Answers to the question: “Do Russian-made machinery and equipment needed for your company include such models that are not inferior in quality to their counterparts from the far abroad?” (total of answers = 100%)

Period	Yes, and quite a lot	Yes, but very little	No
February–March 2010	6.25	51.88	41.87
October–December 2011	6.34	54.93	38.73
April–May 2013	6.08	50.00	43.92
November–December 2014	3.85	53.08	43.07
April–May 2016	10.42	58.33	31.25
November–December 2017	12.75	50.34	36.91
April–May 2019	14.71	47.06	38.23
November–December 2020	11.81	50.39	37.80

survey data show that at present the vast majority of enterprises do not face significant problems caused by violations in delivery terms.

Almost 80% of the respondents noted that delivery terms were almost never violated or rarely violated (Table 15). Meanwhile, it should be noted that the share of violations in deliveries that occurred through the fault of transport workers is extremely low, being 5.51% of answers (Table 16). These data can be considered as an indirect confirmation of the very efficient operation of the modern Russian transport system. It should also be noted that the overwhelming majority of enterprises believe that delays in deliveries usually do not lead to a significant increase in their costs (Table 17).

As a follow-up to the previous surveys on sustainable development, the state of affairs in the field of

environmental modernization of Russian enterprises was investigated and the problem of using the best available technologies (BAT) was raised. The introduction of BAT is provided for by international conventions and agreements that were also ratified in Russia² and is an important institutional mechanism aimed both at reducing the negative impact on the environment from industrial enterprises and at modernizing their production facilities.

While the concept of the best available technologies began to take root in Europe and North America in the 1980s³, a similar concept in Russia—the best available technologies—was first established only in 2002⁴, although this concept was present in an implicit form in a number of GOSTs on resource conservation, rationing of material costs and other areas. In fact, the process of transferring production to the BAT began in 2014, when the federal law of July 21, 2014, No. 219-FL was adopted, according to which enterprises are required to introduce economically rational technologies that minimize wastes and emissions.

Due to the fact that the BAT principles have been introduced into Russian practice relatively recently, not all Russian industrial enterprises are familiar with this concept. The results of the survey have revealed that 40% of the surveyed enterprises do not know anything about the task of transition to the BAT (Fig. 1). Meanwhile, the real task of transition to the BAT is faced by 13.85% of enterprises, and almost a quarter of the surveyed enterprises expect such requirements to arise in the future.

About half of the surveyed enterprises (58%) noted a number of expected positive consequences due to the

² Such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Stockholm Convention on Persistent Organic Pollutants, etc.

³ The concept of BAT was first introduced in 1984 in the European Economic Community Directive No. 84/360/EEC concerning the abatement of air pollution from industrial plants [13].

⁴ In Federal Law, On Environmental Protection, dated January 10, 2002, No. 7-FL.

Table 14. Answers to the question: “How do you assess the size of the gap between the quality of machinery and equipment of Russian and foreign production in recent years?” (total of answers = 100%)

Period	In recent years the gap in quality has been decreasing	The gap remains about at the same level	The gap in quality continues to grow in favor of imported equipment
February–March 2010	15.72	36.48	47.80
October–December 2011	12.95	50.36	36.69
April–May 2013	10.74	53.69	35.57
November–December 2014	16.80	60.00	23.20
April–May 2016	18.18	55.94	25.88
November–December 2017	28.47	52.78	18.75
April–May 2019	20.15	54.48	25.37
November–December 2020	15.20	56.80	28.00

Table 15. Answers to the question: “How often are the terms of delivery of raw materials and components for your enterprise violated?” (total of answers > 100%)

Period	Almost never	Rarely (less than in 10% of cases)	Not very often (in 10–25% of cases)	Often (in 26–50% of cases)	Very often (in more than 50% of cases)
November–December 2020	31.82	47.73	16.67	3.03	0.76

Table 16. Answers to the question: “Whose fault is the delivery terms being violated?” (total of answers > 100%)

