COMPREHENSIVE EVALUATION OF THE EFFICIENCY OF INVESTMENT PROJECTS UNDER CONCESSION AGREEMENTS IN THE RUSSIAN REGIONS WITH MINERAL AND RAW MATERIALS SPECIALIZATION

INTRODUCTION
The erosion of the entrepreneurial activity boundaries accompanies the development of investment processes in the country against lowered economic development rates and narrowing international relations. This situation leads to the need to increase the investment attractiveness of self-developing economic systems considered by academician Tatarkin (2016). Currently, in the context of a decrease in investment activity caused both by the impact of the global pandemic on the development of national economies, and by internal restrictions caused by the impact of sanctions and, as a result, aggravation of economic relations between countries, many authors justify (both foreign: Kareem Tannous, Seongno Yoon (2018), Ledesma, Fulwood (2019), and domestic: Lisitsa, Moroz (2019), Maslennikov (2020) and others) the need to search for self-development tools (TATARKIN, 2008; SILVESTROV et al., 2018), primarily of the regions specializing in mineral resources development (ZHIQIANG and HAOXUE, 2020). According to the Forecast of Russia's long-term socio-economic development for the period up to 2030, these regions will provide economic and financial support for the country's transition to an innovative development path, successful implementation of which depends on the sustainable development of Russia's raw materials industries (SHIKHVERDIEV, 2011; KONOPLYANIK, 2018). The latter is possible via the greater efficiency of implementing investment projects within the framework of concession agreements aimed at forming advanced infrastructure (RIMSAN and MAHMOOD, 2020; VASILEVA and FEDOROVA, 2011; PONOMARENKO et al., 2019; KUSHNIR and KUSHNIR 2019).

In the process of the global economic development associated with the evolution of social economy models, expressed in the transformation of the schemes of productive forces and relations of production, and infrastructure schemes, in particular, the approaches to evaluating the efficiency of investment projects aimed at creating (expanding) infrastructure facilities changed as well.

The classics of economic thought were the first to identify the economic role of infrastructure in the social division of labor. François Quesnay (1758) analyzed social reproduction, aimed at increasing its efficiency through the proportional development of its elements and infrastructural components in particular; A. Smith (1962) and D. Ricardo (1821) studied productive labor as a creator of the main value and assessed the impact of factors (primarily, the division of labor) on the change in productivity. Later studies by K. Marx (1858) concerned infrastructure development as a general condition of social production, focusing its assessment on the increase in expeditiousness, performance, and efficiency of the productive forces’ organization and development. The economists also studied infrastructure formation as a sphere of social production by using resources in full during neoclassical economics dominance; this theory reflected the belief in the unlimited possibilities of a self-regulating market economy.

“A. Marshall was the first who devoted his life to building up the subject [economics] as a separate science,” wrote Keynes about his teacher (2007). Furthermore, these opportunities, described by A. Marshall, contributed to a radical rethinking of the directions of social development toward equilibrium and socially oriented economic growth, and therefore, the introduction of social and environmental indicators into evaluating the efficiency of investment projects considered by Steuer, Elkington, Van Marrewijk, and Dyllick (BLAGOV, 2011).
By analogy with the global studies in the field of project efficiency evaluation implemented within the PPP framework, in Russia, studies of such problems were also associated with specific stages of economic development. At the stage of introducing the first social democratic ideas, this issue was reflected in the works of the Marxist theory followers (STRUVE, 1894; BULGAKOV, 1897) and the representatives of the social-democratic direction (PLEKHANOV, 1956; LENIN, 1969). The efficiency of using economic and mathematical methods in the study of economic phenomena was discussed by Slutsky in 1915 (2010), Kondratiev (1989), and Chayanov (2007). The economists of the Soviet era (KANTOROVICH, 1939/2012; STRUMILIN, 1958; NEMCHINOV, 1962, FEDORENKO, 1968; LEONTIEF, 1990; NOVOZHILOV, 1995), relying on world scientific achievements, presented the theory of the socialist economy functioning with the introduction of appropriate criteria for evaluating the economic efficiency of projects. At the turn of the century, the first Russian economic reformers (ABALKIN, 2002; LVOV, 2002; SMIRNOV et al., 2016) proposed the programs for the country’s transition to the path of market relations and taught other criteria for evaluating projects, using world achievements largely.

In current conditions, dictated by the emerging innovative infrastructure, a comprehensive evaluation of the efficiency of investment projects within the PPP boundaries is formed, which is emphasized in the works of Konoplyanik (1993), Fatkhutdinov (1997), Zavlin, Vasiliev (1998), Varavsky (2002), Sosna (2002), Tatarkin (2008), Van-Van-E (2011), Greenberg (2014), Subbotin (2016), and others.

It is especially relevant to use the presented methodology in the development of mineral resource industries of certain territorial economic systems when creating (or expanding) infrastructure facilities, which is especially emphasized in the works by Shikhverdiev A.P. (2011), Pashkevich (2018), Litvinenko and Sergeev (2019), Ponomarenko et al., (2019) and others. Such evaluation will allow considering the direct economic performance of the investment and indirect results aimed at increasing the sustainability of certain territory development, assessing the social and environmental parameters of industrial production, which is important when developing an investment strategy for territory development.

Research hypothesis. An integrated approach to assessing the effectiveness of investment projects implemented in the format of a concession agreement is reflected in the investment attractiveness of the regions of mineral and raw materials specialization of Russia.

Purpose of the study. Substantiation of the methodology for a comprehensive assessment of the effectiveness of investment projects implemented in the format of concession agreements, implemented in the regions of mineral and raw materials specialization of Russia, by considering the direct economic results of investment and indirect ones aimed at assessing the social and environmental indicators of industrial production.

In accordance with the goal, the main tasks of the study are as follows:

- Study of methodological and methodological approaches to the problem of economic assessment of the effectiveness of investment projects implemented on the principles of PPP;
- Substantiation of methodological approaches to the implementation of a comprehensive assessment of the effectiveness of investment projects within the boundaries of concession agreements, implemented in the regions of mineral and raw materials specialization of Russia;
- Development of guidelines for improving a comprehensive assessment of the effectiveness of investment projects in the format of concession agreements implemented in the regions of mineral and raw materials specialization of Russia.

