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Comparative characteristic of labour potential dynamics in the regions of the Northwestern Federal District*

The article considers the methodological approaches to the quantitative and qualitative assessment of the region's labour potential. The comparative analysis of labour potential dynamics of the regions of the Northwestern Federal District of Russia for 2002–2010, the Komi Republic by the level of labour potential development among the district's regions has been carried out. The main reasons for the favourable dynamics of labour potential development index are revealed.

Labour potential, labour potential development index, Northwestern Federal District.

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Labour potential is the total social capacity for work, i.e. potential labour capacity of society, its labour recources. The progress of the country's economic modernization depends on the quantitative and qualitative characteristics of labour potential. At the moment Russia has approached the line beyond which the quantitative characteristics of labour resources will be steadily deteriorating. While the share of the working age population which consti-

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tutes the basis of labour resources, increased from 57% to 61.3% in the 1989–2002 period, it remained virtually unchanged (61.3% and 61.6%, respectively) in the 2002–2010 period, despite the continuing migration inflow of the working age population from the neighbouring countries. Besides, a large number of regions have been experiencing a steady migration outflow for decades. Under the conditions of increase in fertility and life expectancy of the population, characteristic of the 2000s, the last intercensal period in these regions has been marked by the decrease in share of the working age population. Therefore, the issues related to the assessment of the dynamics of the region's labour potential, the factors determining its level, and the improvement of its qualitative characteristics are of great interest.

Labour potential of the country and its regions is understood as the corresponding human resources considered in terms of the unity of their qualitative and quantitative aspects; it can be defined as labour resources in qualitative terms [1, p. 40–41]. The quantitative characteristics of resources for labour can be assessed on the basis of the population census data, current demographic statistics and sample surveys on the population employment, regularly conducted in the country since 1992. The qualitative characteristics of labour potential do not have single deductive expression. Despite numerous research, the unified methodology for evaluating quantitative and qualitative characteristics of labour potential is yet lacking. Thus, in the studies of the RAS Institute of Social and Economic Studies of Population [2, 3] the system components of labour potential are represented in the form of the "tree" of properties, the top of which is social capacity that is the most general property. Such structure is based on the concept of qualitative characteristics of the population. The given methodology is applied in research carried out by the staff of Vologda Institute of Socio-Economic Development of Territories of RAS [4, 5], who has been annually analyzing the state of the Vologda Oblast labour potential and development prospects since 1996. The writing team highlights such components of labour potential as health, ethics, team spirit, creativity, activity, self-discipline, education, professionalism, working time resources.

In more recent research of the RAS Institute of Social and Economic Studies of Population [6] the focus is made on the qualitative aspect of labour potential with regard to the demographic resource, within which, in fact, human and labour potential is formed. The authors define the quality of labour potential by the set of indicators reflecting its quantitative and qualitative characteristics: size and structure of the economically active population, health, education and skills, labour productivity.

The scientists of Saint Petersburg sociology school [7] developed the concept of the three-tier structure of labour potential, including psychophysiological potential (health status, type of the nervous system, working capacity and stamina, production and qualification potential (the volume of general and special knowledge, skills and abilities, development degree of the ability to work systematically, ability to work productively) and personal potential (level of social maturity, value system, interests, needs and demands at work, desire and willingness to work in good faith and with full dedication).

The Ivanovo State University offers the methodology [8], which also considers three components of labour potential: psychophysical components (life expectancy at birth, mortality rates among working-age population, rate of mortality from suicides and murders, population morbidity rate, crime rate), a social component (poverty rate, coefficient of living standards, share of meal expenses, availability of durables, savings rate) and educational and intellectual component (share of economically active population with high level of professional

education, level of employment in science, share of specialists and directors, number of postgraduates and doctoral candidates, the share of researchers and technicians in the total number of the employed in science).

In order to assess labour potential, the Samara State Economic Academy [9] applies the methodology based on the use of expert assessments of the potential opportunities for labour activity of the population of different age groups (separately by gender), taking into account their number and the level of labour activity.

The Bashkir State University has developed the methodology of system analysis of the composition and structure of labour potential of the country and region [10, 11], that allows expanding the modern structure of labour potential, to reveal quantitative parameters (demographic structure) and qualitative parameters (vocational and qualification structure of the population) of labour potential, employment potential, the conformity of the working-age population to the needs of the market economy, to determine the nature and the degree of labour-employment activity.