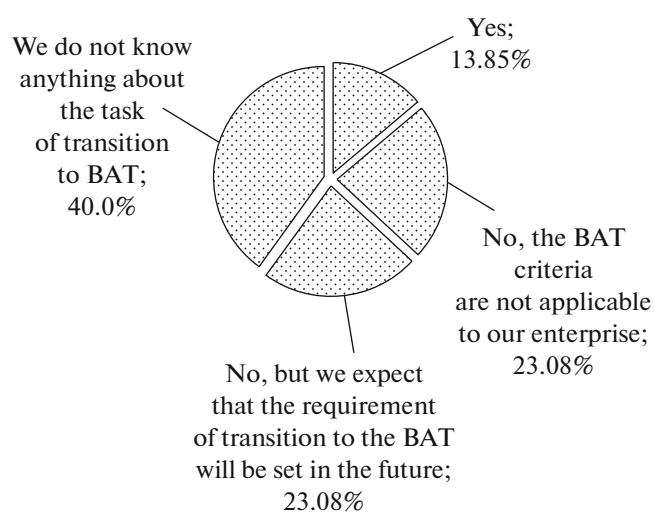
Period	Through the fault of suppliers	Through the fault of transport workers	Due to force majeure circumstances (international sanctions, pandemic, changes in legislation, etc.)	Other
November–December 2020	47.24	5.51	44.88	2.36

Table 17. Answers to the question: “To what extent do today’s delays of deliveries increase the costs of your company?” (total of answers = 100%)

Period	They barely increase costs	They increase costs, but not significantly	They increase costs significantly	They increase costs critically
November–December 2020	34.92	51.59	12.70	0.79

introduction of the BAT system: the opportunity of zeroing fees for negative environmental impact (32.10%) and a real reduction in the burden on the environment (30.86%) were most frequently mentioned (Fig. 2).

At the same time, an even greater part of the surveyed enterprises (64%) noted the possible negative consequences that they may face in the event of the introduction of the BAT system: one third of enterprises feared that additional costs were not justified in relation to real environmental effects; the second third feared an excessive increase in the cost of production; the third one feared a further increase in the bureaucratic burden (Fig. 3). Some of the respondents apprehended the growth of investment costs in a short time and difficulties in developing their own systems. The respondents also included the enterprises that did not see any negative consequences from the introduction of the BAT, but such enterprises turned out to be a minority.

**Fig. 1.** Answers to the question: “Has your enterprise been assigned a task of transition to the best available technologies (BAT) in accordance with Order of the Government of the Russian Federation as of March 19, 2014 No. 398-r?”

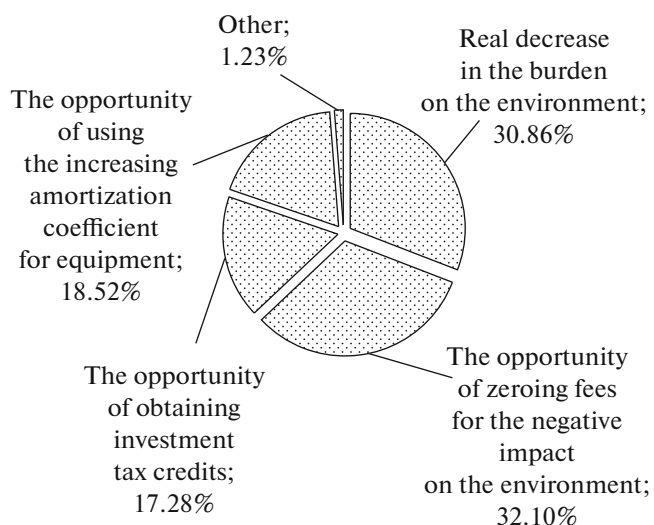


Fig. 2. Answers to the question: "Indicate what positive consequences for your company you expect due to the implementation of the BAT system according to Decree No. 398-r".

