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Regional Habitat as a Factor of the Human Capital Assets Development in Russian Regions

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Abstract

The article proposes a comprehensive approach to the study of interaction between the regional habitat and the human capital assets development. Principles and methodological approaches to the analysis of regional habitat regulation as a factor in the human capital assets development are emphasized. In the first approximation, the impact of the habitat on the human capital assets development is proposed to be evaluated through the analysis of changes in the key indicators of the environment and public health. The results of the analysis of changes in the statistical indicators of the environment and public health in the regions of the Northwestern Federal District of the Russian Federation for the period 2010-2015 are presented, which showed the negative impact of the environment on public health as one of the components of human capital assets. The necessity of taking appropriate measures in the field of ecologization at various levels of management is substantiated.

Keywords: Regional habitat; Human capital assets; Environmental culture.

1. Introduction

The environmental situation is currently unfavorable in the country. This is evidenced by the following data:

1) There is an increase in energy consumption and volumes of solid waste.

2) The ozone layer of the planet is depleted due to the consumption of products containing chlorofluorocarbons.

3) Improper use of renewable resources (water, woods, land) has led to negative environmental consequences: air pollution, in-sufficient supply of clean water to the population.

4) Insufficient provision of the needs of agriculture and industry in fresh water.

The goals of sustainable development have been formulated within the framework of the concept of the country's socioeconomic development through to 2020. The authors would like to focus on the goal of ensuring the environmental sustainability.

The following problems should be solved to achieve this goal:

1) to reduce the human impact on the environment and exhaustion of natural resources;

The anthropogenic load on the environment has continuously in-creased over a long period of time. According to the research organization Global, in the XXIst century "the average inhabitant of the planet used 2.2 ha of land, while the biological possibilities of the planet provided only 1.8 ha per human" (Wackernagel and Rees, 1996). As a result, the natural capabilities of the Earth were exceeded by 20%.

2) to improve environmental conditions for human development, reduce environmental threats to safety, health and living.

A similar situation develops at the regional level. About 200 territorial entities in Russia are in an extremely unsatisfactory environ-mental condition (Rytova *et al.*, 2016).

As such, transition to sustainable consumption is required, where the use of goods and services would not undermine the future needs of people (Rudskaia, 2017a;2017b). Such approach assumes the demand for products that require little energy in production and the use of nontoxic materials and products that minimally pollute the environment during their existence in order to minimize negative effects on the environment.

2. Research and Assessment Methodology

The methodological approach to assessing the impact of the regional habitat on the human capital assets development is based on the theory of sustainable development (in the works of Vernadsky (1991), Lvov (2002), Bobylev *et al.* (2004), Danilov-Danilyan and Losev (2000), Lorenz (1998), Meadows (2007), etc.), in which the economic, social and environmental components in the "human – habitat" system are considered to be equivalent. The following conditions for the existence of the human in the "human – habitat" system can be identified:

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- comfortable (preservation of health and integrity of the habitat components are ensured);
- permissible (no negative impact on human health, but there is a decrease in efficiency);
- dangerous (prolonged exposure leads to destruction of the environment and damage to human health); and
- extremely dangerous (irreversible destruction in the environment, which can lead to death).

The first two conditions (comfortable and permissible) correspond to positive living conditions, while the other two (dangerous and extremely dangerous) are unacceptable for the human life and preservation of the environment.

Two methodological approaches can be used to analyze the regional habitat regulation as a factor in the human capital assets development. The first approach is based on establishing permissible deviations from the existing norms and standards. This approach is convenient for regulation and control of various processes occurring in the habitat but requires the creation of appropriate norms and standards. The second approach is associated with the establishment of relationships between people's needs and capabilities of regional economic systems, which assumes establishing the cause-effect relationships, identifying unmet needs and finding ways to best meet them (Kolesnikov *et al*., 2017).

The regional habitat as a factor in the human capital assets development must be regulated based on the following principles:

- preservation of the environmental systems' integrity when they are used by economic agents;
- ensuring the priority of environmental criteria in determining the economic efficiency of nature management;
- conformity of technogenesis to the ecosystem state (production and consumption wastes should be organically included in natural processes); and
- stabilization of the volumes of natural substances involved in production through its repeated use.

