LABOR PRODUCTIVITY AND ITS ROLE IN THE SUSTAINABLE DEVELOPMENT OF ECONOMY: ON THE EXAMPLE OF A REGION

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Abstract. In this article theoretical aspects of labor productivity and its roles in the stable development of economy are studied. The main purposes of providing the growth of labor productivity as the basis of sustainable economical development are viewed. The relevance of elaboration of a concept of sustainable development of labor is explored. The indicators of the current level of indicators of labor productivity in the regional context and in industries are analyzed. The main problems are identified, the solution of which makes it possible to implement the National project of Labor Productivity and employment support of the Russian Federation. Sustainable economic development is associated not only with the progress of the information technology and innovation industry, but also with the improvement of the labor market where new jobs, professions and personnel are created. In this regard, the relevance of diagnosing labor productivity in the regional aspect is due to the fact that this indicator reflects the effectiveness of the national and regional economies, the production efficiency, characterizes the use of living labor in the production process and ultimately determines the standards of living of the population. In this regard, increasing labor productivity is one of those national goals that are being addressed not only at the federal, but also at a regional level. The higher labor productivity is, the higher economic growth, the level of protection of the national economy from external challenges and threats from the instability of world markets are.

Keywords: labor productivity, sustainable development, region, national project, economic growth.

Reference to this paper should be made as follows: Fedulova, I., Voronkova, O., Zhuravlev, P., Gerasimova, P., Glyzina, M., Alekhina, N. 2019. Labor productivity and its role in the sustainable development of economy: on the example of a region. *Entrepreneurship and Sustainability Issues,* 7(2), 1059-1073. http://doi.org/10.9770/jesi.2019.7.2(19)

JEL Classifications: J24, O40, R11

1. Introduction

Throughout the Soviet history, the government has repeatedly set the goal of achieving a significant increase in productivity. The last of these attempts relates to the period of restructing called perestroika. In the post-Soviet period in 2008 at a meeting of the State Council when considering the Concept for the development of the country until 2020, based on the results of the previous years, the goal to achieve at least a four-fold increase in labor productivity over 12 years was also proclaimed as the need for the main sectors of economy which corresponds to the average annual growth rate of 12,2%.

If the data given by the Organization for Economic Cooperation and Development for 2015 is true, labor productivity in Russia is lower than in Poland and Latvia. The problem is obvious and there is a need to solve it. It is desirable to make a decision not in favor of the employers, although it is clear that in modern class societies the results of the growth of labor productivity are assigned for the purpose of personal enrichment of people who are scarcely employees (Plaskova et al., 2017).

Meanwhile increasing labor productivity is not only an economic process (Korableva et al., 2019; Thalassinos et al., 2011; Sharafutdinov et al., 2018). It gives a powerful impetus to social development. The essence of increasing labor productivity is that it reduces the amount of time that a worker needs to produce a certain amount of product or service in order to earn his living. And since production time is reduced, he has the leisure that is necessary for the development in other spheres of life: spiritual and cultural life, sports, self-education, the development of his own children or self-development, knowledge of the world at last (Masood et al., 2019; Shatunova et al., 2019; Tarman, 2016; Kuznetsova et al., 2019).

Steady growth of labor productivity is the economic law of sustainable economic development. Increasing labor productivity is the most important condition for the growth and improvement of production. An increase in labor productivity means reducing the working time necessary for the production of a product.

2. Methodology

At the beginning of 2019 the passport of the national project "Labor Productivity and Employment Support" was published, which occupies a special place among other documents defining the strategic tasks for the national economy. The importance that is attached to it is also reflected in the fact that among the indicators of assessing the performance of governors established by the Decree of the President of the Russian Federation, labor productivity growth is represented.

In recent years labor productivity in Russia has been growing, but it's still several times lower than in developed countries. OECD statistics show that in 2017 it was $26,5 (this is the volume of GDP produced by each working Russian citizen for one hour of work). The average is $54,8, and Russia is inferior to all OECD countries except Mexico (Kosyakova L. N., Popova, A. L., 2017). In terms of labor productivity Russia lags significantly behind developed countries as well as the BRIC countries.

The head of the Accounts Chamber of the Russian Federation A.L. Kudrin believes that in terms of labor productivity Russia lags significantly behind the United States of America, other economically developed countries of the West, and even Turkey. According to his estimates, the output per worker in Russia is approximately $23 per hour. In Turkey this indicator is 1,5 times more and in the United States it is about 3. He suggests that in terms of labor productivity Russia is at the level of the 1980s for the countries of the so-called "Group of Seven" (Fukalova, 2018).