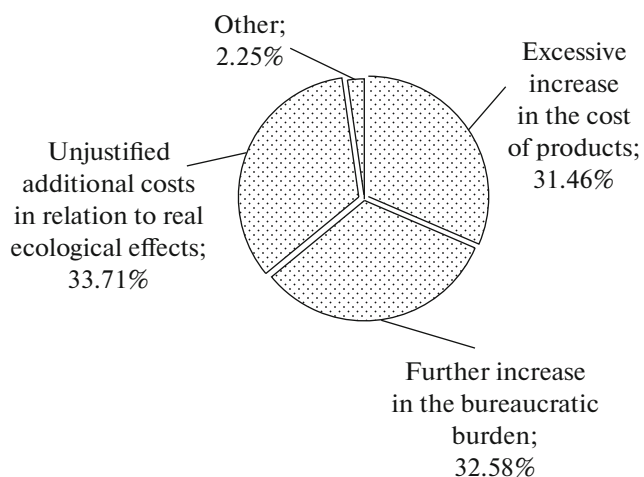


Fig. 3. Answers to the question: "Indicate what negative consequences for your company do you expect in the event of the introduction of the BAT system".

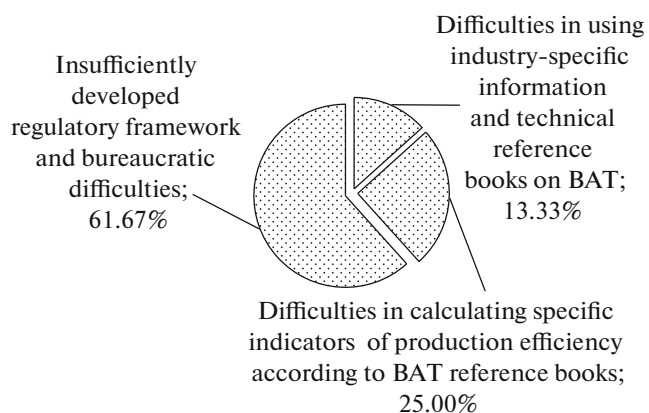


Fig. 4. Answers to the question: "What difficulties does your enterprise face during the transition to the BAT system?"

It should be noted that all surveyed enterprises, which have been assigned the task of transition to the BAT, as well as some enterprises that expect this task to be set in the future, face difficulties in the process of their implementation. Of the surveyed enterprises, 61.67% saw difficulties in an insufficiently developed regulatory and legal mechanism and bureaucratic difficulties, 25% of enterprises face difficulties in calculating specific indicators of production efficiency according to BAT reference books, and 13.33% of enterprises have difficulties in using industry-specific information and technical reference books on the BAT (Fig. 4).

The Russian BAT system is largely based on the experience of foreign countries in this area, since it involves the harmonization of legislation in the field of environmental protection and public health with the international one⁵, but at the same time it has its own characteristics and significant differences. The most significant difference is that the Russian BAT system lacks a comprehensive approach to environmental impact management: permits are issued not for all types of negative impact, but only for emissions and discharges of pollutants.

In this regard, it is important to understand to what extent Russian enterprises are ready for possible further harmonization of the Russian legislation with the international norms. About half of the surveyed enterprises found it difficult to answer this question. But, despite the difficulties of the enterprises in the process of transition to the BAT systems, almost one third of enterprises still believe that the BAT system should be expanded and its influence must also be extended to the regulation of industrial waste and limits on its disposal (Table 18).

The conclusions from the survey are as follows:

1. The COVID-19 pandemic continues to negatively affect the situation in the Russian economy; however, in general, the severity of the economic crisis in the country had decreased by the end of 2020. At the same time, the share of Russian enterprises that managed to receive anticrisis assistance from the federal authorities had increased significantly by the end of 2020.

2. Russian enterprises still consider that the most significant macroeconomic problems for themselves are insufficient effective demand from consumers, high taxation, lack of quality labor and high prices for energy and transport.