The existing approaches to assessing the impact of habitat on the human capital assets development presented in the papers of Bobylev *et al.* (2004), Vlasov (2009) and others assume the allocation of indicators linking the public health with environmental pollution. The first group of indicators suggests to identify the patterns of environmental pollution indicators' impact on morbidity and mortality of the population. Indicators may differ by the types of diseases, pollutants, etc. The second group of indicators is related to developing the man-made environment and infrastructure that sur-round people (supply with clean water, living in contaminated cities, etc.), and does not require a complex assessment of the degree of environmental pollution impact on public health, the number of cases for environmental reasons, etc. (Zaborovskaia and Plotnikova, 2016). Indicators of the third type are related to the assessment of the economic damage to the public health from the pollution and assume the accounting for morbidity and mortality factors that differ by the main classes of diseases (diseases of respiratory tract or digestive organs, oncological diseases, etc.), as well as estimations of the GDP loss, hospital treatment costs, and costs for medications (Degtereva *et al*., 2016).

The developed methodological recommendations for the economic assessment of public health risks caused by environmental factors (Vlasov, 2009) can be used in estimating the damage from public health risks caused by the impact of habitat factors in value terms. The economic damage from public health risks with adverse effects of environ-mental factors (Y) is made up of the amount of economic damage to health (Y_{hl}) resulting from various types of diseases and economic damage (Y_l) expressed in premature mortality and occurring during the period under review:

$$Y = \sum_{n=0}^{N} (Y_{hl}^{n} + Y_{l}^{n}) \text{ rub.},$$

where Y_{hl}^{n}, Y_{l}^{n} are the economic losses from the public morbidity and cases of premature mortality in the n-th year respectively, rub./year; and

n is the period of effects from adverse environmental factors of the habitat on the population, years.

In the opinion of the authors, a statistical database should be formed to apply this method more correctly, which would allow to distinguish the number of different types of diseases from the adverse impact of the regional habitat (Goncharova and Degtereva, 2017; Sharafanova *et al.*, 2017).

Many contradictions arise in the market economy during the interaction in the "human – habitat" system from the standpoint of environmental and economic interests, such as the individual's desire for private appropriation of resources and their social origin; between private interest to minimize the costs of nature protection and the maximum interest of society in preserving the environment quality (Gutman *et al*., 2017). For example, producers are striving to implement a commercially viable project, which may lead to increased employment and income generation in local budgets, but the environment will be disrupted and environmental problems will worsen as a result of the project implementation. The improvement of the institutional environment will help resolving such contradictions.

3. Analysis and Results

There is no integral indicator which would allow to judge the degree of the regional habitat impact on human capital assets. However, the analysis of changes in the key indicators of the environment and public health in the first approximation allows to assess the negative impact of the habitat on human capital assets today.

Table-1. Changes in the indicators of pollutant emissions and dis-charge of contaminated wastewater into surface water bodies

	Changes in the indicators in 2015 in relation to 2010	
	Pollutant emissions	Discharge of contaminated wastewater into surface water bodies
Russian Federation	0.91	0.87
Northwestern Federal District	0.89	0.85
Republic of Karelia	0.89	1.79
Republic of Komi	1.03	1.0
Arkhangelsk region	0.48	0.79
Vologda region	0.97	0.95
Kaliningrad region	0.69	1.21
Leningrad region	1.09	0.93
Murmansk region	0.96	0.97
Novgorod region	1.52	0.78
Pskov region	1.23	0.67
Saint Petersburg	1.28	0.76

The morbid growth per 1,000 population is most common in the Leningrad and Murmansk regions, in the Republics of Karelia and Komi, and in Saint Petersburg. Diseases of the circulatory system are most common in the Kaliningrad and Novgorod regions (Kudryavtseva et al., 2017). Change in this indicator is also high in the Russian Federation in general. Table 2 shows changes in indicators for the main classes of diseases in the regions of the Northwestern Federal District of the Russian Federation.

