Transformation of Infrastructure Projects for the Sustainable Development of the Transport Complex

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Abstract. The article contains actual data on the review of the performance of the transport infrastructure in Russia. The problems and restrictions, affecting its sustainable development, are identified; their interaction and interrelations are traced. The authors argue that the majority of the revealed restrictions are of internal character and mainly is the feature of the state contract scheme. According to the authors, the scheme of public-and-private partnership is an effective mechanism, which can be suggested for the existing problems solution.

1. Introduction
Sustainable development of the transport infrastructure The Russian Federation acts as the key driver of economic growth of the country, and its steady functioning and dynamic development in the conditions of activation of integration into the system of world economic communications represents one of priority problems of modern policy of the state. The need of the economy for modernization of old facilities and for the creation of new facilities of transport infrastructure increases.

But the unstable economic situation which has developed in domestic economy since 2008 reduces the business activity. So, the date of implementation of the infrastructure construction projects as postponed, some of the project are "frozen". The prices of construction materials, equipment, energy resources, and also the prices of credit resources grow. These restrictions have negatively affected the dynamics of the market of construction of the transport infrastructure facilities.

The purpose of the research is to investigate, whether the revealed restrictions are the insuperable external factor or an internal problem, which is possible to be overcome by the means of any adequate mechanism. Then that is necessary to offer such a mechanism.

2. State-of-the-Art Review
The macroeconomic situation certainly influences market conditions of business at the micro-level. Investment into construction of the transport infrastructure even in 2017 [1] (after passing of the lower point of crisis) does not reach the level of 2013 (as presented in the Figure1).
As a result, we can observe not only the reduction of the market of construction of transport infrastructure, but also the redistribution of shares between the participants and also the weakening of the position of the regional and local companies. In practice, the reduction of financing from the state concerns large projects, which are the target for the leading federal players in the market first of all. Because of the reduction of the market of large projects (more than 5 billion rubles) and the transfer of their terms, the largest federal participants of the market of infrastructure are forced to increase their portfolio of projects of the average sizes (1–5 billion rubles) [2].

Strengthening of presence of federal participants in the segment of projects of the average sizes leads to the essential aggravation of the competition with regional and local participants (Figure 2).

Regional and local participants, who mostly have not a stable financial performance, but limited opportunities of attraction of proceeds of credit, lose their market position today. The reduction of orders as a rule leads to the increase in the number of bankruptcies of the regional and local infrastructure companies [3].
The crisis of the Russian economy in 2014 differs from the situation of similar crisis in 2008. During the crisis of 2008 contractors have faced the problem of pressure of the state customers upon the cost of construction projects of transport infrastructure, therefore, it has decreased by 15–20% for some projects. This tendency was explained by essential depreciation of construction materials and other elements of construction cost first of all, because there were a decline in demand both in the Russian market, and the world market [4].

The following crisis (in 2014) differs from previous significantly: the unstable macroeconomic situation, considerable devaluation of ruble, and also a high import component in cost of construction have led to the growth of the majority of pints of the prime cost, namely the expenses on compensation, and also the cost of construction materials, the machinery and equipment. Hi-tech construction materials, which are imported for artificial constructions, have grown in price because of devaluation of national currency for 30–40% during one year.

The cost of the imported construction equipment, equipment and spare parts has also increased more than by 20%. At the same time, the technology of the Russian production has also risen in price more than for 10% [5, 6]. The prices of energy resources tend to grow too, so the matter of energy saving became urgent.

Inflation, sanctions, instability of the national currency are the general factors, which negatively affect whole economy. And there are also some specific aspects, which act as an obstacle during the implementation of projects of transport infrastructure construction [7].

The existing system of implementation of the state contracts in the sphere of construction in Russia is historically divided into two stages [8]. They are the development of the project documents and the construction of transport infrastructure facilities itself, including the preparation of working documents.

When developing the project documents the interaction between the design organization and contractor is not always effective. The matter is that the designer is focused on the fast passing of state examination, and also on observance of the limit of the budgetary financing, allocated for the state customer, but not for the optimization of cost and process of construction. One more distinctive feature of the implementation of the state contracts is the absence of the designer's incentive to use the innovative materials and technologies during construction [9].

Because of the artificial gap between the stages of the creation of the facility, the designer does not bear any financial or legal responsibility in case of the excess of the actual volume of construction over the planned one, therefore the contractor suffers all the risks. Those risks are considerable but the insurance of these risks is absent [10].

The project documents are often of low quality and does not represent the actual volume of construction materials and works. As the result, that does not allow to estimate the real cost of construction of the facility during the conclusion of a state contract [11]. This situation leads to great uncertainty of the final financial result for the contractor.

3. Results
The carried-out analysis of the current situation in the transport infrastructure proved, that it has become possible because of several unresolved problems.

The authors managed to systemize the revealed problems and to trace their influence on the current performance of the transport infrastructure in Russia. The existing problems in their interrelation and interdependence are presents in Figure 3.

One of key problems within the system of the implementation of the state contracts in the sphere of transport infrastructure is the insufficiently high-quality study of the project documents.