**PROBLEM STATEMENT**

The methods and criteria for evaluating the efficiency of investment projects within public-private partnerships applied in Russian practice have passed a significant stage, starting from the first approaches formed in the 19th century to today’s methodologies, sometimes based on
foreign assessments, adapted to Russian conditions and not always taking into account sector specificity of investment (MINAKOVA and ANIKANOV, 2013).

Since the end of the 19th century, Russian scholars’ original economic and mathematical studies have appeared in the field of costs and results of economic processes in Russia. In particular, such results were reported in the 1867 issue of Otechestvennye Zapiski [Notes of the Fatherland, a Russian literary periodical], where rather original articles on the topic were presented. These publications included Dmitriev’s Economic Essays on cost modeling using linear dependencies written in 1904 (DMITRIEV, 2001), economic and statistical models by Slutsky (1915); works by Zhukovsky (2015) on the mathematical analysis of value, profit and rent, and others. Moreover, as a result, Grigori Feldman (1928) made a significant contribution into the development of dynamic models of economic growth, which contained attempts to comprehend the country’s economic system in relation to the emerging socialist relations.

At that time, the progressive nature and economic determinism of the events happening in the country promoted the formation of the concept of a mixed public-private model, which was so needed at the stage of providing the material component of the Soviet state during intervention and “war communism”. Preobrazhensky in his New Economy described this situation in 1926, investigating the problem of investment for socialist industrialization and proposing to unite all state enterprises into a single trust based on the power of state structures and the capabilities of the economic sector (PREOBRAZHENSKY, 2008). Developing the ideas of Soviet practicing economists on achieving market equilibrium in the state system and on the directions for its financial stabilization, discussed by Sokolnikov (1991) and Yurovsky (1919), Kondratiev (1989) identified the mechanism for state planning and using economic indicators to achieve certain levels of economy and infrastructure development, in particular, based on advanced projects.

The issue of weakening over-centralization began to be raised only after World War II to restore the economy by many economists headed by Lieberman (STRUMILIN, 1958; NEMCHINOV, 1962), by USSR State Planning Committee experts, including Chairman of the Council of Ministers of the Russian Republic Rodionov, and Chairman of the USSR State Planning Committee Voznesensky, heads of enterprises, who launched a discussion about the strengthening of the role of commodity-money instruments in the socialist economy management, since according to I.V. Stalin, it was problematic to achieve the level of contemporary world technology in all branches of the national economy, and create conditions for the advancement of Soviet science and technology without granting certain independence to enterprises. Through mathematicians and economists’ efforts in the mid-1960s (FEDORENKO, 1968; NOVOZHILOV, 1995; KANTOROVICH, 2012), an attempt was made to use progressive research methods (in particular, the theory of value) to solve specific tasks facing the country’s economy. As noted by Kantorovich (2012), mathematical methods enriched economic theory with new means of analysis that contributed to the advancement of some basic problems of economic science.

In the early 1970s, research teams of scientists led by Khachaturov (1978), Anchishkin (1986), and others were engaged in studying the directions for the long-term development of the USSR’s national economy. These economists looked for a way out of the existing contradictions of production intensification and developed options for the coordinated and proportional development of all links of the “science-production” cycle. At that time, for example, a typical methodology developed under the guidance of Academician Khachaturov contained the main provisions for substantiating the general and comparative economic efficiency of capital investments, supplemented afterward by the ideas for investments in new technologies. Moreover, as a result, Academician Fedorenko (1968) developed a system for the optimal functioning of the economy and proposed the economic guidelines for managing the national economy: fundamental approaches, target settings, and project options for the system of optimal economy functioning.

However, the lack of a unified approach to introducing commodity-money relations elements hindered the country’s economic development. In terms of methodology, this hindrance was reflected in the elaboration of approaches, at the state level and scientific institutions, to a comprehensive efficiency evaluation of the measures aimed at accelerating the development of the real sector of the economy. These measures were used to draw up investment plans for
enterprises and carry out individual solutions to production problems. In subsequent years (1999 and later), they were methodically supplemented with step-by-step instructions highlighting various kinds of efficiency and the possibilities of financing them.

By that time, the state decided that the regions’ economy, primarily specializing in mineral resources, would be the foundation of the Russian economy. The sustainable development of these regions would predetermine the country’s transition to an innovative path. An increase in their investment attractiveness was largely associated with the creation of a reliable industrial, social and financial infrastructure and the activation of economic ties within the territory. Significant contributions to the formation and development of the investment mechanism in the development of infrastructure facilities in Russia were made, both in legislative and practical terms, at the beginning of the last century (KARASS, 1925; LANDAU, 1935; REIKHEL, 1927; BERNSTEIN, 1930; SCHRETER, 1923; and others) later these contributions were supplemented by Russian scholars (KONOPLYANIK, 2018; YUMASHEV, 1993; VARNAVSKY, 2002; SOSNA, 2002; DORONINA, 2003;) and others, whose research results laid the foundation for the revival of the use and operation of such facilities.

As noted by today’s scholars (SHIKHVERDIEV, 2011; VAN-VAN E, 2011; PASHKEVIC, 2018 LITVINENKO, SERGEEV, 2019; CHEREPOVITSYN, ILINOVA, 2018; SUBBOTIN, 2016) and others, peculiarities of raw material producing regions, associated with the raw material (strategic) supply of the reproduction process in the territories presented, predetermine a certain degree of state support and entrepreneurial responsibility and readiness for the implementation of investment projects in these territories. Such projects should be implemented in the format of the territory development strategy, which provides for the intensification of cooperation between state structures at all levels with the real sector of the economy and community (Resolution of the RF Government No. 134 dated 01.03.2008). Moreover, the viability of specific socially significant projects largely depends on their coordinated actions aimed at implementing the liberal doctrine. The following economists (KONOPLYANIK, 2018; BLAGOV, 2011; STEBLYANSKAYA et al., 2019; TAMBOVTSEV 2008, VAZHENIN, GERSIMOV, 2011 etc.) were engaged in the study of global experience and peculiarities of evaluating the economic efficiency of investment projects based on the PPP principles in domestic business. The presented works highlight that the approaches to evaluating the efficiency of investment projects introduced by the market economy and aimed at promoting the interests of individual participants, on the one hand; and their optimal interaction in solving investment issues, on the other hand, contribute to an increase in the efficiency of investment projects. In the mining industry, when implementing PPP projects, an integrated approach to evaluating the economic efficiency of investment projects results in greater project feasibility (TATARKIN, 2016; TATARKIN, 2008, NEDOSEKIN et al., 2019; KZOLOV et al., 2018; PONOMARENKO et al., 2019; TRETYAKOVA, LAVRIKOVA (2019); RAKHMANGULOV, KOPYLOVA 2014; TCVETKO, CHEREPOVITSYN, MAHOVIKO (2020); PODOLYANETS 2018; KUSHNI, KUSHNI, 2019; SMIRNOVA, ILINOVA 2019; and others).