Table-2. Changes in indicators for main classes of diseases (incidence per 1,000 population)

	Changes in indicators for main classes of diseases in 2015 in relation to 2010			
	Morbid growth	Diseases of the respiratory system	Diseases of the circulatory system	Diseases of the digestive system
Russian Federation	1.05	1.04	1.19	1.06
Northwestern Federal District	1.16	1.07	1.16	1.06
Republic of Karelia	1.13	1.14	1.01	1.05
Republic of Komi	1.31	1.03	1.03	1.11
Arkhangelsk region	0.87	1.04	0.81	0.94
Vologda region	1.08	1.06	0.80	0.88
Kaliningrad region	1.07	0.93	1.62	0.92
Leningrad region	1.77	1.13	1.16	1.64
Murmansk region	1.24	0.97	0.99	1.00
Novgorod region	1.05	1.01	1.61	0.88
Pskov region	1.23	1.27	1.30	1.05
Saint Petersburg	1.11	1.12	1.29	1.15

As can be seen from Table 2, there is a slight decrease in the diseases of the respiratory system in the Kaliningrad and Murmansk regions, as well as the diseases of the circulatory and digestive systems in the Arkhangelsk and Vologda regions. The data from Tables 1 and 2 on changes in the key indicators of the environment and public health in the regions of the Northwestern Federal District indicate the need to take appropriate measures in ecologization at various levels of management (Zaborovskaia and Plotnikova, 2016).

This analysis allows to summarize the unevenness of environmental dynamics in various regions of Russia. The calculations conducted based on the information of the Federal State Statistics Service for 2000-2015 on the state of the environment and public health in the regions of the Northwestern Federal District (Statistical yearbook, 2005-2016) allowed to identify the main trends. There is an increase in pollutant emissions from stationary sources in 2015 compared to 2010 in 50% of the regions of the Northwestern Federal District (Republic of Komi, Leningrad, Novgorod, and Pskov regions, Saint Petersburg), and an increase in discharge of contaminated wastewater into surface water bodies in 20% of the regions of the Northwestern Federal District (Republic of Karelia and Kaliningrad region) (Table 1). In general, the Russian Federation and the Northwestern Federal District observe a decline in these indicators. Most of the effects of air and water pollution have negative impact on public health and the environment. As the analysis of statistical data revealed, the trend continues to increase the morbidity in the main classes of diseases (morbid growth, respiratory diseases, circulatory diseases, digestive diseases) both in the regions of the Northwestern Federal District and in the whole of the Russian Federation (Table 2).

4. Discussion

A comprehensive approach to solving environmental problems in all regions of the Russian Federation is required for achieving sustainable human potential development. This firstly requires the creation of a comprehensive methodology for assessing damage from environmental pollution. One of the solutions to this problem was proposed in the paper of Bobylev *et al.* (2004), which assessed damage using the EcoSense model

designed not only for assessment of the environmental pollution impact on public health, but also for monetary assessment of this impact. It must be noted that estimations based on the EcoSense model took only health damage from air pollution into account.

The water pollution may become a priority for the Russian regions in the long term. The negative impact of the habitat on human development is illustrated in the papers of Vlasov (2009), by the example of estimating the ecological index of the human potential development. At the same time, pollutant emissions from stationary sources and the volume of wastewater discharges into surface water bodies were taken into account. This approach allows to assess the human potential development in the region, taking into account the environmental component, and allows to compare the development of the region with other regions of the Russian Federation, but it contains a number of controversial assumptions when introducing coefficients in the formula of the ecological human potential development index. Further research can be done into improving the methodology for assessing the interaction between the environment and human capital assets from the standpoint of sustainable consumption, conservation of natural potential, and environmental quality.

5. Conclusion

The obtained results can be applied in the development of regional socioeconomic development strategies, assessment of the public health risks caused by the environmental pollution, and the formation of regional social policies at all levels of government (state, regional, municipal). The state of the institutional environment in the region, as well as the efficiency of the existing institutional conditions can be assessed in the first approximation based on the dy-namics of the key indicators of the environment and public health.

References

Bobylev, S. N., Girusov, E. V. and Perelet, R. A. (2004). *Ekonomika ustoychivogo razvitiya, Economics of sustainable develop-ment.* Stupeni: Moscow.