This methodology considers the following aspects as basic indicators of labour potential development: 1) the share of the working-age population in the total number of population; 2) the level of education, professional training and retraining, qualification and work experience, contributing to the the increase of the employee's capacity; 3) wages; 4) equipment of the worker with the means and instruments necessary for labour; 5) the level of employment, labour activity. Sub-indices are calculated by single formula for all five basic indicators:

$$I_n = (C_{fact.(n)} - C_{min(n)}) / (C_{max(n)} - C_{min(n)}),$$

where $C_{fact.(n)}$, $C_{min(n)}$, $C_{max(n)}$ are correspondively factual, minimum and maximum values of the component n in labour potential.

General index of labour potential development is the synthesis of partial indices, which is calculated as their average arithmetic average. The values of all the components of labour potential development index, as well as the value of the integral index, change from "0" to "1". This range allows evaluating the results of the region in achieving the highest possible level of the index under consideration. This approach seems to be the most accurate, as the index method allows different characteristics to be reduced to a comparable form.

The authors used the basic principles of this methodology for estimating labour potential dynamics of the regions of the Northwestern Federal District, having made some changes in the composition of its basic indicators, by which special indices have been calculated and the choice principle of the indices of maximum and minimum comparison bases has been slightly modified.

1. Work life expectancy.

Work life expectancy index is calculated simirlarly with the index of the population life expectancy. In compliance with the ILO methodology, adopted for the Russian sample surveys on employment, age boundaries of the population economic activity make up 15–72 years. Accordingly, the minimal value of the work life expectancy is 10 years: 25 years of minimum life expectancy applied when calculating the index of population life expectancy, excluding 15 years till the lower bound of economic activity, i.e. is the time period during which an individual, living in the conditions of mortality regime, corresponding to the minimum population life expectancy, can work. The maximum value of the work life expectancy makes up 57 years (72 year excluding 15 years prior to the economic activity). The real value will equal the actual life expectancy of the region's population minus 15 years, in the case when the life expectancy of the region's population is less than 72 years (as at present in Russia).

For example, if the population life expectancy is 65 years, the actual work life expectancy will make up 50 years. If the actual life expectancy of the region's population exceeds 72 years, the real value of the work life expectancy will be equal to its maximum value of 57 years (72 minus 15 years) – in this case, the value of index duration of the working life will reach 1.

2. Index of the level of professional education of the employed population.

The quantitative data on the share of the employed population with higher, incomplete higher and secondary professional education in the structure of the employed population, derived from 2002 and 2010 censuses, and the results of sample surveys on employment surve as the basis for calculating the given index. The value exceeding the largest share of the population with higher, incomplete higher and secondary professional education in the total employed population among all the regions of the country, registered in 2000s, is taken as the maximum value of the level of professional education. Accordingly, the value not exceeding the lowest share of the employed population with the specified level of education by the countries' regions is taken as the maximum value. According to the 2002 census, the maximum share of the employed population with high level of professional education was observed in Moscow (60.3%), the mininmum share – in the Chechen Republic (21.7%). In compliance with the sample surveys of the population employment, in the intercensal period the maximum percentage was also observed in Moscow (79.1% in 2008), and the minimum – in Ust-Orda Buryat AO (29.2% in 2003). According to the census of 2010, the highest proportion of the employed population with higher, incomplete higher and secondary professional education was registered in Saint Petersburg (85.7%), the lowest – in the Chechen Republic (56.5%). Based on these figures, the maximum value was adopted for 90%, the minimum value – for 20%.

3. Population employment index.

The level of population employment (the share of the employed out of the number of population aged 15–72 years) is the most important indicator characterizing the conditions and level of labour potential development. The indicators, persisting in the country's most developed regions in the conditions of nearly crisis-free development with the unemployment not exceeding the natural rate (4–5% of the economically active population), can be adopted for the maximum value of employment. it would be logical to take the value not exceeding 80% as the maximum level of employment, taking into account the best levels of employment, registered in 2010 in Saint Petersburg (71.6% of the population aged 15–72 years) and in 2012 in Moscow (72.2%), at which the levels of total unemployment made up 2.6% and 1.4% of the region's economically active population respectively. However, the absolute maximum level of the population employment registered in 2006 in Chukotka AO (79.9% of the Okrug population aged 15–72 years were occupied in the economy at the overall unemployment rate of 3.7% of the economically active population), almost reaches this value. A similar situation may occur in the future and in other Northern regions of the country; that will limit the possibility of extending index time series. Therefore, the maximum level of employment in our calculations was adopted for 85%; the minimum – for the level below the worst value of the employment indicator observed in the 2000s in the most crisis regions, recorded in the Republic of Ingushetia, where in 2006 only 16.8% of the population aged 15–72 were occupied in the economy. In the authors' calculations the minimum employment makes up 15%.