In the ranking on the level of labor productivity in 2017 including 36 of the world's largest economies and compiled by Market Watch analysts, Russia lost two positions compared to 2016, as it moved from the 32nd place to the 34th one losing to Chile and Poland (*Yagodin, 2017; www.rbc.ru*).

The aim of the study is to determine the role of labor productivity in the sustainable development of regional economy as well as to identify the distinctive features and development factors that inhibit growth.
General scientific and special methods are used as the methodological basis of the study.

The methods of analysis and diagnosis were used throughout the whole study, especially they were necessary for studying the regional characteristics of the dynamics of the labor productivity index, which allowed us to identify the general tendency to maintain positive indicators in most regions of the Russian Federation.

The comparative method was used to study the current situation. The factor method was used to identify the main causes of stagnation and decrease in the labor productivity index (Korableva et al., 2019; Solas and Sutton, 2018; Grima et al., 2017; Petrenko et al., 2019; Shaitura et al., 2018; Goloshchapova et al., 2018; Trofimova et al., 2019).

The results of the study were obtained by using the data from the Federal State Statistics Service of the Russian Federation, the Ministry of Economic Development of the Russian Federation, the Analytical Center of the Government of the Russian Federation, and the Russian media holding RBC.

The dynamics of changes in the whole of the Russian Federation

The Federal State Statistics Service of the Russian Federation does not provide any information on the indicator of "The Level of labor productivity" by regions of the Federation. There are publicly available labor productivity indices published annually both in the economy of the country and in the regions. It is calculated as the quotient of dividing the indices of the physical volume of GDP and total labor cost changes.

The analysis of the data available for the public access indicates a negative trend: the labor productivity index in the Russian Federation decreased throughout the country from 104.8% in 2008 to 101.9% in 2017. This is an unfavorable trend in terms of sustainability of economic growth, as well as of the competitiveness of the economy.

The Ministry of Economic Development of the Russian Federation forecasts a decrease in the growth rate of labor productivity in 2019 to 1.2%. Acceleration will begin only in 2020, when productivity will grow by 1.8% in annual terms. The indicator will have reached 3.1% by 2022 and it will remain at approximately the same level until 2024 (the forecast prepared for six years). But this effect in the forecast is still not fully taken into account. The contribution of the project "Increasing of labor productivity and employment support" will be evaluated in 2019. At present, the program's contribution to increasing productivity is estimated at 0.1 percentage points in 2019 "(www.rbc.ru).

In this regard, the analysis of regional aspects of the problem is preceded by valuating of the situation in dynamics. For more than 10 years, in addition to the post-crisis years of 2009 and 2015, there has been a positive dynamics of the index, but the growth rate has been declining. The average growth rate over 14 years was 3.21%. The general growth of labor productivity in different years was formed due to the growth of labor productivity in various industries. Thus, in 2017 the following economic activities made the main contribution: "Professional, scientific and technical activities" (108.4%), "Agriculture, forestry, hunting" (105.9%), "Hotels and catering enterprises" (103.5%). At the same time, back in 2016, the top three sectors were "Administrative Activities and

Related Additional Services", "Agriculture", "Forestry", "Hunting", "Manufacturing" with indicators of 103.9%, 103.0%, and 102.4%, respectively.

Until July, 2016 the old OKVED classifier was used. In this regard, it is difficult to compare time series for the sections of the classifier of types of economic activity in 2015-2017 with earlier periods. According to Federal State Statistic Service, the time series starting in 2011 in a unified methodology for OKVED-2 will be published in April, 2020 (Leaders of Russian regions in labor productivity 2018).

During 2003-2014, there was no definite leading industry in terms of labor productivity index. On average, for the study period, the highest value of the indicator was observed for the following industries: "Manufacturing" (105.2%), "Real estate operations, rental and provision of services" (104.6%), "Wholesale and retail trade; repair of motor vehicles, motorcycles, household goods and personal items "(104.1%). The lowest growth rates of the labor productivity index in 2003-2014 were observed in the field of fishing and fish farming (an average of 99.7% for the entire period under review).

