

The impact of infrastructure projects on social-economic territorial development

Vladimir Ivanov
Moscow Polytechnic University
(Ryazan Institute Branch)
Department of «Economics, management and marketing»
Ryazan, Russia
ivu.iwanow@yandex.ru

Abstract — The conduct of social-economic policy and the country's economic efficiency are pre-determined by regional asymmetry. Thus, the ability of certain regions to compete in the international market using modern approaches to social-economic development defines the vector of intensive promotion of the Russian economy.

The availability of decent infrastructure serves as a guarantee and a factor conducive to the betterment of territorial position.

Therefore, with the objective of its update and full operation it is necessary to implement infrastructure projects whose specific nature is about excessive capital intensity, extensive payback periods, increased complexity and large scales (including territorial ones). The living standard of the population, the society's technological and social conditions are determined by the implementation of infrastructure projects.

The results of the analyzed study into authors' opinions on the positive impact of infrastructure projects on social-economic territorial development are presented in the article.

The assessment and identification of correlation between the development level of a regional infrastructure and a regional social-economic development is initially determined by a researcher's subjective position arising from the regional development theory.

The article touches upon the main investment issues in Russia's infrastructure as a whole as well as in its regions. There has been presented the author's approach to the system of economic indicators illustrating the economic effect of infrastructure investment. The elements of infrastructure, that influence social-economic territorial development and are promising, have been identified and substantiated by the author.

Keywords — *infrastructure, infrastructure investment, infrastructure project, infrastructure industries, regional development*

I. INTRODUCTION

In the modern economics, a lot of attention is paid to research into the impact of investments in territorial infrastructure as a factor and a condition of its social-economic development. Infrastructure and its industries are viewed with the key factors of economic growth of certain

territories and the country as a whole [1], using a so-called "infrastructure impulse" [2].

It is generally acknowledged that investment in infrastructure is a rare occasion where everybody wins. Kuzmin V.A. points out, that "there happens production growth in the long-term aspect and the rate of employment increases short-term. Thus, infrastructure development is an essential condition for a quality territorial economic growth" [3].

The essence and peculiarity of infrastructure and its industries in general terms can be presented simultaneously through [4]: manufacturing-related services; conditions providing the development of industries and meeting the needs of the population; specific capital movement in its virtual form. Traditionally, these industries are referred to as infrastructure: transport, service industries, energy, telecommunication, utilities infrastructure and non-residential construction.

The theoretical aspects and the issues of the specifics of implementing infrastructure projects are the subject matter of the research by the following authors: T.A. Golovina, S.S. Eletsкая, S.A. Izmalkova, M.S. Popov, I.A. Tronina, I.L. Faustova and others [5,6].

The aim of the present research is to consider the particular features of influence of the infrastructure on social-economic territorial development.

II. MATERIALS AND METHODS (MODEL)

Empirical information framework for research was accounted for by official statistical materials from EY company reports; analytical, reviewing researchers' developments published in periodicals and on the Internet.

The present research is based on studying and generalizing theoretical and factual materials on the issues of infrastructure development and the implementation of infrastructure projects with the use of different methods: systematic, comparative as well as table and graphic of processing and presenting the data.

III. RESULTS AND DISCUSSION

Experts note that the current level of social-economic development of a certain region (a territory) compared to other regions depends on resource factors as well as external and internal impacts on the region [7].

Full infrastructure functioning and development becomes a necessary condition for the sustainable growth of the regional economy. It identifies the need for modernizing both operating infrastructure facilities and the construction of new ones, which is feasible by means of the implementation of infrastructure projects.

An infrastructure project is understood as a complex of interconnected and consecutive actions resulting in, with the set restrictions of temporary and financial nature as well as the requirements for the quality of the set results, the set goals are achieved (the establishment, modernization or expansion of infrastructure projects).

For instance, according to the data by the Global Infrastructure Hub, at the global level over the last 10 years the growth of investments in infrastructure has been observed while compared to the size of the global GDP their share is shrinking [8].

In other words, total investments are growing whereas their significance (their share in GDP) is decreasing.