4. Index of gross regional product (GRP) per capita.

This index characterizes the conditions and living standards of the population, the material basis for the reproduction of labour, the region's total employment potential. The methodology of system analysis of quantitative and qualitative characteristics of labour potential, applied by the authors of the article, was developed by G.V.Yakshibaeva, who suggests to take the fixed maximum value of the gross domestic product, equal to 40 000 US dollars (by purchasing power parity), and the minimum value of 100 US dollars, used for calculating the human development index, as the maximum and minimum values of GRP per capita [10, 11]. As the authors faced the challenge of inter-regional comparison of labour potential of Russian regions, the value, exceeding the highest rate of GRP per capita by the country's regions, fixed in the 2000s was adopted for the maximum value; the value less than the worst rate of GRP for 1990s–2000s – for the maximum value. The highest value of GRP per capita was registered in Nenets AO in 2010 (3,461,997.6 rubles), the lowest – in the Republic of Ingushetia in 1998 (3,428.9 rubles). In the authors' calculations 3 500 000 rubles was adopted for the maximum value of GRP per capita, 3000 rubles – for the minimum value.

5. Index of capital-labour ratio.

In statistics capital-labour ratio is determined by the ratio of the cost of operating funds to the number of the working population. There are a lot of problems of methodological character related to the determination of the numerator and denominator. The author of the applied methodology uses cross-country indicators as the maximum and minimum values of capital-labour ratio. The maximum value is the highest indicator of the most developed country, the minimum value is zero level corresponding to the conditions of manual labour [10, 11]. The authors also adopted zero level for the minimum value and the value, exceeding the best value of capital-labour ratio by Russian regions, registered in the 2000s – for the maximum value. In general, for the entire period under review the Yamalo-Nenets AO maintains the leading position on capital-labour ratio, with the maximum value of 15,350.0 million rubles/thousand people registered in 2010. Therefore, the authors adopted 20,000 million rubles/thousand people for the maximum capital-labour ratio.

The suggested method for calculating the index of labour potential development is universal. It can be used for analyzing the dynamics of the regions' labour potential, for the comparative analysis of labour potential between regions, between urban and rural areas. However, its wide application is limited by lack of relevant information. Special information difficulties in calculating and applicating this indicator can be found at the grassroots administration: when making inter-territorial comparisons within the country's regions.

In the study the authors attempt to determine the position of the Komi Republic by the level of labour potential development among the regions of the Northwestern Federal District (NWFD), in which it is included. *Table 1* presents the dynamics of the integral index of labour potential development (ILPD) in the NWFD regions in the intercensal 2002–2010 period, the population census is one of the most important information sources about the population. It allows obtaining information not only about the population and its demographic characteristics (sex and age structure, the number and structure of families, population distribution throughout the country, etc.), but also about social and economic characteristics (population structure by education, employment, sources of subsistence). Only the census provides the maximum reliability of the information about the population and, in particular, can most accurately assess the employment rate and the level of professional training of the employed population.

Table 1. Dynamics of labour potential development index in the subjects of the Russian Federation, constituting NWFD, in 2002–2010*

Regions	Index value
2002	
Northwestern Federal District	*0.439*
Saint Petersburg	0.486
Vologda Oblast	0.455
Nenets Autonomous Okrug	0.444
Murmansk Oblast	0.436
Kaliningrad Oblast	0.424
Komi Republic	**0.419**
Arkhangelsk Oblast	0.414
Leningrad Oblast	0.407
Republic of Karelia	0.406
Novgorod Oblast	0.405
Pskov Oblast	0.380
2006	
Northwestern Federal District	*0.428*
Nenets Autonomous Okrug	0.490
Saint Petersburg	0.473
Murmansk Oblast	0.427
Republic of Karelia	0.421
Komi Republic	**0.410**
Leningrad Oblast	0.404
Kaliningrad Oblast	0.403
Vologda Oblast	0.401
Novgorod Oblast	0.399
Arkhangelsk Oblast	0.396
Pskov Oblast	0.379
2010	
Northwestern Federal District	*0.525*
Nenets Autonomous Okrug	0.757
Saint Petersburg	0.579
Murmansk Oblast	0.520
Leningrad Oblast	0.513
Komi Republic	**0.510**
Kaliningrad Oblast	0.497
Arkhangelsk Oblast	0.490
Vologda Oblast	0.488
Republic of Karelia	0.476
Novgorod Oblast	0.475
Pskov Oblast	0.450