In general, for 2003-2017, the value of the indicator was critically low (less than 100%) only in 2009 and 2015. A significant decrease in labor productivity in 2009 was a result of the global financial crisis, which led to a sharp decrease in production indicators, a decrease in the volume of output in the sectors of the economy, and a decrease in GVA. A similar situation was observed in 2015 during the economic crisis in Russia. Both industries that produce goods and industries that provide services were equally vulnerable (Singareddy et al., 2019; Bekebayeva et al., 2019).

3. Results

The positive factors of the Russian economy are the growth of GRP per capita and the containment of unemployment, which is at the level of 5%. The range in federal regions is from 3.2% in the Central Federal Region to 11% in the North Caucasus Federal Region.

The labor productivity index is significantly differentiated by the regions of the Russian Federation. In 2017, 69 regions (81% of the total number of regions) maintained a positive growth rate of the labor productivity index. The growth rate of at least 10% was demonstrated by the Jewish Autonomous Region (113.5%), Astrakhan Region (110%). The largest drop in the indicator was observed in the Republic of Ingushetia (labor productivity decreased by 5.7%), Chechen Republic (-4%), Sakhalin Region (4%). At the same time, a negative trend has been observed in the Republic of Ingushetia since 2015.

On the whole, in the Russian Federation, the labor productivity index is below 100% compared to the previous year in 16 regions (Table 1), which can conditionally be attributed to lagging regions. This conditionality is associated with the absence of absolute values of the analyzed indicators and a relatively small deviation from the level of indicators in Russia.

At the beginning of 2019, Nizhny Novgorod, Tyumen Regions, Perm Territory and the Republic of Tatarstan became the leaders in the implementation of the national project "Labor productivity and employment support". These regions have entered the most contracts with enterprises. Some of them have more than 40 agreements with the enterprises that participate in the project. More than 950 enterprises are going to enter the project by the end of the year.

Table 1. Regions with low labor productivity index (LPI)

Regions	LPI	Regions	LPI

Komi Republic	99,6	Amur Region	97,8
Altai Republic	99,5	Ivanovo Region	97,3
Kabardino-Balkarian Republic	99,5	The Republic of North Ossetia	97,0
The Republic of Sakha (Yakutia)	99,4	Chukotka Autonomus Region	96,5
Ryazan Region	99,3	Khanty-Mansiysk Autonomus Region	96,2
Nenets Autonomic Region	99,2	Sakhalin Region	96,0
Sevastopol	98,3	Chechen Republic	96,0
Tomsk Region	97,9	The Republic of Ingushetia	94,3

Source: compiled by the authors

At present, there is a clear idea of the factors and the reasons that influence the level and the dynamics of labor productivity in the Russian economy, including those that predetermine the lag of the country in this indicator from economically developed countries (Akhmetshin et al., 2018; Sharafutdinov et al., 2017).

The identification of the causes of regional differentiation of the labor productivity index and the dynamics of its changes suggests the need for factor analysis.

The labor productivity index is characterized by high variability and dynamism, which is associated with the influence of many factors on it. Factors of changes in labor productivity are the reasons for the change in its level. They are classified into the following groups:

1. Material and technical factors (automation and mechanization of production processes, raw materials used, their quality, properties);

2. Organizational factor (improving the management of the enterprise, production and labor);

3. Regional economic factors (climatic conditions, their changes, trends of macroeconomic indicators of the regions) and economic and geographical factors (availability of free labor resources, electricity, water; terrain);

4. Social factors (skill level of personnel, reduction of monotonous, harmful and hard work);

5. Structural factors (changes in the volume and structure of production, economic specialization).

The factors of regional differentiation affecting labor productivity can be systematized according to the time interval of occurrence and the consequences for the economy:

Historically developed factors:

Ineffective sectoral structure of the economies of the constituent parts of the Russian Federation. Thus, in the economy of the Republic of Ingushetia, the Chechen Republic, and North Ossetia, agriculture (its share in GRP is 10%, 4% is in the Russian Federation), trade and construction prevail. The agricultural economy is accompanied by a high unemployment rate compared to the Russian Federation, that is 27%, 14% and 12%, respectively.

Another example of the influence of the sectoral structure of the regional economy on labor productivity is the situation in regions with developed mining industries. Thus, in the structure of gross value added (GVA) of the Khanty-Mansiysk Autonomous Region, Sakhalin Region and the Chukotka Autonomous Region, which are

characterized annually by a low labor productivity index, a high share of the mining sector is distinguished. In these regions, it is 67%, 60% and 43.5%, respectively. However, in these regions the unemployment rate practically does not exceed the value for the Russian Federation as a whole. The main reason lies in the reduction of industrial production, investment in fixed assets, as it is shown by the data in Table 2.