3. Despite the crisis, the relations between Russian enterprises and banks as a whole have not deteriorated.

4. The frequency of purchases of Russian machinery and equipment in 2020 has again outstripped the

⁵ In particular, Federal Law No. 219 was formed taking into account the EU and Council Directive 2010/75/EU dated November 24, 2010, On Industrial Emissions (Comprehensive Prevention and Control), and the European Parliament and Council Directive 2008/1/EC dated January 15, 2008, On Integrated Prevention and Control of Pollution.

Table 18. Answers to the question: “Do you consider it expedient within the framework of the BAT system to introduce control not only for emissions and discharges of pollutants, but also for the formation of industrial waste and the receipt of limits on its disposal?”

Period	Yes	No	It is difficult to answer
November–December 2020	32.14	19.05	48.81

frequency of purchases of machinery and equipment from the far abroad. However, Russian enterprises still rate the quality of domestic equipment rather low.

5. The situation with the supply of raw materials and components to Russian enterprises looks quite good. In general, delivery terms are not often violated.

6. A significant part of enterprises are not familiar with the task of transition to the BAT principles and do not have a clear opinion about their further development in Russia.

7. Many Russian enterprises express concern about the possible negative consequences of the introduction of the BAT systems.

8. Nevertheless, many surveyed enterprises have a positive attitude to the implementation of the BAT systems and consider it important to further harmonize the Russian legislation in this area with the international legal norms.

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REFERENCES

1. A. Shirov, “Corona crisis as a challenge for economic policy,” *Vedomosti*, Dec. 29 (2020). <https://www.vedomosti.ru/opinion/articles/2020/12/29/853008-vosstanavlivaetsya-rost>.

2. The World Bank Improved the Negative GDP Growth Forecast for Russia in 2020. <https://tass.ru/ekonomika/10270561>.
3. The Ministry of Economic Development Improved the Negative GDP Growth Forecast for Russia in 2020 to 3.8%. <https://tass.ru/ekonomika/10351705>.
4. Federal State Statistics Service of Russia. Socio-Economic Situation in Russia—2020. https://rosstat.gov.ru/bgd/free/B20_00/Main.htm.
5. N. I. Komkov, “External and internal challenges and prospects for the modernization of Russia’s economy,” *MIR (Modernizatsiya, Innovatsii, Razvit.)* **9** (1), 12–24 (2018).
6. N. I. Komkov, *Problems of Managing the Development of Large-Scale Socio-Economic Systems* (Nauka, Moscow, 2020) [in Russian].
7. N. I. Komkov, “Conditions of the structural and innovation policy for the development of the Russian economy,” *MIR (Modernizatsiya, Innovatsii, Razvitie)* **89** (1), 80–87 (2017).
8. Yu. V. Yaremenko, “Priority to structural and technological renewal of the national economy,” *Russ. Ekon. Zh.*, No. 1, 3–7 (1994).
9. A. A. Blokhin and A. G. Fonotov, “Global traps for the Russian innovation system,” *Mir Nov. Ekon.* **14** (2), 51–62 (2020).
10. V. N. Borisov and O. V. Pochukaeva, “Method for assessing the process of import substitution in the Russian market of investment equipment and its statistical support,” *Vestn. Novosib. Gos. Univ. Ekon. Upr.*, No. 3, 94–108 (2019).
11. V. Borisov and O. Pochukaeva, “Russian market of investment equipment: Stagnation or development,” *O-vo. Ekon.*, No. 12, 59–74 (2019).
12. I. A. Budanov, A. Yu. Kolpakov, D. A. Polzikov, et al., *Economic Aspects of Modernization of the Waste Management Sector in Russia. Scientific Report* (Nauka, Moscow, 2020) [in Russian].
13. Council Directive 84/360/EEC of 28 June 1984 on the Combating of Air Pollution from Industrial Plants. <https://eur-lex.europa.eu/eli/dir/1984/360/oj>. Accessed December 30, 2020.

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