* Ranked in descending order by ILPD value.
Calculated on the basis of Rosstat data: [12, 13, 14, 15].

Therefore, the corresponding partial indices of ILPD are calculated in the paper according to 2002 and 2010 censuses data. At the same time, intermediate 2006 year, in which the index of the level of professional education of the employed population had been calculated on the basis of the results of sample surveys on the population employment, was also included in the analysis, due to the considerable duration of the intercensal period.

In general, for the 2002–2010 period the integral index of labour potential development increased in the Northwestern Federal District by 19.9% (with 0.439 to 0.525). Thus, in the first decade of the 21st century in the context of economic growth, the labour potential of NWFD is characterized by positive dynamics. However, it should be noted that the negative ILPD dynamics was registered in the first half of the period under review – both in the district and in most regions as a whole (except for Nenets AO and the Republic of Karelia). But the decrease in ILPD value was insignificant in 2002–2006, based primarily on the decrease in the index of professional education of the employed population, which may be only a consequence of the specifics of sample surveys on the population employment, and the subsequent growth is more significant. As a result the growth f the integral index of labour potential development was registered in all regions of the Okrug for the 2002–2010 period.

In the Komi Republic the index of labour potential development increased somewhat more significantly than in the district as a whole: 21.7% (with 0.419 to 0.510). Nevertheless, its level in the Komi Republic is still lower than in the Northwestern Federal District on average. In 2002, the Komi Republic ranked 6th in the array of the NWFD regions by the ILPD level. In Saint Petersburg, the Vologda Oblast, Nenets AO, the Murmansk and Kaliningrad oblasts the situation was better than in the Komi Republic. At that, in 2002 above average rate of the integral index of labour potential development by the Federal District was typical of Saint Petersburg, the Vologda Oblast and Nenets AO. In all other Northwestern regions ILPD was below average in 2002.

For 2002–2010, the position of the Komi Republic in the array of the regions of the Northwestern Federal District somewhat improved, moving from the 6th place to the 5th place, surpassing the Vologda and Kaliningrad oblasts, but giving way to the Leningrad Oblast, where the index of labour potential development increased by 26.0% for the 2002–2010 period. Apart from the Leningrad Oblast, as in 2002, the Komi Republic is outstripped by Nenets AO, that moved from the 3rd to the 1st position and was characterized by considerable ILPD growth (70.5%), Saint Petersburg and Murmansk oblasts, where the growth of the integral index in the 2002–2010 period was less significant than in the Komi Republic. Conspicuous is also the fact that for the 2002–2010 period the Vologda Oblast fell from the second to the 8th place among the regions of the Federal District, with the lowest registered ILPD growth of 7.3% in the North-West.

Let us consider to what degree a certain subscript ensured the positive dynamics of the integral index of labour potential development.

The index of the work life expectancy increased in NWFD by 13.8% (from 0.832 to 0.947) in the 2002–2010 period *(tab. 2)*, which is logical under the conditions of the rise in population life expectancy. In general, for the 2002–2010 period, the life expectancy of the population of the Federal District has grown from 63.84 to 70.07 years.

