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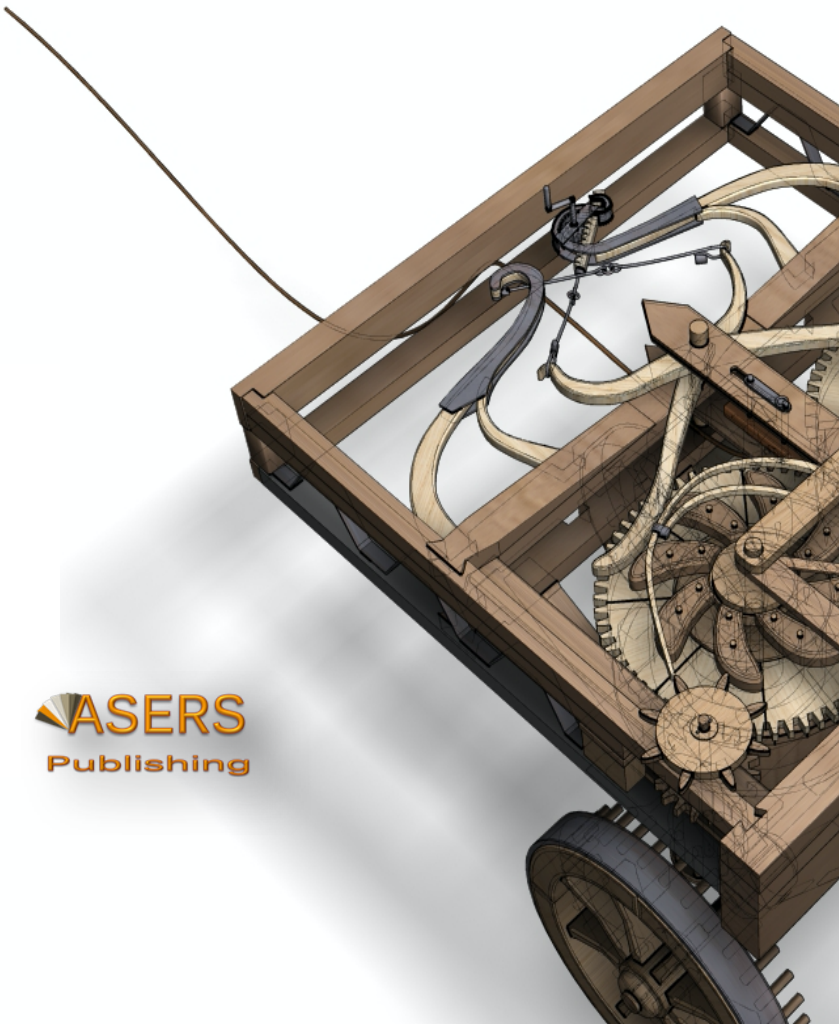

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Journal of Environmental Management and Tourism

Journal of Environmental Management and Tourism is an interdisciplinary research journal, aimed to publish articles and original research papers that should contribute to the development of both experimental and theoretical nature in the field of Environmental Management and Tourism Sciences.

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Authors are encouraged to submit high quality, original works that discuss the latest developments in environmental management research and application with the certain scope to share experiences and research findings and to stimulate more ideas and useful insights regarding current best-practices and future directions in environmental management.

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Impact of Environmental Standards on Employment

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Abstract:

There is a wide variety of dynamics of structural transformations of employment in the world. Some regions of the world are seeing steady growth in employment, while others are facing severe declines in employment. Demographic changes potentially affect regional growth through a reduction in the labor force, which has an impact on growth and is largely dependent on the level of education, labor productivity, and labor resources. The article discusses the impact of ecology on the structural transformation of employment in the Republic of Kazakhstan. The labor market of the Republic of Kazakhstan has acquired a permanent character over the years of Independence and reflects the changes that the country's economy has experienced over the past 30 years. Structural shifts were observed in the structure of world GDP from industrial production to the service sector, to the developing economy of Kazakhstan. The purpose of the study is to analyze the impact of ecology on the structural transformation of employment in the context of digitalization of the economy of Kazakhstan.

Keywords: employment; digitalization; ecology; "green" jobs; ecological environment.

JEL Classification: O15; Q56; R11.

Introduction

Due to the rapid economic development, considering the fast development of digital technologies, the ecological environment has been seriously damaged, which has led to a decrease in the quality of the environment in the natural environment. The aggravation of the global ecological crisis is accompanied by a population explosion and the need to meet the growing material needs of people, which leads to an increase in the scale of economic activity and an increase in the anthropogenic burden on the environment. As a result of the problem of global environmental pollution, global climate change and stratospheric ozone depletion, natural resources are being depleted.

This is especially evident in large resource-based cities. Due to the continued consumption of natural resources, these cities quickly fell into decay, and the industrial workforce lost their jobs, which led to many social dilemmas. Coordinating the relationship between resource use, pollution and employment has become an urgent issue to be addressed for the sustainable development of resource-based cities.

A green approach to all economic activity, including employment, is necessary to prevent climate catastrophes, so labor (market) policies can support or hinder the greening of labor and jobs to achieve this transformative sustainable development goal, but this issue is a challenge for academia and policymaking.

To date, existing studies have not come up with clear conclusions about whether tightening environmental regulations can promote employment, so in this study we examined the impact of environmental standards on employment.

1. Literature Review

Employment in rural areas will increase significantly if investments are made in policies that use nature while ensuring people's well-being. Twenty million jobs could be created by further harnessing the forces of nature to address key issues facing society such as climate change, natural disaster risk and food and water insecurity. Investing in policies that support Nature's Solutions (NbS) creates significant employment opportunities, especially in rural areas.