Table 2. The dynamics of industrial production indices in areas of economic activity and the index of physical amount of investments into fixed assets in commodity outsider regions in labor productivity, in percentage

Regions of the RF	Industrial production index				Index of physical amount of investment into fixed assets	
	Mining industry		Manufacturing industries			
	2015	2017	2015	2017	2015	2017
Khanty-Mansi Autonomous Region	97,1	99,6	101,3	97,0	93,6	113,8
Sakhalin Region	114,0	99,2	90,0	111,6	95,6	117,3
Chukotka Autonomous Region	104,1	86,0	85,2	99,9	156,2	94,0

Source: compiled by the authors

Thus, a unipolar structure of the economy has formed in the regions that are outsiders by the labor productivity index: either the agricultural sector or the extractive industries predominate. The agricultural economy contributes to the formation of high unemployment. Mining economy significantly reduces the possibility of growth in labor productivity due to the decrease in GRP growth rates and the use of low-skilled labor. Nevertheless, state support is of great importance, expressed, in particular, in investing in the economies of these regions (Prodanova et al., 2019a, b; Neizvestnaya et al., 2018; Yemelyanov et al., 2019).

Labor productivity in the Russian region differs significantly. Its growth rates are the highest in the regions where new industries have been built in recent years and old enterprises have been modernized. One can distinguish regions with the so-called "low base effect" as for example, in Jewish Autonomous Region (113.5%).

The number of leading regions where the level of labor productivity exceeds the national average is 45. Not long ago (5-6 years), it could be argued that all the leading regions are producing raw materials, extracting hydrocarbons. Nowadays the situation has changed due to the fact that they have lost their competitiveness. Thus, the labor productivity index in Khanty-Mansi Autonomous Region is 96%, in the Nenets Autonomous Region it's 99%.

Nevertheless, there are large Russian regions with export specialization among them, most of them are characterized by a high share of mining industries (Sakhalin and Astrakhan regions).
Among non-resource regions, the Republic of Bashkortostan, Perm Territory, Kaluga Region, Tula Region, and Leningrad Region, Saratov Region, Irkutsk Region, Primorsky Territory are the leaders in terms of productivity index.

The study showed that the sectoral structure of production greatly affects the level of labor productivity.

The state of the material and technical base of industries does not meet modern requirements. The highest depreciation values of fixed assets in the sphere of mining in Russia are in regions with a developed mining industry (lagging behind in the labor productivity index). The highest depreciation of fixed assets in the Khanty-Mansiysk Autonomous Region is more than 69%. It's 53% in the Sakhalin Region, 52% is in the Chukotka Autonomous Region. On the whole, depreciation in the mining industries is 56.4% in the Russian Federation.

In the agrarian economies of the Republic of the North Caucasus, the degree of depreciation of equipment also exceeds average Russian values. The indicators in agriculture that is the main industry reach 66% in the Republic of North Ossetia (Alania), 43% in the Chechen Republic, 48% in the Republic of Ingushetia. Across the Russian Federation, depreciation of fixed assets in agriculture is 40%.

Investments have a significant impact on the modernization of fixed assets. In the Chechen Republic the share of investments in fixed assets used in agriculture is 11.6%. In the Republic of Ingushetia it's 2.3%, in the Republic of North Ossetia (Alania) it's only 0.04%.

The material and technical base of the economies of these republics is characterized by one of the lowest values for the cost of the equipment used. Among other constituent parts of the Russian Federation, outsider regions rank from 68th (the Chechen Republic) to 84th place (the Republic of Ingushetia) in terms of labor productivity index.

Availability of labor of the required qualifications; lack of qualified personnel. Among the regions of Russia, the republics of the North Caucasus stand out. The population employed in the economy is characterized by a high proportion of people with higher education (the maximum is 42% in the Republic of North Ossetia (Alania), the minimum is 26.7% in the Republic of Ingushetia. Approximately 40% of employees have secondary education. Moreover, in North Ossetia 35% of the unemployed have higher education, 46% have secondary vocational education.