The index of the population work life expectancy increased to the maximum extent for the 2002–2010 period in the Leningrad and Kaliningrad oblasts (by almost 20%). In Saint Petersburg, the Republic of Karelia and the Arkhangelsk Oblast the index growth is about average level across the district. At that, the index of the population life expectancy in Saint Petersburg that is traditionally the leader of the district by the index of the population work life expectancy just could not increase more considerably, as its value in the region by 2010 already reached the maximum value of unit since the life expectancy of Petersburgers exceeded the upper limit of the economic activity of 72 years. In the Pskov, Novgorod,

Table 2. Dynamics of the index of the population work life expectancy in the subjects of the Russian Federation, constituting NWFD, in 2002–2010*

RF subjects	Index value			Growth rates, %	
	2002	2006	2010	for 2002–2006	for 2002–2010
NWFD	*0.832*	*0.864*	*0.947*	*3.8*	*13.8*
Saint Petersburg	0.881	0.934	1.000	6.0	13.5
Kaliningrad Oblast	0.794	0.832	0.943	4.8	18.8
Leningrad Oblast	0.783	0.811	0.931	3.6	18.9
Murmansk Oblast	0.864	0.855	0.929	-1.0	7.5
Arkhangelsk Oblast	0.815	0.847	0.922	3.9	13.1
Vologda Oblast	0.826	0.860	0.909	4.1	10.0
Komi Republic	**0.817**	**0.834**	**0.902**	**2.1**	**10.4**
Republic of Karelia	0.791	0.826	0.898	4.4	13.5
Nenets AO	0.838	0.791	0.869	-5.6	3.7
Novgorod Oblast	0.785	0.802	0.867	2.2	10.4
Pskov Oblast	0.768	0.770	0.862	0.3	12.2

* Ranked in descending order by the index value in 2010.
Calculated on the basis of Rosstat data: [12, 13, 14, 15].

Vologda oblasts and the Komi Republic, the index of working life expectancy increased by 10–12%, in the Murmansk Oblast – by 7.5%. The most insignificant growth of the index was recorded in Nenets AO (3.7%), rating of which worsened for the 2002–2010 period, having fallen from the 3rd to the 9th place for the district. As a matter of fact, some decrease in the index of working life expectancy was observed in Nenets AO, as well as in the Murmansk Oblast in the 2002–2006 period. The Komi Republic's ranking also worsened, having fallen from the 5th to the 7th place. The deterioration of the index value is quite natural for resource regions with young age distribution, as the life expectancy of the population has been increasing in the recent years primarily due to the growth of investment in the healthcare modernization, while regions with a high share of mortality from external causes have benefited from it to a lesser extent. More or less stable ranking positions are characteristic of the majority of the NWFD regions. Only the Leningrad and Kaliningrad oblasts have significantly improved their positions by the index of working life expectancy. And Saint Petersburg, as has been already noted, reached the maximum.

The index of the level of professional education of the employed population increased for the 2002–2010 period in NWFD by 24.0%, i.e. even more considerably than the index of the working life expectancy *(tab. 3)*. According to the 2002 and 2010 censuses, the share of the employees with higher, incomplete higher and secondary professional education has grown significantly in the 2000: from 65% to 75.8% of the total number of the employed. As have been already mentioned, in compliance with the results of sample surveys on employment, the specified index and the corresponding index have decreased rather significantly in 2002–2006. However, the 2010 census has not confirmed the estimates based on sample surveys, having recorded a significant growth in the level of professional education of the employed population as a whole for the intercensal period.

To the greatest extent the growth of the index of the level of professional education of the employed population for the 2002–2010 period is characteristic of the Leningrad Oblast (34%), Nenets AO (33%), the Murmansk Oblast (31%) and the Republic of Karelia (30%). Despite this, Nenets AO remains at the end of the list of the NWFD regions,

Table 3. Dynamics of the index of professional education level of the employed population in the subjects of the Russian Federation, constituting NWFD, in 2002–2010.*

RF subjects	Index value			Growth rates, %	
	2002	2006	2010	for 2002–2006	for 2002–2010
NWFD	*0.643*	*0.464*	*0.797*	*-27.8*	*24.0*
Saint Petersburg	0.791	0.567	0.939	-28.3	18.7
Kaliningrad Oblast	0.656	0.416	0.776	-36.6	18.3
Leningrad Oblast	0.579	0.424	0.776	-26.8	34.0
Murmansk Oblast	0.563	0.431	0.736	-23.4	30.7
Republic of Karelia	0.541	0.479	0.703	-11.5	29.9
Komi Republic	**0.570**	**0.423**	**0.703**	**-25.8**	**23.3**
Vologda Oblast	0.566	0.339	0.703	-40.1	24.2
Novgorod Oblast	0.570	0.470	0.693	-17.5	21.6
Nenets AO	0.511	0.276	0.681	-46.0	33.3
Arkhangelsk Oblast	0.531	0.334	0.679	-37.1	27.9
Pskov Oblast	0.557	0.426	0.671	-23.5	20.5