Green employment is necessary to avoid multiple environmental crises, but there are still differing views on what makes work environmentally sustainable. A research study by (Bogensberger 2022) presents five theoretical perspectives and develops a framework for assessing the environmental impact of employment in four dimensions:

- type of output: sustainable goods and services as outputs;
- profession: green tasks and activities in the workplace;
- lifestyle: working conditions conducive to a sustainable lifestyle for employees;
- the effectiveness of the result: the processes of production of resources and light.

Needs satisfaction theory is described in Brand-Correa *et al.* which is used in the development of taxonomies (2020) to help distinguish between needs and wants and identify sustainable and unsustainable patterns of employment (Gough 2020).

The United Nations Environment Program (UNEP) was the first to define green jobs as employment that contributes to the preservation or restoration of environmental quality and launched a comprehensive research program on green jobs. This means that jobs that reduce energy, raw material and water consumption through powerful policies decarbonize the economy, reduce greenhouse gas emissions, minimize or avoid all forms of waste and pollution, and protect and restore ecosystems and biodiversity."

Vona *et al.* (2019) distinguishes between a production approach (“the workplace of a company that produces goods or services that benefit the environment or protect natural resources”) and a process approach (“a workplace with responsibility, including the improvement of environmentally sound business processes”).

Janser (2018) evaluates "green" jobs and evaluates their environmental considerations. According to (Cedefop 2019), in parallel with the “green” challenge on the demand side of the labor market, it is necessary to identify the “green skills” of labor market participants, assuming that the lack of relevant skills does not impede the transition to sustainable development.

According to Bottazzi (2019), environmental policies affect the labor market and workers should be supported to adapt to these changes. Haberl *et al.* (2020) suggests that technology strategies are likely to be inadequate to prevent climate change-related disasters, so additional approaches are needed, such as feasibility, shrinking, and changing production and consumption patterns.

Bogdashkina and Kuspanova (2019) study the problem of employment and state in their publication that effective employment of a healthy population cannot be ensured without targeted efforts by the state to redistribute, train, socially support and protect its citizens.

Menshikov and Abbas (2018) argue that the new economic situation requires major changes in the structure and characteristics of the workforce through the creation of strategies that improve its quality.

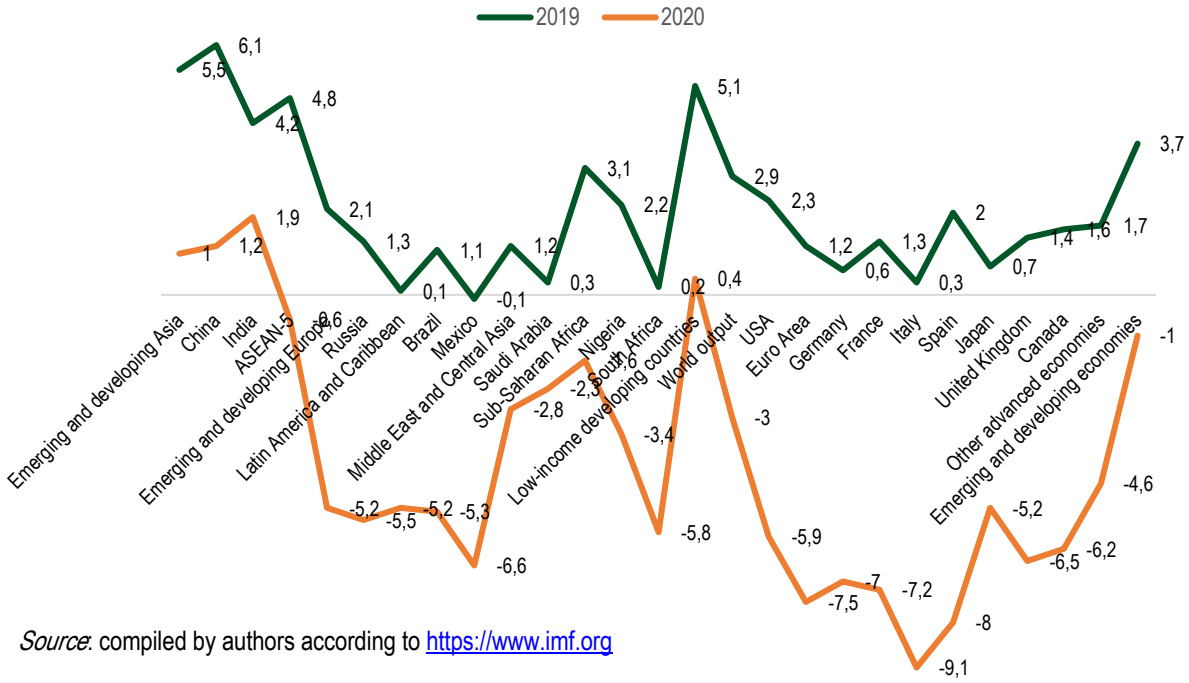
In the context of the global financial crisis caused by the Covid-19 pandemic, demographic indicators affecting employment have become the focus of attention (Figure 1). Covid-19 has had a beneficial impact on the environment, but pollution levels may increase again in the future (Bashir and Shahzad 2020).

Improving the quality of the labor force is a task in which various national, economic, social, legal and economic structures should be involved, taking into account constructive interaction. The need of post-industrial

production for workers who can not only meet the requirements, but also begin their subsequent development, should create conditions for the formation of such qualities of the human personality.

