

## THE ROLE OF KNOWLEDGE ECONOMY IN SUSTAINABLE DEVELOPMENT OF REGIONS

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The article is devoted to the research of theoretical approaches to the development of knowledge economy and state regulation of innovative development of the region machinery. The term "knowledge economy", according to the authors, includes: post-industrial economy; information economy; innovative economy; the global network economy. Preconditions of formation of economy based on knowledge is the creation of two important conditions: the development of the social capital of the state and the presence of the national (state) innovation system. On the example of the Republic of North Ossetia-Alania necessity of development of mechanisms of formation of knowledge economy, adequate conditions and level of development of the region is presented. As part of the modernization and sustainable development of the region it is developed an innovative development strategy of the Republic of North Ossetia-Alania, the implementation of instruments which, as the analysis does not correspond to the needs and pace of innovation. Existing institutional arrangements in the region focus on stable companies, whereas the actual is to support the ability to launch the newly established innovative enterprises. Investment attractiveness of innovative projects in the region is insignificant and due to the lack of a coherent regional innovation systems, inadequate enforcement of obligations by the authorities in the field of innovation support. The first priority in the Republic of North Ossetia-Alania is the creation of an adequate institutional environment of innovative development, scientific development cooperation mechanisms, business and government, as well as creation of favorable conditions for investors, allowing to neutralize the risks of innovation.

Key words: knowledge economy, post-industrial economy, national innovation system, government regulation, innovative development of the region.

The new economy today is the fields with a high proportion of non-material human capital, such as information and communication technologies, education, science and intellectual services. We share the economists' point of view according to which one should distinguish between the concepts of "knowledge economy" and "new economy". The new economy implies the combination of science, innovations and business processes providing leadership and competitiveness of the economy and reducing the consumption of resources at the same time. In turn, the knowledge economy is based on human capital and knowledge, high technologies and high-quality services. In other words, the new economy is the first stage of post-industrial system with the knowledge economy being its highest form of expression. The main resource for pre-industrial economy was the land, for industrial society it was capital. In the knowledge economy the main resources are information and knowledge [1; 2].

The economy based on knowledge has a number of effects differing from all previous types of economies, including: the law of rising return, network effects, the exponential nature of the growth, positive feedback. In the knowledge economy the law of arising return operates instead of the law of diminishing return. In terms of economy this means that the market participants' number increasement and the use of production resources do not reduce the return on them after passing through the extremum, as it was in the industrial economy, and vice versa it raises the return. Due to the specific character of the basic store in the knowledge economy the network effect is the base of the law of raising return. The essence of the network effect is that the value of goods or services increases along with the number of individuals using this product. The classic formulation of the network effect was given by R. Metcalfe: "the value of the network is proportional to the square of the number of users".

The emergence of new effects of the knowledge economy can be partly explained by the rental approach. According to the definition of economic rent which in terms of economy is the name for extra income factor of production obtained due to the unavailability of this factor in another place or

for other economic agents, knowledge can also be attributed to the "rental" factor of production: low investments in knowledge and its adequate usage can give significant results.

According to V.L. Makarova and G.B. Kleiner [3; 4], in the modern company economy the new factor income, the so-called "cognitive rent" appeared along with rents, income, interest and wages. The company gains the factor income successfully investing in knowledge. According to the theory of rent, which is studied by many modern scholars [5], companies that need qualified personnel, applying advanced technology are the source of intellectual rent; the result of the fact that firms are increasingly in need of intellectual rent is the permanent retraining system of staff to become high-qualified, the one which brings that "cognitive rent". In other words, the mechanism of the emergence and the widespread use of intellectual rent can be considered to be the basis for new laws of the knowledge economy in terms of the rent theory.

Thus, we can conclude that the "knowledge economy" is a multifaceted economic category and therefore it should be treated systemically. In our opinion, the structure of the "knowledge economy" comprises:

- post-industrial economy, as there is an increase of the service sector starting to dominate in percentage correlation over the production area;
- the information economy, as the information (knowledge, science) is beginning to play a crucial role in it as a factor of production;
- the innovative economy, since the economy can be considered to be innovative if its knowledge can generate a continuous stream of innovations that meets the fast-moving changing needs and often forming these needs;
- the global network economy, as in the knowledge economy the interaction between knowledge carriers is mediated by wide network connections in the global scale (the emergence of the Internet as a new economic infrastructure).

The factor of formation of the knowledge economy is the creation of two important conditions: the development of the state social capital and the presence of the national (state) innovation system. These conditions should be created at the same time, ahead of establishing the knowledge economy. It is important for this process to be a priority of the state policy, which supports various aspects of innovative development on the one hand, and provides a positive dialogue with all sectors of society on the other.

At present time the developed countries' society pays increasing attention to the modern objective challenges. Scientific, business, political elites are searching for the appropriate specific and adequate responses. Responsibility for the national economies transition to the knowledge economy is imposed on the senior management departments of states. Their main task is to support the private sector, but, in contrast to the capitalist system, a primary criterion for the state aid rendering is considered to be the public utility and the potential of scientific and production activities of the companies rather than individual wealth.