* Ranked in descending order by the index value in 2010
Calculated on the basis of Rosstat data: [12, 13, 14, 15].

although having risen up from the last 11th to the 9th place for the district: the index of the education level in the autonomous okrug was initially very low. The Murmansk Oblast (having fallen from the 7th to the 4th place) and the Repubic of Karelia (having moved from the 9th to the 5th-6th-7th places) greatly improved their ratings. Some deterioration in the rating is characteristic of the Komi Republic, the index of which increased by 23.3% for 2002–2010: it dropped from the 4th place in 2002 to the 5th-6th-7th places in 2010. It is quite logical, considering that almost no professional staff comes to the Komi Republic from the outside for more than two decades already. The noticeable deterioration in rating is also typical for the Novgorod and Pskov oblasts, experiencing significant migration outflow of the educated youth, primarily in Saint Petersburg.

The index of the population employment in NWFD increased by 8% for 2002–2010 *(tab. 4)*, which is natural in the conditions of the employment growth. It grew from 62.5% to 66.3% of the employed out of the total number of population aged 15–72 years in the district for the 2002–2010 period. This index increased in the Pskov and Leningrad oblasts to the maximum extent – by 16–17%. However, the Pskov Oblast at that preserved its last ranking position, while the Leningrad Oblast moved from the last but one 10th place to the 4th place. The Novgorod Oblast (from the 9th to the 5th place) and the Murmansk Oblast (from the 3rd to the 2nd place) improved their ranking positions.

At the same time, zero (and even slightly negative) growth in the employment index was registered in the Arkhangelsk Oblast and the Republic of Karelia for 2002–2010. The positions of these regions have worsened significantly (by three points) for 2002–2010. Low values of the population employment index were observed in the Vologda and Kaliningrad oblasts and Nenets AO, the ratings of which also worsened. The Komi Republic maintained its 7th place, with the value of the employment index having increased somewhat more significantly than in the whole district, and mainly at the end of the period under review.

For the 2002–2010 period the index of gross regional product per capita increased in the Northwestern Federal District even more significantly, by several times, (from 0.017 to 0.081, i.e. 4.8 times) *(tab. 5)*.

Table 4. Dynamics of the employment index in the subjects of the Russian Federation, constituting NWFD, in 2002–2010*

RF subjects	Index value			Growth rates, %	
	2002	2006	2010	for 2002–2006	for 2002–2010
NWFD	*0.679*	*0.730*	*0.733*	*7.5*	*8.0*
Saint Petersburg	0.724	0.784	0.794	8.3	9.7
Murmansk Oblast	0.709	0.747	0.761	5.4	7.3
Nenets AO	0.710	0.794	0.739	11.8	4.1
Leningrad Oblast	0.634	0.701	0.733	10.6	15.6
Novgorod Oblast	0.639	0.664	0.713	3.9	11.6
Vologda Oblast	0.689	0.723	0.701	4.9	1.7
Komi Republic	**0.647**	**0.650**	**0.700**	**0.5**	**8.2**
Arkhangelsk Oblast	0.681	0.709	0.680	4.1	-0.1
Republic of Karelia	0.670	0.730	0.670	9.0	0.0
Kaliningrad Oblast	0.646	0.716	0.664	10.8	2.8
Pskov Oblast	0.551	0.656	0.644	19.1	16.9

* Ranked in descending order by the index value in 2010.
Calculated on the basis of Rosstat data: [12, 13, 14, 15].

Table 5. Dynamics of the index of gross regional product per capita in the subjects of the Russian Federation, constituting NWFD, in 2002–2010*

RF subjects	Index value			Growth rates, %	
	2002	2006	2010	for 2002–2006	for 2002–2010
NWFD	*0.017*	*0.045*	*0.081*	*164.7*	*376.5*
Nenets AO	0.113	0.458	0.989	305.3	775.2
Komi Republic	**0.023**	**0.065**	**0.110**	**182.6**	**378.3**
Saint Petersburg	0.020	0.049	0.097	145.0	385.0
Murmansk Oblast	0.021	0.054	0.083	157.1	295.2
Leningrad Oblast	0.015	0.044	0.083	193.3	453.3
Arkhangelsk Oblast	0.017	0.048	0.082	182.4	382.4
Vologda Oblast	0.017	0.046	0.059	170.6	247.1
Kaliningrad Oblast	0.011	0.031	0.058	181.8	427.3
Republic of Karelia	0.016	0.035	0.056	118.8	250.0
Novgorod Oblast	0.012	0.032	0.056	166.7	366.7
Pskov Oblast	0.008	0.020	0.035	150.0	337.5

* Ranked in descending order by the index value in 2010.
Calculated on the basis of Rosstat data: [12, 13, 14, 15].