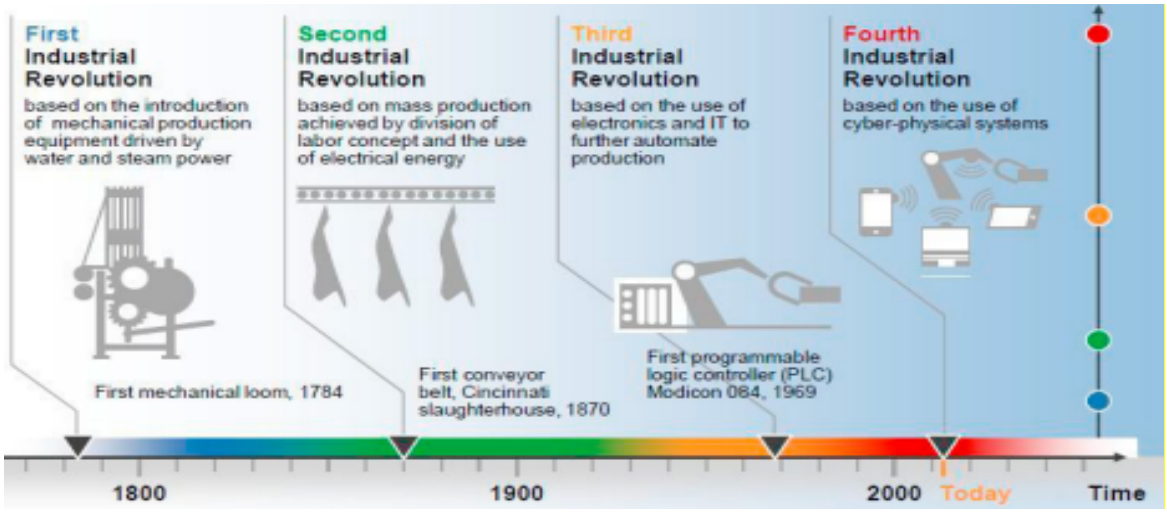
The effective use of resources to reduce environmental pollution and climate change is promoted by "Green" jobs based on the need to connect to environmentally efficient technologies of the future (Rutkovska and Sulich 2020). In Figure 2, we can see how the labor productivity management system has changed, affecting the employment of the population, associated with the introduction of digitalization.

Figure 1. Analysis of global socio-economic and environmental impacts due to the Covid-19 pandemic



Source: compiled by authors according to https://www.imf.org

Figure 2. Scale of industrial revolutions affecting employment



An ambitious environmental policy is necessary to avoid the risks of environmental degradation, prevent health deterioration and maintain economic growth in the long term (Sagidullin 2022). It is no secret that the problems of employment of the population were dealt with by more than one galaxy of scientists and were studied by representatives of the following economic schools: classical, neoclassical, Marxist; Keynesian, CIS countries, Kazakhstan.

The influence of technological processes on employment is devoted to the works of many famous scientists, such as (Pigu 1985, Ricardo 2023, Marx *et al.* 2019). The main provisions of the neoclassical theory of

economic equilibrium in general and its components - the theory of marginal productivity, equilibrium prices form the basis of the analysis of labor, which was later supplemented by Pigou (1985).

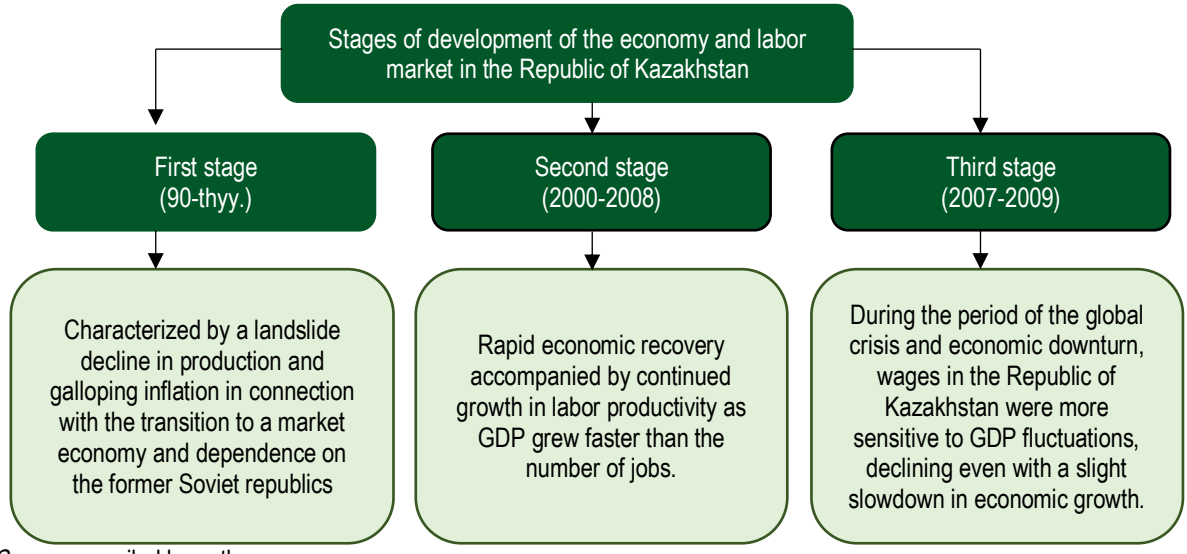
We can take into account the opinion of scientists that the new order is based on the interaction of nanotechnology, biotechnology, information technology and cognitive science (NBIC). The main feature of this way of life will be an intelligent system with minimal human participation. Digitalization is a factor influencing the labor market in order to attract workers to production through the accumulation of knowledge and the distribution of labor products. The potential for innovation will enable the full development of new technologies and job creation, with a focus on product innovation (Vivarelli 2019).

The employment development trajectory includes the main parameters of the economic environment, human resources, human capital development, training and continuing education (Walcott 2021).

2. Debates on Stages Development of the Economy and Labor Market in Kazakhstan

For 1991–2021 In the development of the economy and labor market of Kazakhstan, three stages can be distinguished, which were accompanied by either a decline or an increase in GDP, and, as a result, sharp fluctuations in the cost and labor costs in the form of real wages and the number of employed people (Figure 3).