From the country-specific angle, thanks to their investments in infrastructure, countries have currently created infrastructure assets (objects) that are different in price and quality. As McKinsey calculations have shown, the quality of infrastructure in different countries is different (see Figure 1) [9]. The countries are located on the coordinate plane called “The quality of infrastructure and GDP per capita”.

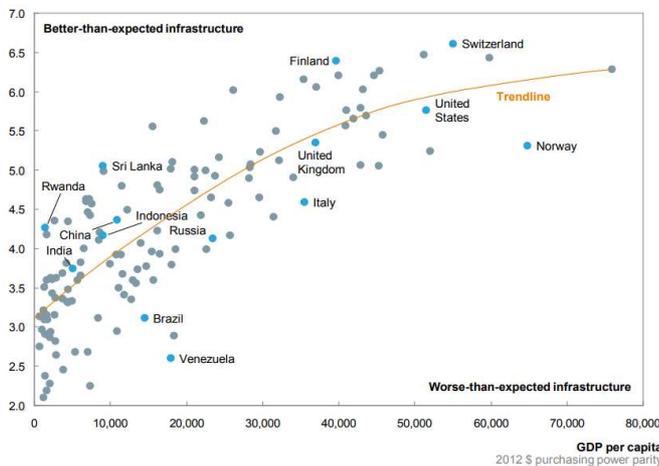


Fig. 1. Differentiation between countries based on criteria “infrastructure quality – GDP per capita” [9]

As we can see, Russia has an unsatisfactory rate in this graph. Switzerland enjoys the highest quality infrastructure. Russia’s GDP per capita is higher than that in China, Indonesia and Sri Lanka; however, the quality of infrastructure is lower than the one in the countries above.

Gubenko D.V. speculates that “economic and geographic positions of a region as well as its natural and climatic characteristics make demands for the quality of infrastructure; however, infrastructure itself is capable of changing a region’s economic and geographic positions and allow its entry into a market” [7].

It has also been mentioned, that, on the one hand, a highly developed infrastructure eases a region’s access to markets and, on the other hand, increases the efficiency and productivity of regional economy, thus enhancing regional competitiveness. It is notable that there is a chain reaction effect: “infrastructure development in one region quite often leads to the emergence of positive externalities on others” [7].

So far significant experience has been gained of implementing infrastructure projects, which shows their positive influence on social-economic territorial development.

- Golts G.A. considers that “it is infrastructure that becomes a trigger which will help to balance the course of actions for the community and household, economy and population” [10].

- Golts G.A. has rightly stated that “a developed and good quality infrastructure increases the turnover rate of goods, capitals, ideas and information”. The speed at which territorial markets and consumers get involved in turnover is also increasing;

- According to Mark Zandi, a chief economist of no Moody’s Analytics, “state capital investments in infrastructure stimulate private investments; in this case, each dollar spent on infrastructure projects causes multiplier effect at the size of USD1.59” [11], McKinsey Global Institute (MGI) analysts estimate that in the long-term prospect it cause GDP growth by 20 cents, or produces a 20% social-economic effect. And in some successfully implemented infrastructure projects the balance of the benefits and costs may account for 20 to 1 [9];

- The World Bank states that 10% growth of investment in infrastructure development is conducive to the increase by approximately 1% of economic growth in the long-term prospect [12];

- Mostov M.Y. points out that “investments in infrastructure is a perfect way of redistributing resources and workforce from the stagnating sectors of economy to forward-looking driving industries of economic development” [13];

- Korovin M.Y., Orlov A.A., based on OECD estimates on the development of the world economies by 2035, state that due to the population growth, its concentration in cities and further development of trade and tourism, the pressure on infrastructure will increase all over the world. And, “taking into consideration that design, construction and expansion of major infrastructure facilities will take years, it is necessary to take a decision concerning the mechanisms of their funding in the near future” [14]. The above authors consider investments in infrastructure an important factor of economic growth;