Thus, in the Russian context, the development of an integrated approach to evaluating the efficiency of investment projects under concession agreements in the regions with mineral and raw materials specialization will make it possible to interconnect the project development efficiency with the strategic direction in the territories’ development.

RESEARCH METHODS AND TECHNIQUES

In the world practice, costs and results have been commensurate in the process of economic activity for a long time. The well-known saying of William Petty1 was made at the beginning of the 18th century in his Political Arithmetick: “I have taken the course… to express myself in terms of Number, Weight, or Measure...” thereby he expressed the need to calculate the manufactured product and the costs of its creation (SOSNINA, 2010). Developing the direction

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1This e-text was prepared by Rod Hay and posted at the Archive for the History of Economic Thought, McMaster University, Canada. April 1, 1998. Available at: https://www.marxists.org/reference/subject/economics/petty/index.htm. Access: Feb. 05, 2021.

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of political economy, Quesnay (1758) attempted to assess social reproduction using balanced proportions between the main elements of social product creation. Later, the classics of economic thought (Smith, 1962; Ricardo, 1821) systematized the entire totality of accumulated economic knowledge, defending the interests of a “new type of consciousness being formed”, they laid the foundations of the labor theory of value, showing the high role of productive labor as a creator this value and assessing the influence of factors (mainly the social division of labor) on the change in productivity.

The outstripping development of productive forces based on the improved production facilities and technological processes and associated constant increase in labor productivity contributed to the emergence of a new concept called the political economy of labor by K. Marx and F. Engels. Marx's *Capital* exemplifies the use of mathematical approaches to calculating the labor results and costs: factor analysis of economic performance (created value, surplus value, and productivity), evaluation of production pricing and conditions affecting it, etc. (MARX, ENGELS, 1858). The progressive development of productive forces dictated the description of such criteria that increase the expeditiousness, performance, and efficiency of the market actors' activities through a more complex division of labor with its high specialization, scientific and technical knowledge in organizing production processes.

As a reaction to Karl Marx's economic theory and the marginal utility theory, and their critical understanding, a new economic direction emerged at the turn of two centuries – neoclassical economics, reflecting the belief in the unlimited possibilities of a self-regulating market economy. For example, representatives of the neo-Keynesian school (DOMAR, 1946; HARROD, 1939) investigated the factors of achieving an equilibrium state of the economic system in the process of growth. The presented models enabled the process optimization regarding certain methods of state influence, which made it possible to speak about the efficiency of using state instruments in the investment process. Thereby, according to A. Marshall2, the emergence of a non-classical direction represented, on the one hand, the progressive development of the global economic thought with its focus on dynamic processes and regularities of the reproduction process development. On the other hand, it reflected the aspirations of researchers of that period to formulate fundamental approaches to the optimal management of market structures by the state institutions of participation (BLAGOV, 2011).

The ongoing changes at the end of the 20th century, associated with radical rethinking of the social development directions toward equilibrium and socially-oriented economic growth, promoted the emergence of a new paradigm in theoretical terms – the concept of sustainable economic development (STEURER, 2005; SALEH et al., 2020); in practical terms, these changes resulted in the reorientation of state economic policy. The latter built on the conceptual ideas of an economic entity development based on the triune criterion of investment rationality: obtaining a commercial result and achieving social and environmental indicators of industrial production. Moreover, the system of state incentives should target the real sector of the economy toward pursuing a sustainable development policy (BLAGOV, 2011; HIKMAH et al., 2020).

Dissatisfaction with the traditional economic theory, which failed to disclose the issues of economic agents’ institutional environment, and the interdependence of institutional amendments and opportunities for economic growth that arose at the turn of the 20th-21st centuries contributed to the formation of a new research area – neo-institutionalism, which made it possible to introduce the following provisions into theoretical approaches to substantiating efficiency of investment projects within the PPP framework:

- Introduction and assessment of restrictions on the part of government structures concerning the contractual component of exchange (ALCHYAN, DEMSETS, 2003);

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2A. Marshal stood at the origins (generalization and formalization) of numerous economic analysis methods, known today in the form of cost-benefit analysis, cost-effectiveness analysis, and others (Alaev et al., 2015).
The above concepts are reflected in the following main approaches to evaluating the socio-economic efficiency of investment projects known today in world practice: cost-benefit analysis, cost-effectiveness analysis, cost-utility analysis, and others (ALAEV et al., 2015). Practically combinations of many methods enable today to obtain a more complete and accurate evaluation of the socio-economic efficiency of projects, which is necessary for making investment decisions (JENSOVA, 2013). In addition, methods aimed at the optimal ratio of the project cost and the project implementation quality within the Value for Money concept framework are relevant under conditions of funds rationing. Furthermore, the results obtained cannot always be estimated in value terms, but they can be reduced to one measure by point evaluation method (VASILENKO et al., 2020). Furthermore, as a result, the method provides flexibility and opportunities for analyzing investment alternatives at the project planning stages.