Figure 3. Labor market in Kazakhstan: stages of development



Source: compiled by authors

In 2014 Kazakhstan also felt the consequences of the unfolding crisis: GDP growth amounted to 4.4%, down 1.6% compared with the previous year, exports decreased by 4.5%. To an even greater extent, the crisis and the resulting devaluation of the national currency in February 2014 and August 2015 affected the cost of labor, ensuring its fall by 4.7% against 1% in 2009 In 2020 due to the coronavirus crisis, for the first time in two decades, Kazakhstan's GDP growth rate became negative, amounting to -2.6% in 2020. The services sector, which accounts for 67% of employment, has suffered the most during the pandemic due to border closures and the need for social distancing. There has been a significant reduction in the number of employees. As for highly qualified specialists occupying jobs that require a higher level of skills and “cognitive” work, many of them calmly went to “remote work” during the lockdown, switched to online mode and continued to work.

According to the data of the Bureau of National Statistics for 2016-2021, the number of employed people in the service sector is growing in Kazakhstan than in industry and agriculture. If we look at the statistical data of the employed population by main types of economic activity, we can observe structural shifts both in the republic and in the regions. Over the 30 years of independence of the Republic of Kazakhstan, the active population has increased from 7,716.2 to 9,256.7 thousand people, which is 1.2 times less than the inactive population of 3,533 thousand people. up to 4093.3 thousand people, *i.e.,* 1.1 times. Therefore, there is a factor dependence of these indicators, and for this study we have built an econometric model.

In the third quarter of 2022, 8.8 million people were employed in various sectors of the economy of Kazakhstan, of which 6.7 million people were employed (76.1% of the total number of people employed in the economy), 2.1 million people were self-employed (23.9% of the total number of people employed in the economy).

Compared to the third quarter of 2021, total employment increased by 12.5 thousand people, in the segment of employees by 28.5 thousand people, the number of self-employed, on the contrary, decreased by 16 thousand people.

In the regional context, as of the 3rd quarter of this year, hired employment, as a rule, along with megacities prevails in Karaganda, Pavlodar and Aktobe regions - cumulatively, almost every fifth employee works here. And among the self-employed in the top three are Turkestan, Almaty and Kyzylorda regions with a total number of self-employed 751.2 thousand, or 35% of the total self-employed population. By types of economic activity, as in the previous quarter, trade, agriculture, education and industry remain leaders in terms of the number of employed people, in which about 4.8 million people or 55% of the total employed population cumulatively worked. At the same time, in July-September, the largest increase in the number of employees was demonstrated by:

- spheres of art, entertainment and recreation (+4.8% or +6.6 thousand people),
- accommodation and food (+4.1% or +7.6 thousand people) and transport (+3.4% or +20.9 thousand people).

These same areas show the greatest dynamics in the growth of the employed population in relation to the same period last year. The largest decrease in the number of employed in the quarterly period was observed among:

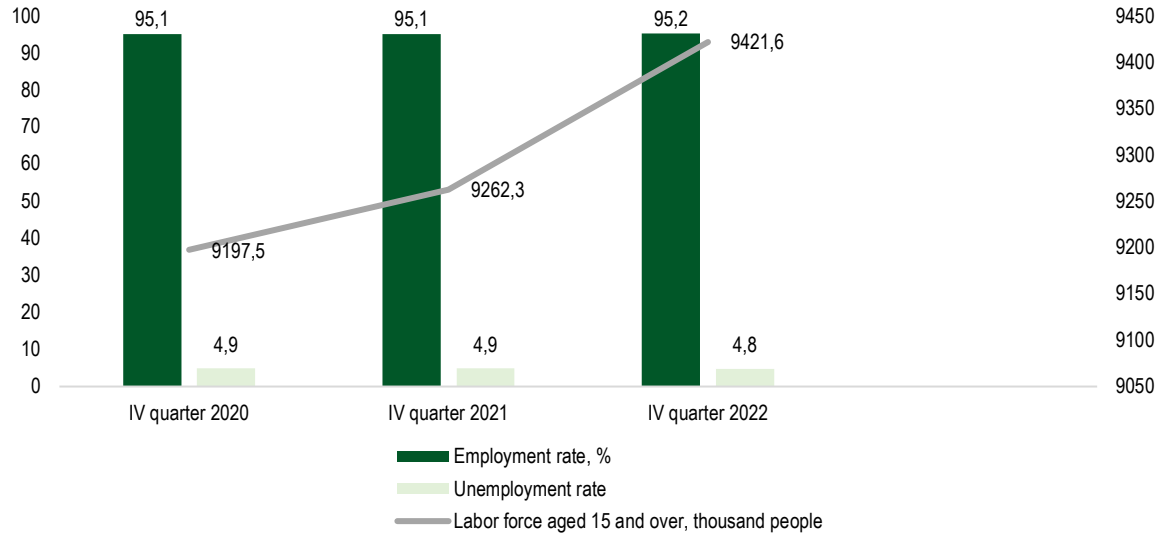
- employees of other types of services (-15.8 thousand people or -4.8%);
- finance and insurance activities (-10.5 thousand people or -5.6%);
- energy (-7.2 thousand people or -4.9%).

In the case of the latter sector, a decrease in employment is also observed in annual dynamics, along with operations with real estate (-5.4% or 9.4 thousand people) and activities in the field of administrative and support services (-4.6% or 13,1 thousand people).

The average number of hours worked per worker in the fourth quarter was 39, with employees working 41 hours and the self-employed working 34 hours. During this period, there was a noticeable decrease in the number of workers who do not have full-time employment, by 9.9% to 268.9 thousand people.

In the fourth quarter, the unemployment rate, measured by the methodology of the International Labor Organization (ILO), fell to 4.8%, representing a decrease of 0.1 percentage points. This means that a total of 456.1 thousand people were left without work, and this figure has been steadily declining since the third quarter, when the potential workforce or those who are not looking for a job and/or are not ready to start working decreased by 19.3%. Currently, this figure is 39,500 people (Figure 4).