Inaccuracies and mistakes in the project documents lead to the significant increase in the actual volume of works as well as in the volume of quantity of the used construction materials cause the situation, when the general cost of construction increases. At the same time, the experts estimate the probability of the adjustment of contract price as extremely low, because of difficult and long process of re-coordination in state examination (up to 3 months). Sometimes there appear a paradoxical situation during the state examination for the coordination of the increase in the estimated cost, the decrease in
the estimated cost is possible. Contractors came up against the situation when the estimated cost of the facility was reconsidered towards the decrease by 10–15% [12].

Figure 3. Interrelations and interdependence of the problems in the field of the transport infrastructure construction

During the design stage, the practice of the use of outdated technologies and construction materials for the reduction of expenses and in the sake of the simplified state examination is widespread. It leads to the technological complication of the project, longer terms of construction, and also to deterioration in the operational characteristics of the infrastructure facility, comparing with those, which can be obtained thanks to the use of modern technologies and innovative materials. And in turn the use of outdated technologies often simply forces contractors to use the obsolete construction equipment with various negative consequences.

At last, when developing the project documents the designer does not consider technical-and-technological capabilities of contractors that negatively influences all the process of the implementation of projects. According to experts, the average divergence of estimated cost of construction materials with market value made up about 15%. The similar situation is observed in the field with construction works, where the excess has made up about 18-20% [13].

Considerable inflation naturally leads to the rise in price of construction materials, prices of the equipment and services. At the same time the price of the concluded contract for construction is fixed; no adjustment of the estimated cost according to inflation is provided. Because of the fact that the average duration of the implementation of the infrastructure project makes up 2–3 years, the cost of construction materials can significantly increases, and that leads to the increase in the gap between the actual and estimated cost of materials and works. At the moment the legislation provides no mechanism of compensation for the expenses of contractors. That reduces the profitability of construction works and worsens the financial performance of the company [14].

One more problem of the existing system of realization of the infrastructure projects is the untimely preparation of building sites by the customer. The matter is that the existing practice assumes the inclusion of actions for registration of the land plots under construction in the development stage of the project documents. At the same time the customer is interested in the continuous reduction of terms in
a chain "the approval of the project – carrying out the tender – the conclusion of the state contract for construction". As a result, we observe the unavailability of the land plots by the beginning of carrying out construction works. Thus, after the conclusion of the contract contractors meet some difficulties of access to the land plots, freed from the rights of the third parties and they are forced to conduct the necessary preparatory work independently.

Besides, because of some difficulties of the access to the land plots the level of engineering-and-geological research decreases. That leads to the emergence of essential mistakes in the project documents and to the increase in cost and terms of construction.

Problems with the release of lands under construction are generally connected with definite difficulties of identification of owners of the real estate, difficulties of land and cadastral procedures and land surveying of territories, and also with the unwillingness of owners to sell the assets, which belong to them at the offered prices. The land and cadastral works, connected with the assessment, repayment, demolition and also with registration of the property, take a lot of time, and that leads to considerable failures to meet time constraints of works.

Besides the technical problems the existing scheme of advancing and payment of the performed works is not effective. That fact forces contractors to attract the loans. And thus there appear the problems, connected with the credits at quite high rate (in spite of all the statements about the decrease in the credit rate, its level does not fall below real 20% per annum).

According to the Federal law No 44-FZ, the contractor is obliged to provide to the customer the bank guarantee of 30% of the initial maximum competitive price of an infrastructure facility before signing of the state contract. The existing system of the implementation of the state contracts does not provide any compensation to contractors for the expenses on obtaining the bank guarantees. To be fair it should be noted, that within any anti-crisis plan the Government of the Russian Federation has reduced the amount of providing the contract up to 10%. In some cases the state customer can not demand providing the contract.

At last the central problem is the insufficient funding, or financing by the residual principle of the sphere of construction, reconstruction and operation of the transport infrastructure of the country, which has taken place for a long time. It is caused both by limitation of regional budgets, and weak involvement of business. By expert estimates [6], 1 ruble from the private companies goes along with 1 ruble of state investments, whereas in the USA 3 dollars of non-budgetary sources goes along with 1 dollar of the budget funds. Often the tenders for the transport construction are ineffective because of high corruption in the whole industry, and that results in the lack of the competition and has negative effect on the prices and quality of the transport infrastructure. This tendency is incorrect. Most of the facilities of transport infrastructure have a strategic importance. That is why both construction business, and the state have to be interested in their successful realization.

Therefore, we consider that the primary task is the attraction of the private capital for the transport infrastructure, i.e. the development of institute of the public-and-private partnership (PPP).

International experience demonstrated the complexity of implementation of mechanisms of PPP, especially regarding their legal-and-organizational component. The limitation of the existing legislation was until recently main problem of the development of PPP in Russia. However acceptance the Federal law No 38-FZ [15] "On the Introduction of Amendments to the Federal law "On the Concession Agreements" and to item 16 of the Federal Law "On the State Company "Russian Highways" and on the Introduction of Amendments to Separate Acts of the Russian Federation" created "a legal backlog" for the development of this mechanism. Upon the acceptance the Federal law No 224-FZ "On the public-and-private partnership, municipal-and-private partnership in the Russian Federation and introduction of amendments to the separate acts of the Russian Federation" by proper legal base for development of PPP in Russia was created.