Later studies, carried out proceeding from the above, concretize a certain aspect. At the same time, strategic developments are highlighted, which are carried out by the world’s leading universities Ledesma, Fulwood (2019); Hashimoto (2018); Henderson, Yermakov (2019); Soleimani, Pirayesh, Dehghanian (2020) aimed at developing models for assessing the effectiveness of projects in relation to different areas of development. In addition, one can highlight the works of foreign researchers Wikström, Arto, Kujala, and Söderlund (2010); Nguyen, Mohamed (2018), etc., linking the investment project efficiency analysis with the strategic development of an enterprise within a region. The tactical direction in performing the analysis is represented by the publications of Yang et al. (2011); Wu, Liu, Zhao (2017); Newcombe, Robert Gordon (2010) and others, who associate the analysis effectiveness with the solution of short-term management problems. So in the work of scientists Joyanta Kumar Majhi, Bibhas, Giri, Chaudhuri (2021) analyzed the relationship of project stakeholders depending on the market situation and its effectiveness; in the work of researchers Kareem Tannous, Seongno Yoon, (2018) identified the zones of influence of stakeholders and proposed an assessment of the synergistic effect, and the work of scientists Mohamad Reza Amin Naseri, Farimah Mokhatab Rafiee, Shadi Khalil Moghadam (2020) presents a portfolio analysis of investment projects.

The works by domestic scientists (ERSHOVA, BOLOTIN, 2008; EFIMOVA, SAMOHINA, 2014, etc.), are aimed at developing approaches and assessing the effectiveness of projects in relation to Russian conditions. In addition, the works of domestic scholars such as Litvinenko, Sergeev (2019); Pashkevich (2018); Nedosekin et al. (2019); Steblyanskaya et al. (2019); Vasilenko et al. (2020) are aimed at considering industry-specific features during a comprehensive evaluation of project efficiency: analysis of approaches, principles, evaluation techniques that significantly affect project viability in the resource regions.

A more detailed evaluation of the socio-economic efficiency of investment projects within the framework of the public-private partnership mechanism can be seen in the publications of foreign scholars (BRUGHA, VARVASOVSKY, 2000; ZHU et al., 2016; EL-GOHARY et al., 2006; LI, AKINTOYE, EDWARDS, 2005), which focus on considering the interests of the state and private business during such evaluation. In Russian practice, prominence is given to the works by Tatarkin (2016); Varnavsky, (2002); Sosna (2002); Konoplyanik, 2018) and others who pioneered the PPP introduction in Russia and substantiated the use of criterial indicators to evaluate the efficiency of such projects. In addition, some modern scholars link project investment analysis with the strategic development of territories. Thus, the research by Boush, Grasmik (2012) was aimed at the formation of innovative structures - regional clusters. Kuznetsova and coauthors (2007), Lisitsa, Moroz (2019) analyzed the role of the state in such projects. Industry focus, in minerals and raw materials, characterizes the publications of Kozlov.
et al. (2018); Ponomarenko et al., 2019; Kushnir, Kushnir 2019, in which it is substantiated that the analysis of the socio-economic efficiency of complex mining projects aimed at the development of the mineral resource base and the development of the territory within the framework of PPP, leads to greater information content and the effectiveness of the project.

Thus, the analysis of world approaches to evaluating the efficiency of investment projects based on the PPP principles substantiates the need to account for the commercial feasibility of project implementation, reflecting the interests of a private investor to a greater extent, and public efficiency, which is important for the public sector, regarding social and environmental ratings. The formed methodology for assessing the effectiveness of investment projects in the development of infrastructure, implemented under concession agreements in the regions of mineral and raw materials specialization of Russia, is based on methodological studies and is determined by industry specifics. The methodological approaches used in world practice to assess the economic efficiency of investment projects, reflecting the economic aspects of the liberal concept of development, the provisions of the theory of stakeholders and based on the principles of PPP, are recognized as effective in the implementation of investment projects in the development of territories of mineral and raw materials specialization of Russia and reflect:

- Ensuring the strategic focus of investment projects in the development of the infrastructure of the presented territories;
- The establishment of partnerships between government agencies and private business, in which large private investments are able to provide a sustainable vector of equilibrium growth of the economic system;
- The formation by the state of the basis of partnership relations: the development of a common economic policy; implementation of legal support of relations; formation of the circle and legal status of subjects of economic relations; development of effective means of control and protection of relations;
- Ensuring minimal interference of state bodies in the economic processes of private business in the implementation of infrastructure projects and, as a result, an organic combination of administrative and legal with financial and other “liberal” means of state influence on economic relations;
- Substantiation of a comprehensive assessment of the effectiveness of investment projects in the development of infrastructure, taking into account social and environmental aspects.

The formation of a strategic perspective for developing a certain territory suggests the coordination of investment projects with development goals (Fig. 1).

Figure 1. Formation of the territory’s strategic perspective and the goals of its development.

(source: Search data.)
The territory's strategic priorities are expressed in forming an objective tree by development levels (from current to long-term development), areas of development (affecting the social sphere and the environment), and priorities. Many objectives of investment projects may be different, and the results obtained in the course of their implementation are not always associated with the receipt of commercial profit (they may result in a social effect and (or) environmental effect). Therefore, options for investment projects will have a different scale of implementation depending on the purpose of their implementation; that is, they will belong to different levels. The scheme for implementing a comprehensive evaluation of investment project efficiency in the format of concession agreements is shown in Fig. 2.

At the level of a sectoral enterprise, the final economic performance of investing in the production sector is assessed through integral indicators of investment efficiency. For each investment project, a criterial assessment is carried out within a certain level to ensure the indicator compliance with the recommended values. The projects selected based on the criteria will form a potential investment portfolio of the enterprise. To rank projects and subsequently include them into the enterprise's complex program, it is recommended to evaluate projects according to the following indicators, known as NPV, PI, IRR, DPP (Ministry of Economic Development of Russia, 2015). The criterial analysis indicates that the use of dynamic indicators leads to a more substantiated result of the efficiency of investment projects under concession agreements. The presented information is most important in the implementation of investment projects in the regions with mineral and raw materials specialization since such are large projects affecting the interests of the social sphere and having an impact on the environment.

Figure 2. Scheme for the implementation of a comprehensive evaluation of the project efficiency

Source: Search data.
The efficiency of projects implemented by individual enterprises located within the territory is evaluated through the socio-economic efficiency, the main indicators of which are presented in Table 1.

