

THE INFLUENCE OF THE DEMOGRAPHIC FACTOR ON REPRODUCTION OF SUSTAINABLE DEVELOPMENT POTENTIAL

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Abstract: The purpose of this article is to study the interaction of trends in reproduction of labor power and sustainable development of countries and regions in the world. Methodologically the study was based on the papers of well-known Russian and foreign scientists on the problems of reproduction of labor power in the framework of sustainable environmental and economic development. The analytical basis of the study was the annual United Nations surveys on population indicators of countries and regions as well as Rosstat informational surveys. It is proved that the process of reproduction of labor power as an element of the ecological and economic system is affected by a change in the role of the human worker in social production, transformation of the content of labor, and modification of its functions.

Keywords: Demography, Sustainable Development, Economic Growth, World Population, Ecology.

1 Introduction

A most important law of sustainable development in modern conditions is the change in the nature of reproduction of labor power under the influence of the environmental factor.

The development of human potential is the main guideline for sustainable development, since, on the one hand, it is universally recognized that population growth largely determines the pace and trends of the global environmental crisis; on the other hand, in the socio-economic system, human capital plays the role of an active growth factor in production, the results of the production and economic activities of society largely depend on the development of the abilities of a human worker, and finally, the state of human health reflects primarily the environmental pollution resulted from the waste of industrial and domestic life activities (Bobileva & Grigoryeva, 2016).

From the point of view of political economy, a human being is considered as a subject of production relations and one of the production factors. If the traditional approach of economic science assigns him a rather stationary role of a constituent element of the productive forces in the economic system, then in the analysis of the ecological and economic system the role of a human being is greatly enhanced, emphasizing the dialectical unity and contradictory nature of the natural, social and individual in him.

2 Methods

Many national economists devoted their work to the problems of

studying the human factor, where a person is characterized as a worker, and the object of study is labor, as well as to the problems of labor socialization and the formation of an aggregate worker based on the labor division and cooperation, to other theoretical problems of reproduction of labor (Vechkanova G.S., Grandberg Z.A., Nugaev R.A., Sargsyants A.A., Sharapova S.I. and others). The reports prepared by the Club of Rome at the end of the last century also call the human factor and innovations as one of the most important factors of sustainable development (Pestel, 1988; : <http://www.un.org>).

Without dwelling in detail on the general methodological issues of reproduction of labor power which are quite fully covered in the aforementioned scientific publications, we believe that the primary basis for the development of any economic structure is the process of human reproduction, and the role of a man in the ecological system has been substantiated for a long time, although, in our opinion, in modern conditions it is necessary to reassess priorities, while focus from man as a conqueror of nature should shift towards his role as a carrier of a reasonable, planned principle in a careful, prudent, rational use of natural resources to achieve high level and the quality of his own live.

3 Results and Discussion

Considering the labor force as a person's ability to work, as the complex of physical and spiritual properties that a living human person possesses, we characterize the process of reproduction of labor power from the point of view of the process of re-creating a human being as a person capable of labor (Gubaidullina, 2015).

The natural processes of environmental reproduction begin to intersect with the economic processes of social reproduction. At the same time, maintaining the ability of the personal factor of production to reproduce becomes a condition for social reproduction in general (Gubaidullina et al., 2018). In this regard, economic relations at all stages of the reproduction process should correspond to both the pace of economic development itself and the pace of reproduction of labor power. Violation of this balance can lead and leads, as practice shows, to environmental and economic instability of social development.

For the normal and effective functioning of public production, it is important that the process of reproduction of labor power, the restoration of its qualitative parameters, be carried out taking into account the influence of the whole variety of factors and conditions. First of all, reproduction of labor power as an element of the ecological and economic system is affected by a change in the role of the human worker in public production. In addition to the socio-political factors that played an extremely important role in this process, the root cause, apparently, should be seen in the progress of science and technology, which led to a profound modification of both the content and nature of labor.

Much attention is paid to the training of workers. However, one cannot agree with the widespread opinion that the physical parameters of the labor force are losing their significance in modern conditions. In our opinion, there is a dialectical unity between these aspects. Deterioration of the workers' physical health leads to the degradation of mental, brain competences.

The general physical well-being of the workforce under the conditions of the ecological crisis is actively affected by the state of the environment. The problem of environmental protection is great not only in terms of favorable production conditions, but also of human life and his survival.