- MGI analysts present some data concerning several countries with regard to the fact that investments in infrastructure have increased the number of work places [9]. For instance, according to the data, infrastructure investments

of 1 per cent from GDP created 3,4 million work places in India, 1,5 million places in the USA and in Indonesia 0,7 million places [9];

- It is a safe assumption that a good quality transport infrastructure increases mobility of the population, which is enabled to move about between city areas and regions more actively for reasons including the search for work. This improves the structure of labour market, leading to general growth of population income and eventually stimulates consumption, which is one of the main factors of economic growth;

- It was as early as in 1990s that foreign researchers (such as Munnell A. [15] and Aschauer D. [16]) based on the example of analyzing the impact of state infrastructure costs came to conclusion that a reduction in state expenditures on infrastructure leads to the decrease in labour productivity in the private sector. Such a pattern takes place since good quality infrastructure (roads, telecommunications, public utilities, energy and others) cuts down transaction costs of all the market participants (it takes less time to make a transaction, it is implemented with fewer material and other costs) and, therefore, labour productivity increases and economic resources are used more efficiently.

The issue of investment in infrastructure is as acute in Russia as in the rest of the world. Apart from worldwide trend of urban growth, the development of trade and tourism, specifically Russian conditions influence the growing need of the Russian economy for infrastructure investments: the need for the decrease in the dependence on resource-based industries and the economies of other countries (in reducing import dependence and ensuring national security) as well as the need for creating great impulses to the development of the national economy.

TABLE I. THE SYSTEM OF ECONOMIC INDICATORS ILLUSTRATING THE ECONOMIC EFFECT OF INFRASTRUCTURE INVESTMENTS

INDICATORS
Approach EY[17]
Total investments
GDP at market prices
Physical persons' incomes
Organizations' profits
Working age population
Changes in the rate of unemployment
Income tax receipts
Corporate tax receipts
Receipts of all the indirect taxes
Suggested by the author
GRP
Market value of:
-1 square metre of housing
-1square metre of commercial property
-1 hectare of land
Property tax receipts from:
-organizations
-physical persons
The number of small and medium entrepreneurs
Substandard housing (percentage of total housing)

Drafted by the author based on research materials

Besides, investments in the Russian infrastructure allow to strengthen and make profitable the country's unique geographical position.

Russia's unique geographical position consists in the following: a good location at the junction of Europe and Asia; Russia has maritime boundaries with three out of four oceans (53 sea ports); it can be sought by air transport hub; a high potential of railway routes (Russia ranks first in the world in the extent of electric railway tracks of 43 thousand kilometres); it has a good pipeline infrastructure (pipelines have been built to Germany, Poland, Turkey, the Czech Republic, the Baltic countries and CIS countries); the country shares a border with 17 states [17].

EY analysts propose considering the impact of infrastructure investments on the region through the synergistic effect of both direct and indirect effects from total investments: through the annual rate of increase in regional GDP as well as other main economic indicators (see Table 1) [17].

Experts Vagizova V.I., Terentjeva K.L., Merzlov M.Y. and others [18] also suggest considering the impact of infrastructure investments on the regional development at detailed infrastructure industry level.

Golts G.A. considers the most prospective and revolutionary element of infrastructure to be information and communicative sphere on computer-based reality capture, and the most exceptional is ecological one, and only following that he rates transport infrastructure. 10]

However, a number of researchers (for instance, Doroshkevich D.V. [19], Donaldson D. [20], Hornbeck R. [21], Faber B. [22], Gritsenko S.G. [23], Vagizova V.I., Terentjeva K.L. [18] and others) point out transport, or the transport infrastructure in particular as a key (main) infrastructure industry.

Transport infrastructure as a central element of general infrastructure is "directly integrated into the sphere of life support and service for the regions, the social-economic system operators as well as the population, is directly linked with the functioning of transport-logistics system of the country and the regions which has been intensively developing in the last few year" [23].

Merzlov M.Y. proposes "taking into consideration that individual infrastructure industries may influence the development of adjacent ones" and addresses the mutual impact of infrastructure industries through effects they have on each other [25]. For instance, Merzlov M.Y. has identified the mutual impact of four infrastructure industries: telecommunications, electrical power distribution, transport and water infrastructure.