Danilov-Danilyan, V. I. and Losev, K. S. (2000). *Ekologicheskiy vyzov i ustoychivoye razvitiye, Environmental challenge and sustain-able development.* Progress-Traditsiya: Moscow.

Degtereva, V. A., Zaborovskaia, O. V. and Sharafanova, E. E., 2016. "Innovations in healthcare, The risks of regional development." In *Proceedings of the 28h International Business Information Management Association Conference - Vision 2020: Innovation Management, Development Sustainability, and Competitive Economic Growth .Seville.* pp. 3504-12.

Goncharova, N. and Degtereva, V., 2017. "Expansive use of planning and finance mechanisms as a factor increasing the living standard of elderly people." In *Proceedings of the 30th Inter-national Business Information Management Association Conference, IBIMA 2017 – Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth . Madrid.* pp. 1175-83.

Gutman, S. S., Zaychenko, I. M. and Kalinina, O. V., 2017. "Selection of strategy implementation tool for shipbuilding cluster of arkhangelsk oblast." In *29th International Business Information Management Association Conference – Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth .Vienna.* pp. 1430-38.

Kolesnikov, A. M., Malevskaia-Malevich, E. D. and Dubolazova, Y. A., 2017. "Peculiarities of quality management methodology for innovation projects of industrial enterprises." In *Proceedings of the 30th International Business Information Management As-sociation Conference, IBIMA 2017 – Vision 2020, Sustainable Economic development, Innovation Management, and Global Growth . Madrid.* pp. 2898-901.

Kudryavtseva, T. J., Ivanova, E. A., Kozlova, E. A. and Skhvediani, A. E. (2017). Pricing and assessment of competitiveness of innovative medical devices in the context of commercialization strategy. *Academy of Strategic Management Journal,* 16(1): 110-22.

Lorenz, K. (1998). *Behind the Mirror.* Publishing House, Republic: Moscow.

Lvov, D. S. (2002). *Ekonomika razvitiya, Economics of development.* Examen: Moscow.

Meadows, D. (2007). *Limits to growth, The 30-year update.* Akademkniga: Moscow.

Rudskaia, I., 2017a. "A regional innovation system, Formation features and growth areas (case study: St. Petersburg)." In *Proceedings of the 30th International Business Information Management Association Conference, IBIMA 2017 – Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth . Madrid.* pp. 541-47.

Rudskaia, I. (2017b). *Regional innovation foresights, Drivers and barriers for development.* Proceedings of the 30th Inter-national Business Information Management Association Conference, IBIMA 2017 – Vision 2020: Sustainable Economic development, Innovation Management, and Global Growth. Madrid.: 889-903.

Rytova, E. V., Kozlov, A. V., Gutman, S. S. and Zaychenko, I. M. (2016). Analysis of the regulatory and legal framework of the socio-economic development in the far north regions of Russia. *Journal of Advanced Research in Law and Economics,* 7(21): 1828-36.

Sharafanova, E. E., Fedosenko, Y. Y. and Skhvediani, A. E. (2017). Regional labor market, Forecasting the economic effect of cooperation between universities and entrepreneurs. *Journal of Advanced Research in Law and Economics,* 8(6): 1908-15.

Vernadsky, V. I. (1991). *Nauchnaya mysl kak planetnoye yavleniye, Scientific thought as a planetary phenomenon.* Nauka: Moscow.

Vlasov, Y. S. (2009). Ekologo-ekonomicheskaya otsenka blagosostoyaniya naseleniya v regionakh Rossii, Ecological and economic assessment of the public welfare in the Russian regions.

Wackernagel, M. and Rees, W. (1996). *Our ecological footprint: Reducing human impact on the earth.* New Society Publishers.

Zaborovskaia, O. V. and Plotnikova, E. V., 2016. "Assessment of the housing stock condition as an element for estimating the conditions for human capital development in the regions of the russian federation." In *Proceedings of the 28th International Business Information Management Association Conference - Vision 2020: Innovation Management, Development Sustain-ability, and Competitive Economic Growth. Seville.* pp. 1218-25.