The creation of favorable working conditions will contribute to an increase in potential labor force growth or an increase in output without involving additional workers. Reproduction of

labor power in modern conditions is associated with significant material and financial costs and requires the action of numerous structures in health care, education, training, culture, etc. In this regard, the mechanism of reproduction of labor power is changing in value and in kind (Grigoreva et al., 2019).

If to characterize the process of environmental and economic interaction that has a direct impact on the reproduction of labor power, it should first be emphasized that changes in the ecological system affect the functioning of the economic system through the combination of environmental and economic factors (Gubaidullina, 2019).

The production process and human life are associated with harmful wastes that pollute the natural environment. Because of this, some properties of the natural environment change, that leads, on the one hand, to a deterioration of the human habitat, and, on the other hand, to a change in the conditions of manufacturing activity. As a result of environmental degradation, the depreciation of the means of production is accelerated, natural resources are depleted, working conditions are worsened, the need arises for the costs of environmental protection measures that would allow society to reduce the damage to the environment, which ultimately reduces the company's production capabilities.

Changes in environmental conditions lead, in turn, to a degradation in the quality of life. The decline in living standards also entails losses in the production process. People living in adverse environmental conditions get tired more, get sick more often, live shorter lives. In addition, workers employed in production are additionally affected by the deterioration of working conditions; they are affected, as it were, by a double impact from the environmental factor. Overlapping and a combination of the factors discussed above result in economic damage, a decrease in the production potential of society, which in turn affects the functioning of the socio-economic system.

Thus, among the many problems posed by modern objective conditions, the foreground is the influence of the environmental factor on the process of reproduction of labor power. This is due not only to the dependence of man on the environment, but also to the occurrence of numerous complications in the process of his interaction with nature. The health and welfare of present and future generations largely depend on the correct and timely resolution of the issue of environmental protection.

Theoretical research in this area should be conducted, in our opinion, in three main directions. Firstly, it is the study how population growth influences the use and reproduction of the environment.

Secondly, it is the study how human and natural capital as factors of social production in the ecological and economic system interacts in the framework of sustainable development. The third area of political economic research may be to justify

the impact of the environmental crisis on the change in the quality parameters of the workforce through the study of indicators of quality of life (life expectancy, health condition of the population and others).

4 Summary

The influence of environmental restrictions primarily affects the demographic situation. In different countries, these processes proceed in different ways, so it is necessary to analyze the global trends in the impact of environmental restrictions on the reproduction of labor manpower to compare the situation in Russia. From these positions, in our opinion, it is necessary to consider how the increase in anthropogenic impact on the environment as a result of the population explosion affects the quality of the workforce and what boundaries of economic development are indicated by the current demographic situation.

One of the ecological principles says that the size of populations is the result of a dynamic balance between their biological potential and environmental resistance. When the resistance of the environment weakens, the population increases explosively.

The first estimate of the world's population was made in 1682 by W. Petty. He believed that by the end of the XVII century the number of people living on Earth amounted to 320 million people (according to modern demographic estimates, it was almost twice as large at that time). During the XIX century for the first time, official population data were obtained in most European and some Latin American countries.

If in 1900 the population was 1.6 billion people, then by the year 2000 it exceeded 6 billion people (see Table 1). That is why the term "population explosion", meaning a rapid population growth, appeared in the 20th century.

In 1997, the world's population was estimated at 5.84 billion people, of which 1.175 billion were in developed countries and 4.665 in developing countries. Annual growth amounted to 86 million people, 96% of which are in developing countries.

According to UN experts, the zenith of the population explosion passed and the relative population growth begun to decline. However, despite the current decline in population growth from 2% per year in 1960s to 1.47%, the absolute population growth is going fast enough. Against this background, the population of Russia is decreasing, and by 2025 it may lose, according to some estimates, about 20 million inhabitants.

According to UN experts, the world's population will stabilize by the middle of the 21st century – the population in 2050 will fluctuate between 7.7 and 11.1 billion people (according to other sources, this will happen in 2095 at 10.2-12 billion people). Population growth trends by UN expert estimates are presented in Table 1.