That is, obviously, natural against the background of positive dynamics of the gross regional product in the district (4.5 times increase during the period under review: from 63297.1 to 286827.7 rubles/person). However, as follows from the table 5, the index values of GRP per capita in the NWFD regions (excluding Nenets AO) are very low, as an extremely high maximum value, based on the actual registered in 2010 GRP per capita in Nenets AO, is used in the calculations.

The highest growth rates of this index in 2002–2010 are characteristic of Nenets AO, as well as of the Leningrad and Kaliningrad oblasts, that is primarily related to the increase in investments in the fixed capital of the basic sectors in these regions. Investment demand growth in oil and gas complex was crucial in Nenets AO, while investment demand growth in machine building was critical for the Leningrad and Kaliningrad oblasts. On the whole, the Northwestern Federal District is

characterized by a fairly high level of investment activity. In 2010 the volume of investments in the fixed capital in the district made up 1049.6 billion rubles, which is by 5.8% more than in the previous year. The share of NWFD accounted for 11.5% of the total investment volume in fixed capital of the Russian Federation. The flow of foreign investments per one resident of the district in 2010 amounted to 685.6 US dollars. According to this indicator, NWFD occupies the 3rd place behind the Central and Far Eastern Federal Districts. Saint Petersburg, the Leningrad Oblast and Nenets AO are the leaders in the volume of received foreign investments [16].

The Komi Republic permanenty maintains the 2nd place behind Nenets AO. Due to the favourable investment climate, Saint Petersburg pressed the Murmansk Oblast from the 3rd place in 2002–2010. The Leningrad and Kaliningrad oblasts improved their positions significantly. Along with the Murmansk Oblast, the positions of the Republic of Karelia, the Vologda and Novgorod oblasts deteriorated in terms of the index level. The ranking positions of the Arkhangelsk and Pskov oblasts are relatively stable. But while the first is in the middle of the array, the second one is firmly in last place. However, it should be highlighted once more that the index of GRP per capita increased significantly in all the regions for the 2002–2010 period, including 2.5 times in the Republic of Karelia and the Vologda Oblast.

The index of capital-labour ratio also increased considerably in the North-West for 2002–2010: 2.5 times (0.026 to 0.067) *(tab. 6)*. The growth was characteristic of all the district's regions, except for the Vologda Oblast, where the index of capital-labour ratio decreased by 62% in the period under review. As a result, the Vologda Oblast fell from the 1st in the district to the 6th place. However, it should be noted that a significant decrease in the index of capital-labour ratio in the Vologda Oblast took place at the first stage, while some growth was observed in the 2006–2010 period. The maximum increase in the index of capital-labour ratio (more than 10 times) is characteristic of Nenets AO that rose from the 2nd to the 1st place in the array of the NWFD regions in the 2002–2006 period, that is connected with the beginning of the active development of the already opened, but formely suspended raw hydrocarbon deposits. The Komi Republic, where the index increased 3.5 times, moved from the 3rd to the 2nd ranking position.

Table 6. Dynamics of the index of capital-labour ratio in the subjects of the Russian Federation, constituting NWFD, in 2002–2010*

RF subjects	Index value			Growth rates, %	
	2002	2006	2010	for 2002–2006	for 2002–2010
NWFD	*0.026*	*0.037*	*0.067*	*42.3*	*157.7*
Nenets AO	0.049	0.130	0.507	165.3	934.7
Komi Republic	**0.038**	**0.077**	**0.133**	**102.6**	**250.0**
Murmansk Oblast	0.025	0.046	0.092	84.0	268.0
Arkhangelsk Oblast	0.026	0.044	0.088	69.2	238.5
Leningrad Oblast	0.024	0.041	0.082	70.8	241.7
Vologda Oblast	0.180	0.039	0.069	-78.3	-61.7
Republic of Karelia	0.020	0.035	0.058	75.0	190.0
Saint Petersburg	0.014	0.029	0.053	107.1	278.6
Novgorod Oblast	0.018	0.030	0.045	66.7	150.0
Kaliningrad Oblast	0.013	0.021	0.042	61.5	223.1
Pskov Oblast	0.016	0.025	0.037	56.3	131.3

* Ranked in descending order by the index value in 2010.
Calculated on the basis of Rosstat data: [12, 13, 14, 15].