Faustova I.L., while studying the impact of implementing infrastructure projects in the field of energy conservation, also holds that "the development of energy-efficient infrastructure includes not only the creation and modernization of engineering infrastructure and machinery (the core) but also improving the mechanisms of maintaining scientific and

technological developments and their further commercialization, specialist training etc.” [26].

In our opinion, it allows to dwell on the positive influence of infrastructure projects on science development in regions as well as on creating the possibility of further commercialization of scientific knowledge. Besides, regional infrastructure projects lead to generating new knowledge and skills by those involved in their implementation, exploitation and servicing. For instance, with regard to energy industry, infrastructure projects can be implemented in three areas: “1) the creation and modernization of the facilities of engineering infrastructure and the introduction of equipment ensuring a more efficient energy use; 2) a complex optimization of energy consumption by public sector institutions and territorial entities; 3) the elaboration and commercialization of innovative technologies of energy conservation, specialist training and others” [26]. Gubenko D.V. regards the access to cheap electric power as one of the regional advantages [7].

The positive influence of infrastructure projects on social-economic regional development is confirmed by the fact that it always relies on an investment mechanism, and the investments in the territory provide an incentive for its further development (however, it is necessary to mention that these incentives can be either long- or short-term). Ovsyannikov S.V. and Davydova E.Y. argue, that “one of the main areas of regulating the processes of social-economic life is improving the quality of an investment mechanism” as well as the fact that “the productivity of an investment mechanism is considerable for all the segments of the regional economy” [27].

Tolstel M.S., Russkova E.G. and Yakovleva E.S. also note, that “infrastructure is a key factor of developing and maintaining long-term economic growth in both individual countries and regions” [28].

Revzon O.A. and Mikhacheva A.A. state that “infrastructure transformations are conducive to the change of development vector of the Russian economy from resource-based to innovative, to the increase in the economy’s energy efficiency, to attracting private investments to infrastructure projects, to creating new work places, to ensuring the availability of a variety of state services to the population” [29].

While identifying the impact of infrastructure on the regional development of a specific territory, it is also necessary to take into account cross-regional interrelations between territories, which are particularly revealed in an infrastructure aspect.

It is also necessary to assess the impact of infrastructure megaprojects on a territory (as both a place of their implementation and neighbouring and non-neighbouring, or remote territories) from the point of view of a dynamic aspect of the whole country’s spatial development. Gubenko D.V. notes that there has been proven a lengthy regional asymmetry “for the growth of some regions and a decline in others” [7].

Specialists warn that regional infrastructure optimization consists not only in the lack of deficit in its funding but also in the lack of untargeted investment leading to overinvestment in

infrastructure [7]. In other words, one cannot underfund or overfund infrastructure. In both cases, it is fraught with negative consequences for the region.

IV. CONCLUSION

While assessing the impact of infrastructure investments in regional development, infrastructure is “both the factor in the population’s quality of life, i.e. consumption goods and a factor in business activities and production” [3].

The positive influence of infrastructure projects on social-economic regional development is confirmed by the fact that it always relies on an investment mechanism, and the investments in the territory provide an incentive for its further development (however, it is necessary to mention that these incentives can be either long- or short-term).

Between investments in infrastructure and increased welfare of those citizens living on the region’s territory, there is an inextricable link. The update of infrastructure is conducive to fostering private capital flows. It ensures the growth of production, trade, services, which in turn determines the increase in tax receipts in the budget of the Federation’s entity.

Investments in infrastructure projects provide investment impulse for a region that generates “impacts that are multidirectional by their nature” [24], since “in conditions of individual kinds of resources being scarce (in those cases when an assumption of their scarcity should be recognized as plausible) the development of some directions drains the resources from others, thus depriving them of necessary potential”.

The expected results of infrastructure investments in this country and regions are as follows: “production growth, a decrease in travel time, access to new markets and new directions for the purpose of trade and investments”, ensuring national security as well as import substitution in infrastructure industries.

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