Figure 4. The indicator of employment of the population of the Republic of Kazakhstan for the period from 2020-2022



Source: compiled by authors according to http://www.stat.gov.kz

Assessing the state of the labor market in modern conditions, it can be noted that the bearer of labor relations in society is the active part of the population, and the real value is the state and availability of resources for the labor force as a factor in the formation of the labor market.

The labor market is characterized by the presence of certain problems, in which it is necessary to note the discrepancy between the needs of employers in personnel and the professional capabilities of those who submit candidates for consideration. The level of employment and unemployment is also characterized by certain characteristics. In this regard, the urgency of finding ways to overcome the contradictions and disagreements between the supply of labor and the demand for it is increasing.

3. Employment Indicators. A Correlation-Regression Analysis

Using the method of correlation and regression analysis, the author tested whether the variable depends on several explanatory factor variables (employment of the population) that affect it. The following indicators for 2011-2021 were selected as independent factors:

- income from labor activity, total (average per capita per year, tenge);
- informal employment (person);
- formal employment (person);
- gross regional product per capita (thousand tenge);
- human capital index (HCI);
- employed population with higher (including postgraduate) and incomplete higher education (thousand people);
- employed population with secondary vocational (special) education (SVE) (thousand people);
- population size (persons);
- life expectancy of the population at birth (years);
- average monthly nominal wage of one employee (tenge);
- the total number of personal computers in organizations (units);
- the number of computers with access to the Internet (units).

To build an econometric model, the growth (%) of the above indicators for the period from 2011 to 2021 was calculated according to statistical data from the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan. The results can be seen in Figure 5, Figure 6, Figure 7.

Figure 5. Growth in indicators of employed population, income from labor activity, informal and formal employment

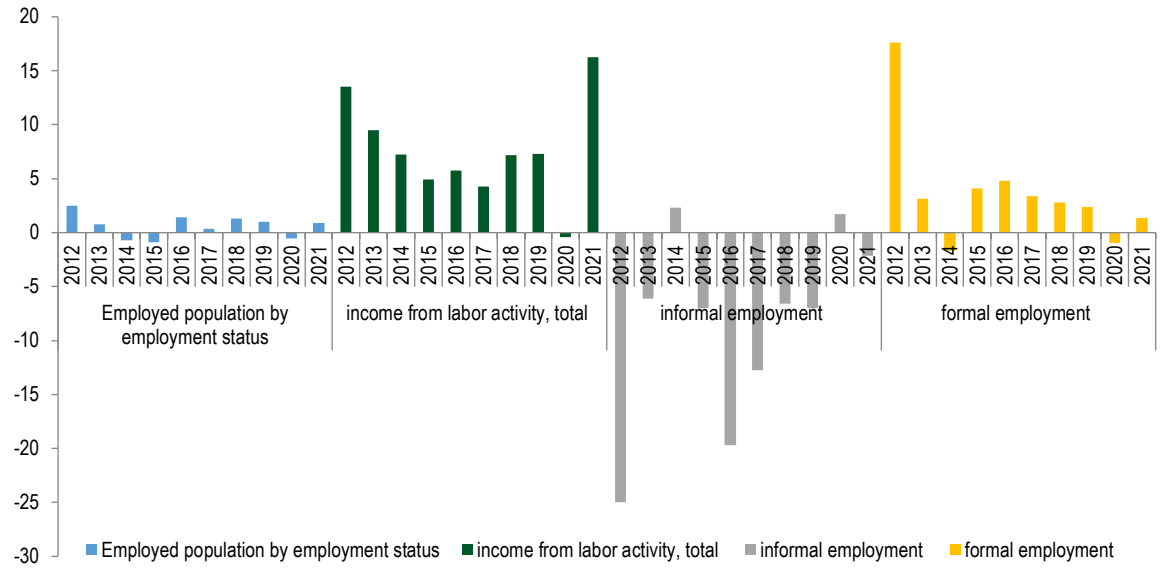


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Figure 6. Growth in indicators of the employed population with secondary vocational and higher education, human capital index and gross regional product