In case of using the mechanism of PPP the list of sources of financing of projects considerably extends in comparison with the traditional state order (Figure 4).
Strengths of each participant of PPP are:
- legal powers, protectionist policy of purchases, balance of satisfaction of public requirements, labor and capital resources (for public sector);
- management efficiency, the latest technologies, effective production capacities, experience of traffic control of cash, professional development of personnel, complex use of resources (for the private sector).

4. Discussion
The common decision is not found, it is necessary to undertake some system measures. For example, long-term planning of the development of infrastructure both on federal, and on regional levels is necessary, and it is necessary to define accurately which projects should attract private investors through the public-and-private partnership and which projects should be implemented by the means of the classical state order. There is corresponding assessment of the budgetary efficiency and comparative advantage for making such decision. Federal support of really significant and necessary regional infrastructure projects is also necessary. Today it is applied only in the field of road construction. The experts consider that it is worth scaling this practice, first of all in the social sphere [16, 17].

Continuing the subject of the projects support, it would be desirable to mention that it is necessary to undertake some measures for the depreciation of predesign preparation, otherwise the simple economy could cause poor quality of the project subsequently. Nowadays only every sixth project successfully passes from the idea stage to the realization stage. Some representatives of the largest infrastructure companies have formulated the measures, which can be aimed on the decrease in the operational expenses and indemnification. These measures, are, frankly speaking, ambiguous. They come down to the following:
- optimization of the park of the construction equipment;
- formation of the uniform management of mechanization for the construction departments, which are located in close proximity from each other;
- suspension and preservation of own production capacities companies;
- suspension of the implementation of the programme of modernization and technical re-equipment;
- introduction of part-time for employees;
- reduction of non-staff personnel and partial optimization of the staff (in fact the reduction of the stuff);
– suspension of construction works within the projects with the lack of the current financing;
– reduction of social obligations [18].

It should be noted that these measures are ambiguous, but the representatives of construction business consider them to be reasonable [19]. Realization of the aforesaid measures will allow the companies to lower constant expenses and to avoid losses. But in case of preservation of the current tendencies in macroeconomic, these measures could be not enough branch [20]. So, we cannot escape state support.

State support is to go through the improvement of the process of advancing and payment for the construction works that assumes:
– granting the state guarantees to contractors for receiving the bank credits [21];
– granting subsidies for compensation of the expenses connected with service of the credits;
– prolongation of crisis response measures in spite of the decrease in the amount of providing state contract and application of bank maintenance or subsidizing of the commissions for bank guarantees;
– the simplified scheme of coordination of the replacement of import construction materials for the project with domestic materials, in case of impossibility of such replacement it is necessary to provide the mechanism of reimbursement, connected with the growth of exchange rate [22];
– indexation of cost of the current contracts according the size of the actual amount of inflation or according the actual size of growth of expenses;
– granting target advance payment on acquisition of construction materials of not less than 40% about the overall cost of the contract [23].

Certainly, great attention is to be paid to the matters of support of the regional projects. Attention has also to be paid to the matters of cost and availability of so-called long-term money into the infrastructure projects (further replication and development of the Programme 1044 for the infrastructure, creation of commercial master fund or state fund for preferential crediting. The cost of money for the projects for the development of public infrastructure should not be more than the cost of money for the production or agricultural projects. Such global matters [24, 25] as long-term planning of the development of infrastructure and taking into account the public-and-private partnership within the state programmes and strategic documents [26], and also more applied matters of distribution of risks of the projects, holding the competitive procedures [27], project management and other aspects, connected with preparation and start of projects will not remain unaddressed.

5. Conclusions
Having completed the state-of-the-art review, we can conclude that the idea of the influence of external factors (sanctions, exchange rate, price of oil) on the condition of the market of construction of facilities of infrastructure is strongly exaggerated. The current problems mostly have internal character and can be overcome in practice. Such restrictions as backward technologies, construction materials of the last century, the problem in the legislation (Land, Water and Town-planning Codes) expensive credits, etc., can be lifted or reduced if the state and business will come to the agreement and cooperation. The authors consider public-private partnership to be the reasonable form of realization of such a cooperation.

The research of foreign experience as well as domestic situation confirms the necessity of modernization of transport infrastructure on the basis of involvement private capitals into the public sector of the economy with the use of the mechanisms of public-and-private partnership, allowing to solve a problem of creation of modern transport infrastructure and its effective maintenance and in the conditions of limited budgetary funds.

The analysis proves that the mechanism of public-and-private partnership is the core for the attraction of non-budget investments into the development of transport infrastructure. The state can reach additional optimization and economy of the budgetary expenses, and also achieve considerable improvement of qualitative and quantitative parameters of implementation of the projects aimed on public services. Thus, the demand for attraction of non-budget financing in the field of public infrastructure on the basis of public-and-private partnership is able not only to realize difficult schemes of financing, but also to transform the system of the public and municipal administration itself.
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