Table 1: Projected Trends in the Growth of the Earth's Population (million people)

Countries and regions	1997	2000	2005	2025
Russia	147	146	144	131
Europe (excluding Russia)	582	585	586	575
Africa	743	832	945	1313
North America	298	306	319	372
Latin America	483	525	564	691
Asia	3552	3737	4003	4914
Australia and Oceania	29	31	33	39
Total including	5834	6162	6594	8035
Industrialized countries	1190	1185	1200	1125
Developing countries	4644	4977	5394	6910

According to UN conference (Agenda 21), global population growth leads to environmental degradation, firstly, through an increase in food production (for this, food production should double in 40 years, which requires an annual production growth

of about 2 %) and the associated more intensive use of land and its subsoil, as well as an increase in the volume of pollutant emissions, and secondly, through urbanization (it is estimated that 90% of the world's population lives in cities or suburban

areas), which gives extremely difficult problems to overcome or prevent the negative social and environmental impacts.

Especially dangerous from an environmental point of view is the inclusion of the so-called factors depending on population density: the emergence of new diseases not previously observed, the intensification of common diseases, increased mortality from stress illnesses, etc (Report “The Future We Want”, UN Conference on Sustainable Development “Rio + 20”).

Each territory has an optimum population, determined by the natural conditions of housekeeping, people's lives and the efficiency of the economy, especially by the last factor. In general, the better people live, the lower is the population growth (or it is easier to regulate this growth).

We can agree with leading scientists that only a global improvement in people's lives can weaken the effects of the population explosion on the planet. Thus, the extensive path of economic growth, which implies an increase in the number of applied production factors, including due to the natural increase in labor force with its constant quality, becomes unacceptable in the conditions of the ecological crisis. Society cannot, without prejudice to the biosphere, ensure the reproduction of labor in the quantity necessary to meet growing needs. To ensure economic growth, a qualitative leap is needed, therefore, in modern conditions, the importance of health as a qualitative characteristic of the workforce is growing.

This thesis seems especially relevant for the Russian economy. Significant evidence of the country's situation is the structure of mortality and life expectancy of the population (Table 2).

Table 2: Key demographic indicators (middle version of the UN forecast for Russia), per 1,000 people

Key demographic indicators	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025
The average annual population decline	- 453	- 516	- 513	- 582	- 679	- 672
Total growth rate	- 0.31	- 0.36	- 0.36	- 0.42	- 0.5	- 0.5
Natural growth rate	- 0.49	- 0.5	- 0.42	- 0.42	- 0.5	- 0.5
Migration rate	0.18	0.14	0.07	0	0	0
Life expectancy, years:						
males	58.0	59.0	61.0	63.0	65.0	66.5
females	71.5	72.1	73.3	74.0	75.3	76.1

In many ways, several factors contributed to this: the improvement of national economic indicators; increase in life expectancy of Russian citizens; an increase in the flow of migrants from neighboring states (<https://undocs.org>).

In 2018, for the first time in the last decade, a negative population growth was noted – the number of Russians decreased by 96,400 people. In 2019, the trend of natural decline continued – over the 12 months the population fell by 43,700 people, and even a massive influx of migrants could not bring the indicators up. Rosstat reported that the natural decline in the Russian population in 2019 was the highest in the past 11 years, and the number of Russians decreased to 146,780,720 people (World population 2019.UNFPA Report).

5 Conclusions

Thus, for Russia the demographic situation remains, as before, relevant at the present time, which, in particular, is emphasized by Vladimir V. Putin, the President of the Russian Federation (<http://www.kremlin.ru>). In industrialized countries, stabilization of population quantitative indicators is offset by high indicators of the quality of the workforce: a relatively low incidence, high life expectancy, and a long period of labor activity of the population. In developing countries, high population growth rates are observed with a low life expectancy and a short period of labor activity, which is extremely inefficient, since in the conditions of scientific and technological progress it takes a lot of money to train the workforce and the length of the able-bodied period is short, so the return on investment in human capital is small. In Russia, in modern economic and environmental conditions, the trend is negative in both quantitative and qualitative indicators, as evidenced by the above data. In this regard, the practical solution of the problems of labor reproduction on the basis of an effective economic and environmental policy in Russia and its regions is a task of a special degree of importance and relevance that requires the development of a scientifically based concept of environmental safety of the state, and most importantly, its effective implementation in practice.

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