The Murmansk Oblast with even more significant growth of the index of capital-labour ratio pressed the Arkhangelsk Oblast and took the 3rd place. High growth rate is also typical for Saint Petersburg that rose from the 10th to the 8th place for the 2002–2010 period. Along with the Vologda Oblast, the Pskov and Novgorod oblasts worsened their positions in comparison with 2002, although the index of capital-labour ratio for 2002–2010, increased in these regions more than 2 times.

Thus, the positive dynamics of the integral index of labour potential development in the Northwestern Federal District in 2002–2010 is ensured by the dynamics of all five subscripts in practically all regions. The exception is the index dynamics of the capital-labour ratio in the Vologda Oblast, characterized by significant reduction (almost 80%) in the 2002–2006 period and the zero dynamics of the employment index in the Arkhangelsk Oblast and the Republic of Karelia for 2002–2010 as a whole. The index of GRP per capita increased 4.8-fold in the district for 2002–2010, and the index capital-labour ratio increased 2.6-fold contributing most to the ILPD growth.

However it should be noted that the values of these indices in the regions of the Northwestern Federal District, except for Nenets AO, are rather insignificant (less than 0.1 in most regions). In other words, the values of these indices made small contribution to the ILPD level of the regions. A much more significant contribution is made by close to the maximum index of working life expectancy, the index rate of vocational training of the employed population (about 0.8 for the district) and the population employment index (about 0.65). At the same time, the population employment index is characterized by insignificant increase of 8% over the 2002–2010 period in many ways resulting from the consequences of the global financial crisis, when many companies were forced to pursue the policy of reducing personnel due to the difficult economic situation. The employment rate reached its peak in 2007–2008 in NWFD (67.5% of the population aged 15–72 years) rather deep recession was observed in 2009, but the growth has been recorded again in subsequent years, pointing to the growth of the population employment index in the long term.

In 2002, the integral index of labour potential development was above the average for the district in three regions of NWFD out of the eleven (Saint Petersburg, the Vologda Oblast and Nenets AO). Yet in the 2002–2006 period, the Vologda Oblast dropped out due to significant decrease in the index of capital-labour ratio. Thus, the level of the index of labour potential development of the Northwestern Federal District was in fact defined in 2010 only by two regions: "capital of the North" and the region, the economy of which is based on hydrocarbon production that, on the one hand, requires significant capital-labour ratio, and on the other hand, ensures high level of GRP per capita.

The Komi Republic somewhat improved its position in the array of NWFD regions by the ILPD value, rising from the 6th to the 5th place for 2002–2010, primarily due to the growth of the index of the capital-labour ratio, which increased 3.5-fold in the Komi Republic – the region rose to the 2nd place following Nenets AO in 2002–2006. The growth rate of the index of GRP per capita, by the level of which the Republic steadily holds the 2nd place following Nenets AO, and the population employment index in the Komi Republic are also above average for the Northwestern Federal District. Largest last the Komi Republic still occupies low-ranking 7th place. At the same time it comes to the attention that the employment index in the Komi Republic, started to grow significantly only in recent years (see tab. 4) that is encouraging in the long term.

The increase rate of the index of professional education of the employed population in the Republic is below average for the District: by this level the Komi Republic fell from the 4th to the 5th-6th-7th place in the 2002–2010 period. It is related to the transition of the Republic to "self-supporting with qualified personnel" in the 1990s, the ageing of the professional staff previously trained in higher education institutions of the capital, the attainment of age limit and gradual termination of labour activities, as well as high levels of migration outflow of the young people, who had received education in the Republic, to Saint Petersburg and Moscow. And, finally, the growth rate of the index of the working life expectancy in the Komi Republic is below average for the Northwestern Federal District (decline from the 5th to the 7th position), resulting from insufficient increase of the population life expectancy in the Republic in the 2000s, characterized by the significant rate of mortality from external causes.

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