**Table 1. Indicators of investment project efficiency in the concession agreement format**

| The effect type | Explanatory text | Calculation formula |
|-----------------|------------------|---------------------|
| **Averted economic losses from environmental pollution** | \[ L_{\text{air}}, L_{\text{water}}, L_{\text{soil}} - \text{averted losses from environmental pollution (caused by air, water, and soil pollution)} \] | \[ L_{\text{ext}} = L_{\text{air}} + L_{\text{water}} + L_{\text{soil}} \] |
| **Net economic effect from environmental protection measures** | \[ E_{\text{env}} - \text{economic effect from environmental costs}; C_{\text{env}} - \text{environmental costs}; P - savings from trapped hazardous pollutants recovery} \] | \[ E_{\text{compr}} = L_{\text{ext}} + E_{\text{env}} \] \[ E_{\text{env}} = P - C_{\text{env}} \] |
| **Social return (RUB)** expressed through: | | 
- **Increase in the real household income (E_{\text{rhi}})** | \[ H_{\text{i}} - \text{fluctuations in real income}; W_{\text{r}} - \text{average unemployment benefits}, \text{RUB.} \] | \[ E_{\text{rhi}} = \frac{\sum_{i=1}^{n} \Delta l_i}{12} \] \[ \Delta l_i = (W_{\text{r}} - W_{\text{reg}}) \times \Delta MP \times 12 \] |
- **Local budget savings (E_{\text{lb}})** | \[ W_{\text{mp}} - \text{average unemployment benefits}, \text{RUB.} \] | \[ E_{\text{lb}} = B_{\text{unemp}} \times AHC (\Delta MP) \times 12 \] |
- **Maintenance and development of housing and public utility services (E_{\text{hpu}})** | \[ C_{\text{mp}} - \text{average market price per square meter, RUB; S_{\text{r}} - usable floor area, m^2; RC - residential construction costs, RUB} \] | \[ E_{\text{hpu}} = C_{\text{mp}} + S_{\text{r}} - \sum RC \] |
| **Total socio-economic effect** | \[ n - \text{areas of social activities.} \] | \[ E_{\text{total}} = \sum_{i=1}^{n} \frac{E_{\text{rhi}} + E_{\text{lb}} + E_{\text{hpu}}}{(1 + r)^t} \] |

**Source:** Search data.

Social return indicators for stakeholders (enterprises) participating in the project characterize the project result from the community’s standpoint. At the community’s level, the result of an enterprise’s impact on the environment is defined as an economic loss from environmental pollution due to production activities. The latter takes the form of averted economic loss to the community, which should be regarded as the effect obtained through environmental protection costs allocated to the measures to prevent or reduce environmental pollution. Moreover, the costs of eliminating the pollution consequences should be taken into account as actual economic damage to the community. Because of comparing the enterprise’s environmental protection costs and economic losses, the socio-economic efficiency of the enterprise’s environmental activities will be determined, which must be accounted for in the indicator system of investment project efficiency.

Social return indicators should also be included in this system. Many types of social effects are rather difficult to measure by direct evaluation methods; therefore, researchers have to limit themselves to qualitative indicators. We have proposed an evaluation system by increasing the real household incomes in a certain territory, saving the local budget, and maintaining (developing) the sphere of housing and communal services. The first manifestation of the social effect depends on the form of regional production development: intensive development of an enterprise is associated with an increase in labor productivity and, as a result, an increase in wages; the extensive form is associated with the introduction of new production units with a higher level of wages. The annual social effect with intensive development is determined through the relative increase in the payroll fund. With the extensive form, the calculation is based on comparing the average labor remuneration at a new production unit to the average...
labor remuneration in the region. The second type of social effect is manifested through the repayment of social damage, expressed in a decrease in social unemployment benefits. The third type of social effect is associated with the development of the housing and public utility services sector. It represents the enterprise’s additional income from the sale of housing at market value. Ultimately, the social effect reflects the contribution of a certain project to improving the social sphere and, as a result, improving the quality of people’s life (LUBECK, 2008).

Additionally, when making decisions related to the provision of state preferences for investment projects being implemented, it is advisable to calculate budgetary efficiency indicators (in a static form and in more detail in a dynamic form of evaluation), considering financial performance for budgets of different levels. Besides, it also seems advisable to determine the comparative advantage of the project based on targets and relative performance indicators, for example, based on the ratio of the net discounted costs of a certain project budget and the sum of net discounted costs in the implementation of a government contract and other indicators.

Following the results of evaluating the economic efficiency of projects, financial sources are determined, and schemes for financing projects within the region are proposed. For a more detailed financial substantiation, it is necessary to use indicators and ratings (for example, credit standing or financial stability ratings), which enable to substantiate the sources of funds used and the financial investment scheme. The analysis results are summarized by the investment strategy blocks, considering the project implementation time vector by the planning horizon years.

Thus, the optimal investment portfolio formation within the planning horizon for the investment strategy blocks (production, environmental, and social ones) is carried out using investment efficiency criteria (primary grouping of projects). Secondary grouping involves ranking projects on a time basis within the investment strategy blocks. The investment projects selected in the blocks will form the basis of the enterprise’s comprehensive long-term program. The inclusion of investment projects in the comprehensive program is finally substantiated based on the results of monitoring the financial situations of projects.

The presented methodology was used to carry out a comprehensive analysis of the economic efficiency of investment projects on the principles of public-private partnership implemented in the Tuva Republic.

The presented projects were aimed to increase the sustainable socio-economic development of the Tuva Republic through the development of mineral deposits and construction of industrial and social infrastructure facilities (Official portal of the Tuva Republic, 2020).