At the beginning of the 1980s liberal market reforms were held in most of the western countries. In the process of their implementation there has been adopted a set of acts that encourage innovative activity in all areas. In particular, in the United States a number of laws was adopted for the extension of ties of universities with private corporations. The acts were aimed at the industry innovation: Stevenson-Wydler innovation act (1980), economic recovery act (1981), small business innovation development act (1982), the law on joint research and development (1984), the act on transfer of technologies developed in government laboratories and institutions to private business (1986), the "National Innovative Capacity" Project (2000).

Politicians, government and American businessmen were involved in the implementation of the "National Innovative Capacity" Project. Their task was to manage the process of creation and promoting innovation in the economy. America got many advantages after implementation of the program. Firstly, the USA public funding of science increased up to 85 billion dollars yearly [9]. Projects on informational and biotechnological development supported by the government helped the country to take leading positions in these areas. Secondly, the development of the Internet as a foundation for economic growth was actively encouraged. The vast majority of secondary schools,

secondary and higher educational institutions, health care institutions and libraries were joined the "World Wide Web." Thirdly, we developed a variety of programs aimed at supporting higher education in the United States. According to data of 2014 the proportion of American students who continue their education after high school is about 70% which is 13% more than the corresponding figure of ten years ago data. It should be noted that the creation of a single innovation system of the USA is considered the main achievement of recent years [9].

Similar national policies aimed primarily at the development of R & D and innovation, there are in other countries. The forms of governmental support are sufficiently developed for small and medium-sized innovative businesses in the UK, Germany, Finland, France. Various mechanisms are used to support innovative businesses. These mechanisms include staff training and retraining, provision of access to information, technology and markets, the provision of tax incentives such as incentives for small firms or tax credit for investors financing small innovative business. Studies carried out in Canada on the results of the Industrial Research Assistance Program (IRAP) showed that small firms involved in IRAP had a 20% higher survival rate as compared with small businesses that were not supported by the government [10].

Thus, in the modern market economy the state plays a key role in laying the foundations of the coming post-industrial economy. Summarizing the directions of the government's efforts in the formation of the knowledge economy we can distinguish two ways: the first (more characteristic of the US) in which a country develops a foundation for the transition to the knowledge economy through the establishment of liberal legislation which gives companies the necessary freedom for innovation, talent recruitment and development and high-tech application; the second (more typical of Europe) is the development of interstate strategies to guide national economies.

Of course, in the context of globalization it is necessary also for Russia to form the basis of the "knowledge economy" and then the frame of the "new economy" more active relying on the potential of the Russian industries in order to maintain the competitiveness of its economy and humanitarian sphere. North Ossetia-Alania has accumulated significant scientific and educational potential enabling the formation of a competitive innovative complex. The technology center "Baspik" functioning in the country and specializing in the production of photoelectric nano-microdevices is the source of innovative development of North Ossetia-Alania. The technopark structures of innovative entrepreneurship are being formed in the republic in accordance with the "Technopark" project. In addition, two projects on business incubators formation are being realized in order to create a favorable environment for the emergence of small innovative enterprises.

Among the advantages of an innovative complex of North Ossetia-Alania it is possible to distinguish the presence of: the famous scientific and educational centers which supply qualified personnel; a number of high-tech industries of the Russian and world level; the regulatory framework of innovation; certain elements of the innovation infrastructure; business incubator. However, there are certain problems in the innovation sector of the economy among which are: weak innovation enterprises activity; absence of a full-fledged institutional innovation environment; inadequate industry funding; insufficient level of infrastructural investment areas furnished for innovation; shortage of specialized educational institutions; shortage of modern information and communication channels.

The main barriers to sustainable growth and modernization of the economy are of more than institutional nature. This fact on the one hand, complicates the decision of strategic problems which the republic faces (changes in the institutional environment is a long and difficult task). On the other hand, it actualizes the search for areas in which the institutional changes are possible and may have a significant positive impact on the economic situation. The strategy of innovative development of North Ossetia-Alania was developed within the framework of the modernization and sustainable development of the innovation system of the country. The strategy includes the strategic priorities of the economy high-tech sectors development and it is aimed at supporting small and medium innovative enterprises including financial and material support; preferential crediting of innovative projects; promotion of interregional and international cooperation.

However, the above-mentioned measures of state support in the republic do not match the pace and needs of business development. The existing institutional mechanisms are aimed at the stable running enterprises, while the actual task is to support the possibility of starting new enterprises. Existing deficiencies affect the regional investment policy. Investment attractiveness declines due to investors' non-confidence in the proper obligations enforcement. The first priority here is the creation of new institutional and cooperation mechanisms maximum favorable for investors and allowing to reverse the current negative tendencies.

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