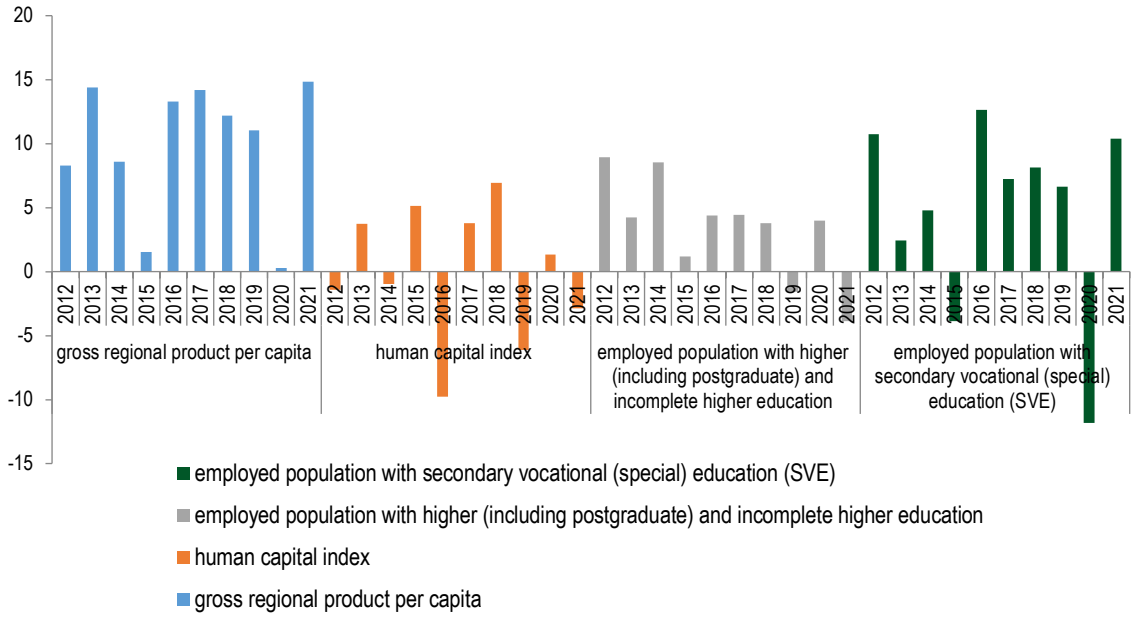

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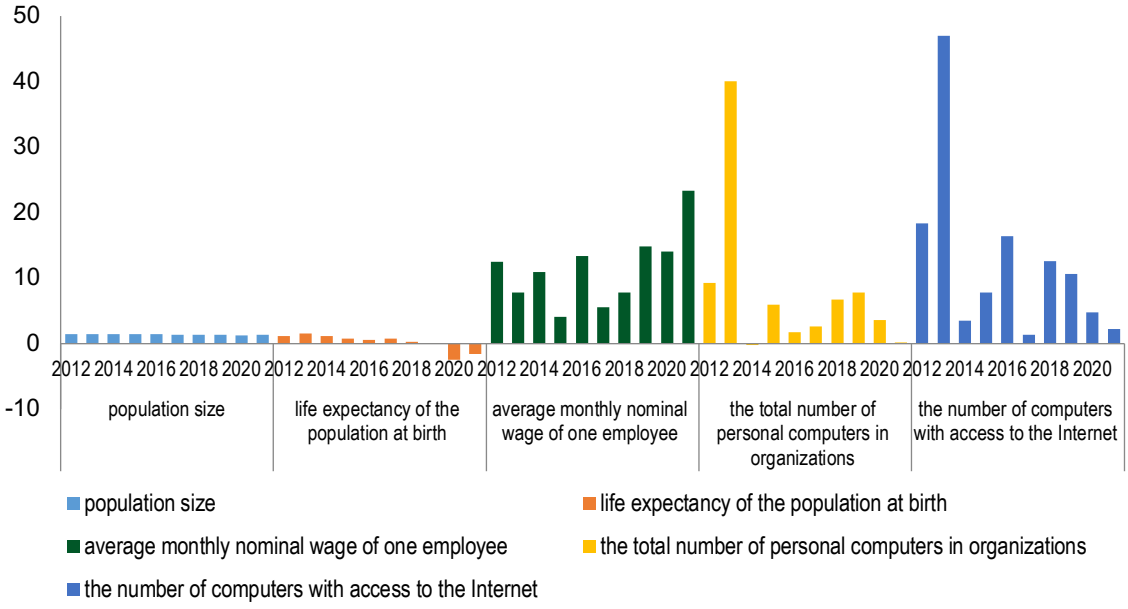
Figure 7. Growth in indicators of population, expected duration of employment, average monthly nominal wages, total number of PCs and the number of computers with Internet access



Source: compiled by authors

The construction of the mathematical model was carried out using the universal integrated system (Statistica - version 6.0). This integrated system not only performs statistical analysis using a wide range of analysis procedures, but also manages databases and application development. As a result of the correlation-regression analysis, factors were selected that have a close statistically significant relationship with the growth of the employed population, these are the growth of the following indicators: informal employment; formal employment; human capital index; employed population with secondary vocational (special) education; average monthly nominal wage of one worker; number of computers with Internet access.

Scatterplots of the selected independent factors and the resulting indicator are presented in Figure 8 to Figure 12, compiled by the authors.

Figure 8. Scatterplot: Growth in formal employment, % vs. Employed population growth, in %

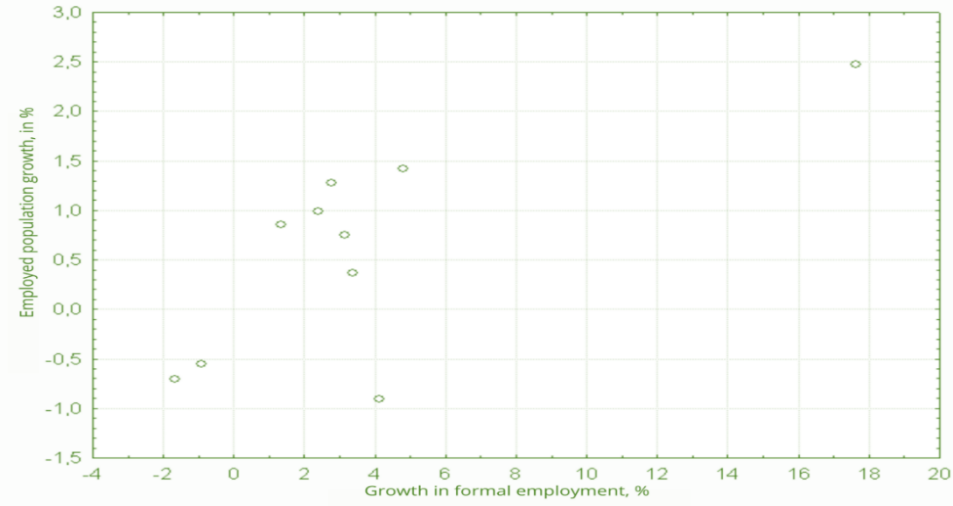


Figure 9. Scatterplot: Growth of Human Capital Index, % vs. Employed population growth, %

Figure 10. Scatterplot: Growth of employed population with SVE, % vs. Employed population growth, %