This indicates the lack of demand in the labor market for workers with higher education and a shortage of workers. The North Caucasus is the region with the highest unemployment rate and labor force potential.
The people employed in the mining regions also mainly have higher education: 38% in Khanty-Mansi Autonomous Region, 31% in the Sakhalin Region, about 35% in the Chukotka Autonomous Region.
The share of the unemployed with secondary vocational education in the Khanty-Mansi Autonomous Region is more than 36%, the highest is 32%. In the Sakhalin Region it's about 39% and 17% respectively. In the Chukotka Autonomous Region it's 28% and 8.7%.

Modern factors: macroeconomic factors of economic development under the conditions of sanctions, the dominance of large and largest enterprises in the regions, insufficient business development, corruption, etc.
The development of small and medium-sized businesses in the regions is one of the factors notable for its insignificant role in the Russian economy. Thus, investment in fixed assets of small enterprises in the Chechen Republic in 2017 was only 7.1%, in the Republic of Ingushetia and North Ossetia it was less than 1%. In the number of small enterprises, the North Caucasus occupies the last place: 48 thousand, or 1.7% for the Russian Federation as a whole.

The presence of large companies whose products are known in the world market is of great importance. They are distinguished by high and stable turnover, relatively high wages and, as a consequence, high labor productivity. In 2015, the premium All-Russian project "Labor Productivity: Industry Leaders", organized by the Business Portal "Production Management", was launched. In 2018, the project results were published. In the process of compiling the rating, the specialists studied the data of more than 5,000 industrial enterprises in Russia, their total revenue amounted to more than 51% of Russia's GDP, the number of employees was more than 5.5 million people. Table 3 presents the companies included in the top ten leaders in labor productivity, which are situated in the leading regions.

Large companies have a positive effect on the investment climate of the regions, increase their level of economic security, but do not guarantee high rates of labor productivity (Sycheva et al., 2019). One of the reasons is their small number. So, in two of the ten regions represented, the labor productivity index does not reach 100%, despite the fact that they are based on large enterprises. These are the Sakhalin and Ryazan regions. The first one has a

single-industry economy, the second one is characterized by high depreciation of fixed assets (the 76th place in the Russian Federation), low amount of investment in fixed assets (61st place).

The dynamics of labor productivity depends on the growth rate of the economy and targeted efforts to increase production efficiency and introducing new technologies. Since September 2017, the Ministry of Economic Development of the Russian Federation has been implementing a project to increase labor productivity and support employment at the expense of internal reserves of enterprises.

According to the program passport, in 2018, special programs to improve business models and retrain employees are implemented in 150 enterprises in 15 regions. There are results when enterprises already participating in the program show tens of percent performance growth dynamics.

Table 3. Companies leading in labor productivity in 2018

Company	Productivity 2017, mln rubbles per person a year	Region of the RF	Labour productivity index according to Rosstat in 2017
Sakhalin Energy	139,44	Sakhalin Region	96,0
ANK Bashneft	81,29	The Republic of Bashkortostan	103,0
NOVATEK	71,6	Tyumen Region	102,0
Hyundai Motor Company	67,55	Saint Petersburg	100,4
LUKOIL Group	57,3	Moscow	101,6
Udmurtneft	54,56	Udmurt Republic	101,3
Logicruff Factory	44,56	Ryazan Region	99,3
Processing Plant "Abashevskaya"	34,98	Kemerovo Region	103,7
NLMK Kaluga	26,84	Kaluga Region	107,4
Boguchanskaya hydroelectric station	28,14	Krasnoyarsk Territory	103,1

Source: compiled by the authors

Labor productivity is low, as in recent years there has not been a sufficient increase in investment that could improve into productivity. The decrease in labor productivity growth in 2018 was due to the delayed launch of state investment projects, while the tax burden was growing (Fig. 1).
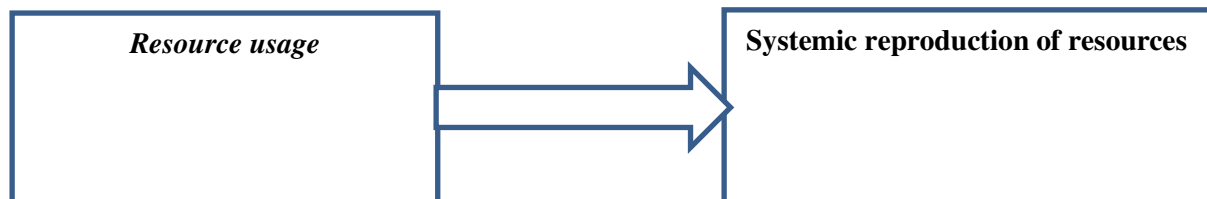

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Fig. 1. The reproductive aspect of sustainable development of the region's economy.