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3 The efficiency of investment projects was comprehensively evaluated based on the data of investment projects implemented in the Tuva Republic.
Table 2. Efficiency analysis for investment projects

| Project | Project description | Key outcomes of project implementation |
|---------|---------------------|----------------------------------------|
| Construction of the Elegest-Kyzyl Kuragino Railway and the coal terminal in conjunction with the development of the mineral resource base in the Tuva Republic | Project description: Investment project (amounting to a total of 217 billion RUB by the end of 2023) includes: - Construction of the railway from Elegest through Kyzyl to Kuragino 410 km long, with a throughput capacity of 15 million tons per year, to be increased to 27 million tons. - Construction of a mining and processing industrial complex at the Elegestskoye field with a capacity of more than 15 million tons of coking coal concentrate comprising a coalmine and a full-cycle concentration plant with related industrial engineering, transport, and social infrastructure. - Construction of a coal port terminal near Cape Burny in the port of Vanino in the Khabarovsk Territory. The Russian Federation’s Government approved the conclusion of a concession agreement with JSC Tuva Energy Industrial Corporation Kyzyl-Kuragino by its decree of April 17, 2018, No.687-r, to set up public railway transport infrastructure facilities within the project implementation framework. | Integrated effect of the project: - The production and economic effect: the development of extractive industries, production, and social infrastructure facilities will increase tax revenues, which from 2018 through 2047 will amount to 590 billion RUB, including 472 billion RUB into regional budgets. - The social effect is expressed in: - creating about 15 thousand jobs (considering related sectors) - reducing social strain among the population in the Republic, arising from poorly developed regional transportation networks, rolling stock, and terminal complexes; - strengthening interregional and inter-ethnic links (especially for Western and Central Siberia territories, with access to the growing markets of the Asia-Pacific Region, primarily in China (the transport leg is reduced by 2.5 thousand km). |
| Construction of a cement plant (within the first project) | Project description: Construction of an ecologically friendly, energy saving, and high-tech modular cement plant producing high-quality cement and using local raw materials in the Ulug-Khemsy District of the Tuva Republic. Provision with raw materials: 1. Karachatskoe clay deposit (reserves of cement clays under categories B + C1) amount to 5,836 thousand tons. 2. Haiyrakan limestone deposit (reserves of limestone as a carbonate component of cement charge and raw materials for the production of construction lime under categories A + B + C1 amount to 19,223 thousand tons). 3. Ulatai iron ore deposit (cement additive), C1 category reserves amount to 248 thousand tons. Project characteristics: The planned capacity of the plant is 200 thousand tons per year. The project cost is 350 million RUB. | Integrated effect of the project: - The production and economic effect: Net profit will make at least 2 million RUB per year. The internal rate of return (IRR) is 23%. The payback period is seven years. - The social effect is expressed in: - Strengthening internal, interregional, and international ties (the products are designed for the domestic market of the Tuva Republic and export (primarily to Mongolia). |
| Construction of a thermal power plant with heat and power grids in Kyzyl (within the first project) | Project description: Construction of a TPP-2 using local fuel (two units with a 120-140 MW capacity and the possibility for further expansion). Two project options have been worked out: 1. Construction of TPP-2 in the western part of Kyzyl town. 2. Construction of TPP-2 near the Elegestskoye coal deposit. The consumer market description: The project aims to serve consumers in Kyzyl town (with a population of 112 thousand persons). Electricity consumption by the population makes 42%, with 65% of heat energy. Investors have announced a total capacity requirement of 300 MW. Investment form: Direct investment, possibly with the participation of foreign capital. Total project cost: 25,000-27,000 million RUB Integrated socio-economic effect of the project: - Generation of 300 MW electric power and about 250 Gcal/h thermal power; - Development of related energy-intensive areas of activity in the Republic; - creation of new jobs; - Electricity export across the territory, including to international consumers in Mongolia. The implementation period is 3-4 years. The discounted payback period of the project is 14 years. |  |

Source: Search data.

Thus, the presented program is aimed at the sustainable development of the territory: obtaining a direct commercial effect and indirect effects related to solving social problems. The program implementation, together with the elaboration of the relevant legislation, will impact the Tuva Republic’s investment attractiveness, which has already risen by 35 positions in the national rating and was ranked 46th.
DISCUSSION

As market relations are introduced in Russia, a new institutional structure of the economy appears. Changes are being made in the system of economic relations between state structures and the private sector within the framework of liberal-conservative doctrines. This situation is reflected in certain territories’ investment attractiveness, primarily having mineral and raw materials specialization. According to the strategic documents of the country’s development, these territories are entrusted with the transition to innovative development. It is possible to increase the above territories’ investment attractiveness by forming the appropriate infrastructure within the scope of investment projects based on the PPP principles.

Under neoliberal concepts in many countries worldwide, the process of reforming relations between government structures and the real sector of the economy in the implementation of infrastructure projects is based on a formed legal framework that ensures the efficiency of investment mechanisms. The new mechanisms for the existing institutions are formed either in the context of the new economic policy of state regulation (Great Britain, New Zealand, Argentina, and other Latin American countries) or as part of a supplement to the existing system of public administration (developed countries of Europe and America).

The world practice of introducing PPP mechanisms into the investment process activation allows for the conclusion that PPP schemes are recognized as an effective economic mechanism for implementing socially significant projects in most foreign countries. Moreover, the project performance, and hence the investment area sustainability, will depend on the completeness of the applied methodology for evaluating the efficiency of such projects.

The Russian economy and public structures are institutionally not sufficiently prepared to use such investment mechanisms. There is no Russian concept and a competent strategy for the transition to such an economic mechanism; the toolkit for state regulation of enterprises’ activities under concession agreements is not clear. There is also a lack of comprehensive, scientifically grounded substantiations for comprehensive efficiency of investment projects in general and in individual industries in particular that are supported by exact calculations.

The above is largely related to the specifics of the current and largely preliminary stage of PPP-based property reform. In Russia, a legislative base is gradually being created, and, in parallel, the real mechanism for the functioning of such objects is being worked out. All these factors influence the methods for evaluating the economic efficiency of investment projects: consideration of the target settings of counterparties, the project scopes, and proposed evaluation indicators and criteria.

The methodology for evaluating the project efficiency is substantiated because of the specific organizational scheme development. Such a scheme is implemented based on a formed national legal model, enabling to develop and implement investment projects for the design, construction, and operation of infrastructure facilities. In particular, to develop territories with mineral and raw materials specialization in Russia, it is most promising to apply the concession model for large projects implemented in difficult natural conditions (for which the costs of discussing individual necessary conditions and concluding an agreement are justified by the scale of potential positive effects), and small deposits administered by one regional body (given the opportunity of combining them into one large project). The use of the presented mechanism in Russia’s constituent entities (the Yamal-Nenets Autonomous Okrug, Sakhalin Region, Komi Republic, and Tomsk Region) will increase the investment attractiveness of economic systems by creating an appropriate PPP infrastructure.