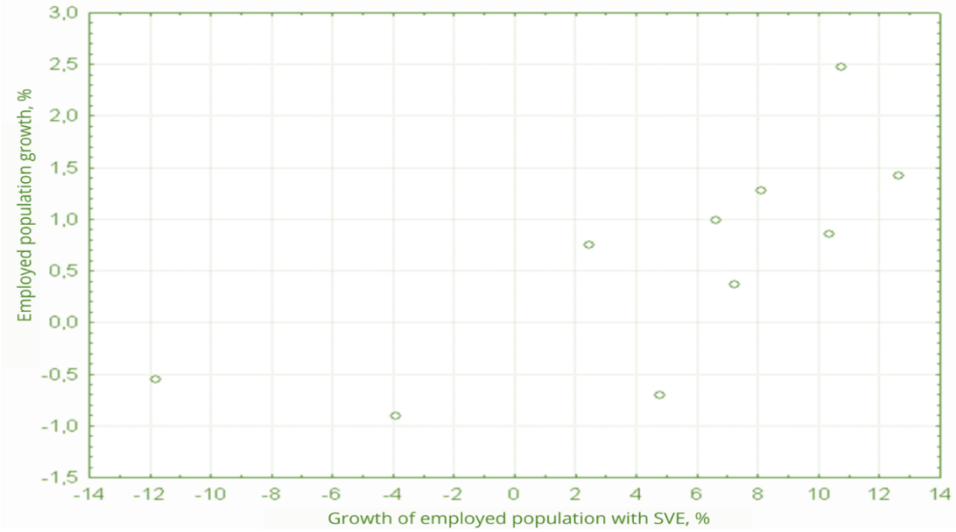


Figure 11. Scatterplot: Growth in average monthly nominal wages, % vs. Employed population growth, %

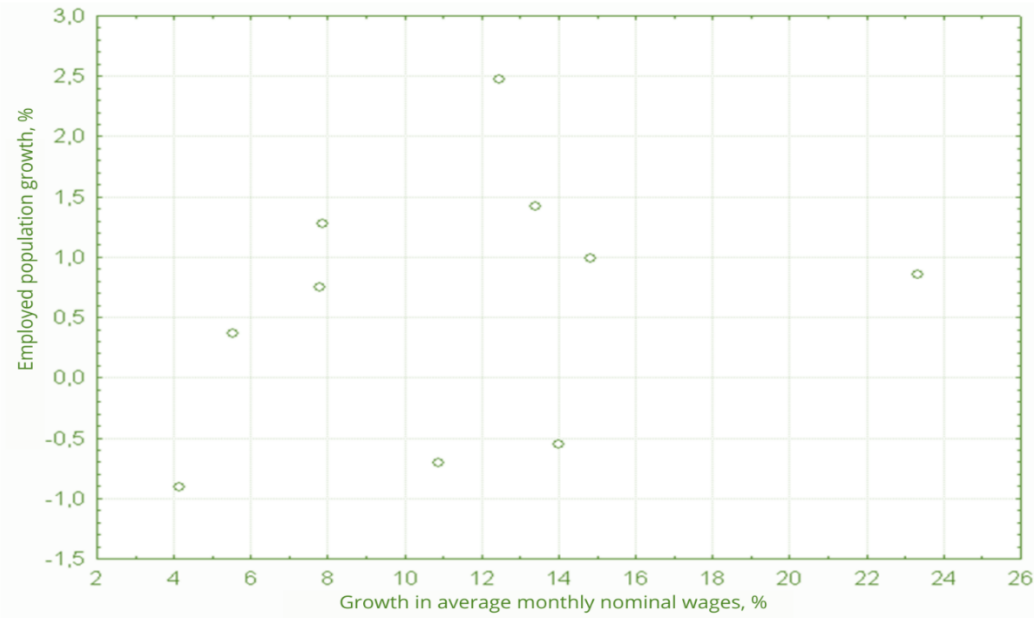
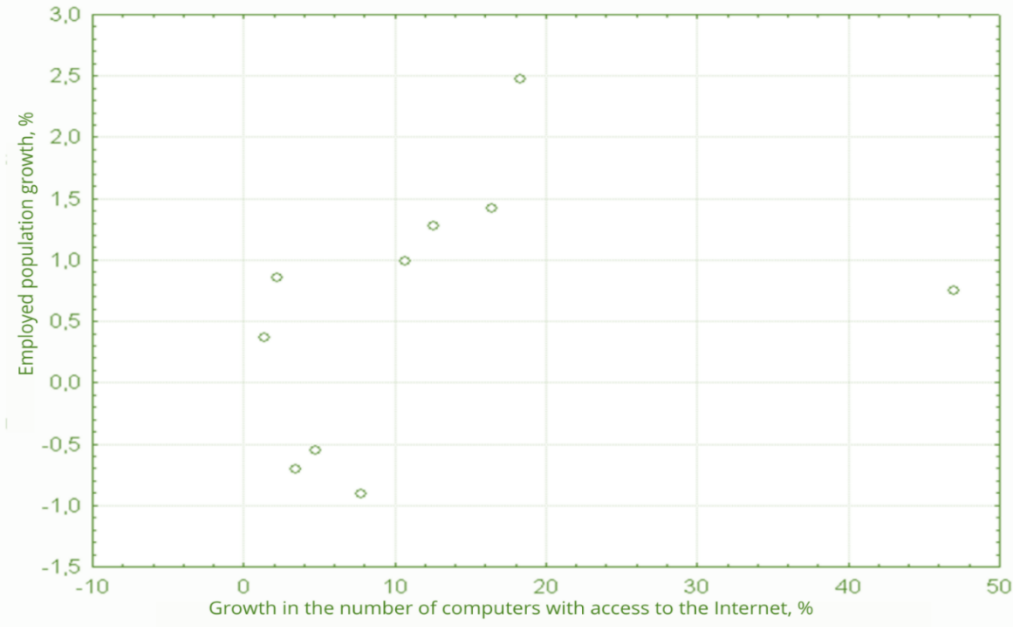


Figure 12. Scatterplot: Growth in the number of computers with access to the Internet, % vs. Employed population growth, %



As a result of the approximation of statistical data using the least squares method, the multiple linear regression equation will take the form and the result of the data approximation is presented in Table 1.

$$EmpP = -1{,}672 - 0{,}184InfEmp + 0{,}139ForEmp + 0{,}111HCI + (-4{,}656)(-3{,}880)(6{,}071)(3{,}203) + 0{,}137EmpPSVE + 0{,}181Wage + 0{,}035\ Comp, R^2 = 0{,}977, F_{\text{набл}} = 8{,}941$$

$$(5{,}868)(4{,}672)(4{,}122) \qquad 3.1$$

where: EmpP is employment growth by employment status, %*;* InfEmp is increase in informal employment, %*;* ForEmp represent increase in formal employment, %*;* HCI – increase in human capital index, %*;* EmpPSVE represent increase in the employed population with secondary vocational (special) education, %*;* Wage is increase in the average monthly nominal wage of one employee, %*;* Comp represent increase in the number of computers with Internet access, %.