Source: compiled by the authors

The growth of labor productivity is a matter of technology to a large extent, and under the conditions of sanctions, Russia's technological openness remains in question (Ivanov and Bukhval'd, 2019).
The reasons for low labor productivity in the regions are:

insufficient attention of the leaders of the regions of the Russian Federation to the problem of increasing labor productivity and the lack of appropriate practical actions;

low level of managerial and technological competencies among enterprise managers necessary for a qualitative leap in labor productivity;

underdeveloped financial mechanisms necessary for the implementation of projects to improve production efficiency;
high social risks of mass layoffs and ineffective mechanisms for the quick search for new jobs and retraining and advanced training of employees;

the lack and low productivity of human capital as a leading factor in the intellectual and economic development of the Russian Federation and its regions due to low investment in it (1.5-2 times lower than in the EEC) (*viperson.ru*).

4. Discussion

The first thing that comes to many minds when there's the question what should be done first to increase labor productivity is to urgently replace all equipment with modern high-performance one. But then doubts begin: where can companies get money for it? After all, they are pressured by the stagnation of the Russian economy, in Russia there is practically no production of machinery and machine tools, the ruble exchange rate is not favorable enough for large-scale imports (Rahman and Bobkova, 2017; Vasilev, 2019). This is a serious obstacle to the big league of efficient producers.

However, some experts doubt that business in Russia now should spend money on achieving the same performance indicators that are recorded in countries with developed economies. Foreign companies opening factories in Russia do not lay the most advanced technologies on them, because it is too expensive. A competitive level of labor productivity, taking into account the devaluation of the national currency and the cost of labor in Russia, may be lower than the performance of advanced countries and leading companies in industries (Mullins, 2019; Titova et al., 2019; Voronkova et al., 2019).

Actually, other experts strongly disagree with this position, believing that one should be absolutely guided by world highs. As soon as we lower the bar to which we must strive, we subconsciously lead the country to what is called the Latin American model. If you remember, after the war, Argentina was one of the most highly developed countries. It had a high level of both productivity and GDP. And then everything collapsed, because they stopped pushing themselves, considering the competition with the USA hopeless. Another thing is China: it has long had a system of standards for products and production processes with a focus on indicators of world industry leaders. Enterprises accept it voluntarily, but those that have not done so are not allowed to fulfill government orders. As a result, Chinese enterprises are becoming more competitive in the global market in many

ways, including labor productivity (according to the Free Economic Society, in 1991–2012 it grew by an average of 6.8% per year, and by 1.29% in Russia, and in recent years it has stagnated).

However, those who reduce the problems of increasing labor productivity solely to the lack of funds allocated for modernization, do not know that they should not rush to invest in fixed assets without looking around first: are there any cheaper ways to increase productivity here and now? Then the investment may be less burdensome for the business, and its effect will be greater.

Conclusion

High productivity is the foundation of sustained economic growth. We believe that the main reasons for low labor productivity are a low level of competition, a serious lag in technology, worn-out equipment and a lack of investment.

The country has created a lot of inefficient jobs. On the one hand, this can be an advantage, since unemployment is low, but on the other hand, a huge army of watchmen, security guards, managers who, in fact, produce nothing, but only get paid, negatively affect labor productivity indicators.

In addition, the country has poor automation of production. For example, according to the International Federation of Robotics, in South Korea for every 10 thousand employees employed in the manufacturing industry, there are 631 industrial robots, in Singapore they are 488. Germans have more than 300 robots for every 10 thousand employees, Danes have more than 200, Americans have almost 190. Russia's performance in this ranking is very weak. We have only 3 industrial robots for every 10 thousand people. This is even lower than in Indonesia and as much as in the Philippines.

We will have to work with all these problems in the coming years. According to the government decree of 2019, the following trends were approved as the main areas for work to increase labor productivity in Russia:
1. Promotion of investments for the modernization of production
2. Stimulating technological updates
3. Promoting the replacement of obsolete jobs
4. Development of conditions for the professional development of employees
5. Increasing labor mobility
6. The growth of labor productivity in state-owned companies
7. Increasing Employment in the Small Business Sector

We believe that these measures, taken together, will improve the situation with labor productivity evenly across the regions, and, therefore, will have a positive impact on the sustainable development of the country's economy as a whole.

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