Further development of relations between private investors and government agencies during the implementation of investment projects based on PPP principles and comprehensive evaluation of their efficiency should be aimed at increasing the sustainable territory development at the expense of sectoral industries, taking into account the environmental situation and solving social problems; improving the legal and economic climate for the development of the real sector of the economy; forming techniques for evaluating comprehensively the efficiency of investment projects regarding industry-specific features, and elaborating procedures for state control over strategically significant projects.
CONCLUSION

Based on the results of the study, the following conclusions are presented:

- The analysis of the current state of the methodology for performing a comprehensive assessment of the effectiveness of investment projects under concession agreements, reflecting the economic aspects of the liberal concept of development, the provisions of the theory of stakeholders and based on the principles of public-private partnership, indicates the transformation of approaches to assessing the effectiveness of investment projects towards complication infrastructural component, due to the evolution of models of public economy and the influence of sectoral features of development.

- Developed methodological approaches to assessing the effectiveness of investment projects in the format of concession agreements - of a complex nature, due to taking into account not only the direct economic results of investment, but also indirect ones aimed at increasing the sustainability of development, assessing the social and environmental indicators of industry production.

- The developed recommendations for improving the comprehensive assessment of the effectiveness of investment projects on the terms of concession agreements implemented in the regions of mineral and raw materials specialization of Russia are determined by the possibility of using the research results by interested state authorities at the federal and regional levels in the country when developing an investment strategy for the development of the territory.

The intensification of investment processes in the regions of mineral and raw materials specialization of Russia, which are entrusted with the strategic task of the country’s transition to an innovative path of development, against the background of a general economic slowdown and a decrease in international activity, necessitate the involvement of unused opportunities and sources of development into circulation. The formation of self-developing economic systems within its regions can ensure long-term sustainability of the development of territories by using the potential of industrial and raw material agglomerations and activating market mechanisms. The increase in the investment attractiveness of such structures is largely determined by the formation of an innovative infrastructure based on PPP principles.

A comprehensive assessment of the effectiveness of investment projects in the development of infrastructure, implemented under concession agreements in the regions of mineral and raw materials specialization of Russia, is based on methodological studies and is determined by industry specifics. The methodological approaches used in world practice to assess the economic efficiency of investment projects, reflecting the economic aspects of the liberal concept of development, the provisions of the theory of stakeholders and based on the principles of public-private partnership, have been recognized as effective in the implementation of investment projects in the development of territories of mineral and raw materials specialization in Russia. When analyzing the economic efficiency of investment projects based on PPP principles, taking into account the sectoral features associated with the development of mineral deposits within mining agglomerations helps to increase the efficiency and effectiveness of the implementation of investment projects, which forms a stable interest of potential investors in the development of the concession mechanism. The comprehensive efficiency of investment projects based on concession agreements, substantiated in the work, contributes to the sustainability of the development of the territory, improvement of the social and environmental parameters of industrial production, and will be in demand by interested state authorities when developing an investment strategy for the development of the territory.

Further research is carried out within the framework of the scientific direction - the formation of a strategic perspective of self-developing economic systems of mineral and raw materials specialization in Russia and is aimed at developing an investment strategy for such integrated structures.
REFERENCES

ABALKIN, L. The logic of economic growth. Moscow: Institute of Economics, RAS, 2002.

ALAEV, A.A.; KOZLOVA S.V.; M AlyUTIN, K.M. et al Assessment of the socio-economic efficiency of infrastructure projects. Financial Journal, 2015, 4, p. 41-52.

ALCHYAN, A.; DEMSEITS, H. Production, information costs and economic organization. In Slutsky A.G. (Ed.) Milestones of Economic Thought, Volume 5: Theory of Industry, 2003, p. 280-317. St. Petersburg: School of Economics Press.

ANCHISHKIN, A. Science. Technics. Economics. Moscow: Economics, 1986.

BERNSTEIN, I.G. Essays on the concession law of the USSR. Moscow-Leningrad: Gosizdat, 1930.

BLAGOEV, Y.E. Corporate social responsibility: evolution of the concept. St. Petersburg: Higher School of Management Press, 2011.

BOUSH, G.D.; GRASMIK, K.I.; PYATKOV, M. V. Potential risks of attracting direct foreign investments to the formation of regional clusters. Economy of Region, 2012, 1, p. 118-127. Retrieved from: https://cyberleninka.ru/article/n/potentsialnye-riski-privlecheniya-pryamyh-inostrannyh-investitsiy-v-formirovanie-regionalnyh-klasterov. Access: May 15, 2021.

BRUGHA, R.; VARVASOVSZKY, Z. Stakeholder analysis: a review. Health Policy and Planning, 2000, 15 (3), p. 239-46.

CHAYANOV, A.V. Peasant Farm. Moscow: Direct-Media, 2007.

CHEREPOVITSYN, A.E.; ILINOVA, A. A. Methods and tools of scenario planning in areas of natural resources management. European Research Studies Journal, 2018, 21 (1), p. 434-446. Retrieved from: https://www.ersj.eu/dmdocuments/2018_XXI_1_36.pdf. Access: Sept. 15, 2020.

COASE, R. The Nature of the Firm. Economica, 1937, 4 (16), p.386-405.

DMITRIEV, V.K. Economic Essays. Moscow: Higher School of Economics Press, 2001.

DOMAR, E.D. Capital Expansion, Rate of Growth and Employment. Econometrica, 1946, 14 (2), p. 137–147.

DORONINA, N.G.; SEMILUNA, N.G. State and investment regulation. Moscow: Gorodetsizdat, 2003.

EFIMOVA, O.; SAMOIHINA, V. Stakeholder approach to identification and analysis of value creation drivers. Review of Business and Economics Studies, 2014, 2 (4), p. 62-70.

EI-GOHARY, N.; OSMAN, H.; EI-DIRABY, T. E Stakeholder management for public private partnerships, 2006. Available at: https://doi.org/10.1016/j.ijproman.2006.07.009. Access: May 15, 2021.

FATKHUTDINOV, R.A. Strategic management. Moscow: ZAO Business School Intel-Sintez, 1997.

FEDORENKO, N.P. On the Development of the System for the Optimal Functioning of the Economy. Moscow: Nauka, 1968.