Table 1. Results of evaluating the equation for the growth of the employed population by employment status

R	0,988
R^2	0,977
Adjusted R^2	0,930
The observed value of the Fisher criterion	20,924
Critical value of the Fisher criterion	3,490 ($\alpha = 0{,}05$)
Employed population growth by employment status, % - dependent variable	
Constant	-1,672**
Growth of informal employment, %	-0,184**
Growth in formal employment, %	0,139***
Growth of the human capital index, %	0,111**
Growth of employed population with secondary vocational (special) education, %	0,137***
Increase in the average monthly nominal wage of one employee, %	0,181**
Growth in the number of computers with Internet access, %	0,035**

Note: * p<0,1; ** p<0,05; *** p<0,01
Source: compiled by authors

Conclusion

The importance of greening the labor market for solving environmental and climate problems is recognized by international organizations and most countries of the world. "Green" employment makes it possible to limit the negative impact of economic activity on the environment and increase the efficiency of the use of natural resources and labor productivity through the introduction of environmentally friendly technologies and equipment. Since greening the labor market is an important part of greening the economy as a whole, green employment strategies should be integrated into decarbonization and green growth policies.

In order to effectively transform the labor market and compensate for the negative consequences of the "green" migration of workers, a number of socio-economic measures are needed, including support for the most vulnerable categories of the population, vocational training and advanced training, as well as support in finding a job. The creation of "green" jobs makes it possible to reduce the negative impact of human activity on the environment, but also to support economic development and the growth of people's well-being.

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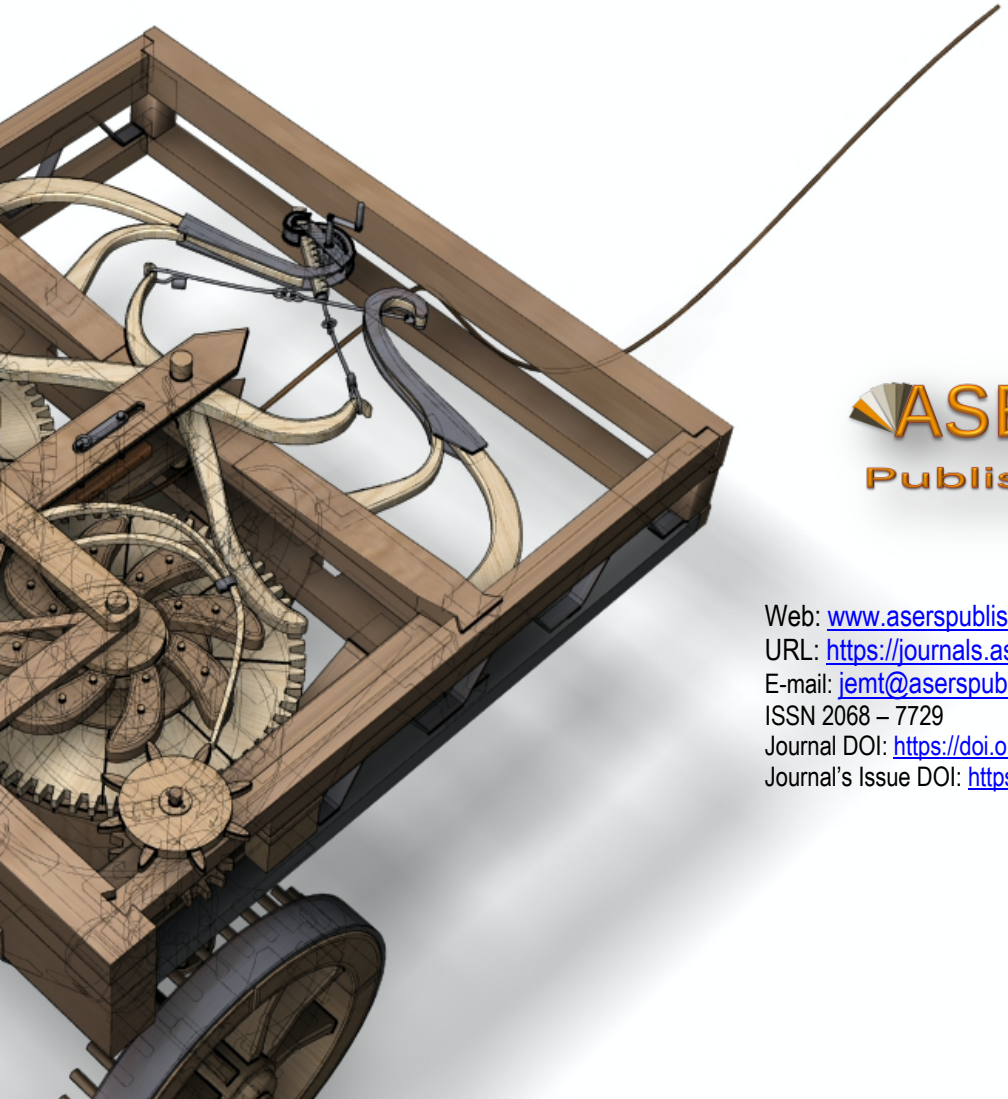

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