FELDMAN, G.A. On the Theory of the Rates of Growth of the National Income. Planned Economy, 1928, part one: 11, p. 146-170, part two: 12, p. 151-180.
FORECAST FOR THE LONG-TERM SOCIO-ECONOMIC DEVELOPMENT OF THE RUSSIAN FEDERATION FOR THE PERIOD UP TO 2030. Retrieved from: http://www.garant.ru/products/ipo/prime/doc/70209010. Access: Sept. 15, 2019.

GREENBERG, R.S. Economy of modern Russia: state, challenges, prospects. Problems of Management Theory and Practice, 2014, 11, p. 13-24.

HARRRD, R.F. An Essay in Dynamic Theory. The Economic Journal, 1939, 49 (193), p. 14-33.

HASHIMOTO, H. Emergence of LNG Portfolio Players. The Institute of Energy Economics (Japan), March 2018. Available at: https://eneken.ieej.or.jp/data/7814.pdf. May 15, 2021.

HENDERSON, J.; YERMAKOV, V. Russian LNG: Becoming a Global Force. Oxford Institute for Energy Studies, November 2019. Available at: https://www.oxfordenergy.org/wpcontent/uploads/2019/11/Russian-LNG-Becoming-a-Global-Force-NG-154.pdf. May 15, 2021.

HIKMAH, K.; HARYONO, T. Djuminah Endogeneity Test: Investment Opportunity Set and Ownership Structure on Funding Policies. Journal of Southwest Jiaotong University, 2020, 55(4). http://jsju.org/index.php/journal/article/view/652. Access: May 15, 2021.

JELNOVA, C. Analysis of the practice of decision-making in the field of investment policy. Journal of Contemporary Economics Issues, 2013, 0 (4). Available at: https://doi.org/10.24194/41302. Access: May 15, 2021.

JENSEN, M.; MECKLING, W. Theory of the Firm. Managerial Behavior, Agency Costs and Ownership Structure. Journal of Financial Economics, 1976. c. USA.

Jonek-Kowalska I, Ponomarenko T.V., Marinina OA (). Problems of interaction with stakeholders in the implementation of long-term mining projects. Journal of Mining Institute, 2018, 232, p. 428-438. Available at: http://pmi.spmi.ru/index.php/pmi/article/view/7218/8409. Access: Apr. 02, 2019.

KANTOROVICH, L.V. Mathematical methods of production organization and planning (Reprinted edition). St. Petersburg: State University Press, 1932/2012.

KARASS, A.B. Concessions in the Soviet Law. Soviet Law, 1925, 2, p. 30-49.

KEYNES, J.M. General Theory of Employment, Interest and Money. Moscow: Eksmo [in Russian], 2007.

KHACHATUROV, T.S Intensification and efficiency in the conditions of developed socialism. Moscow: Nauka, 1978.

KONDRAEV, N.D. Problems of Economic Dynamics. Moscow: Economics, 1989.

KONOPLYANKA, A.A. LNG market - driver of changes. Neftegazovaya vertical’, 2018, no 23-24, p. 37-44.

KOZLOV, A. V.; TESLYA, A. B.; CHERNOGORSKII, S. A. Game theory model of state investment into territories of advanced development in the regions of mineral resources specialization. Journal of Mining Institute, 2018, 234, p. 673-682. Available at: http://pmi.spmi.ru/index.php/pmi/article/view/7363/8614. Access: June. 02, 2021.

KUSHNIR M.A.; KUSHNIR, V.Y. Study of the impact of the mechanism of public-private partnership on the investment attractiveness of projects for the development of gold deposits. Gorny informatsionno-analiticheskiy byulleten’. 2019. No. 1, p. 200-207. Available at: https://cyberleninka.ru/article/n/issledovanie-vliyania-mehanizma-gosudarstvenno-chastnogo-partnerstva-na-investitsionnuyu-privlekatelnost-proektov-osvoeniya. Access: June. 02, 2021.
KUZNETSOVA, T.E.; KITOVA, G.A.; AND SAMOVOLEVA, S.A. The Government’s Role in Innovation Projects: Capabilities and Constraints. *Foresight*, 2007, 1(1), p. 54-60. Available at: https://cyberleninka.ru/article/n/gosudarstvo-v-innovatsionnyh-proektech-vozmozhnosti-i-ogranicheniya. Access: Apr. 02, 2019.

LANDAU, B.A. *Concession Law of the USSR*. Moscow: Pravoizhizn, 1935.

LEDESMA, D.; FULWOOD, M. New Players, New Models. Oxford Institute for Energy Studies, March 2019. Available at: www.oxfordenergy.org/publications/new-players-new-models/. Access: June. 02, 2021.

LEONTIEF, W. The contemporary significance of K. Marx’s economic theory. In Leontief W. *Essays in economics: theories, theorizing, facts, and policies*. Moscow: Political Literature Publishing House, 1990, p. 99-111.

LI, B. A.; AKINTOYE, P.; EDWARDS, J. Perceptions of positive and negative factors influencing the attractiveness of PPP/PFI procurement for construction projects in the UK: findings from a questionnaire survey. *Engineering, Construction and Architectural Management*, 2005, 12 (2), p. 125-148. Available at: https://doi.org/10.1108/09699980510584485. Access: June. 02, 2021.

LISITSA V.; MOROZ, S. Legal regulation of public-private partnership in Russia and other countries of the Eurasian economic union, 2019. Available at: https://doi.org/10.17589/2309-8678-2019-7-3-53-81. Access: July 01, 2021.

LITVINENKO, V. S.; SERGEEV I. B. *Innovations as a Factor in the Development of the Natural Resources Sector Studies on Russian Economic Development*. 2019, No 6. p. 635-643. Available at: https://link.springer.com/article/10.1134/S107570071906011X?. Access: Sept. 02, 2020.

LUBECK, Y.V. (2008) Development of a social block in the investment strategy of a mining enterprise. *Journal of Mining Institute*, 179, p. 173-176. Retrieved from: https://elibrary.ru/item.asp?id=13417380. Access: Sept. 02, 2020.

LVOV, D.S. *Economics of Development*. Moscow: Examen, 2002.

MAJHI, J. K.; BIBHAS, C.; GIRI, C.K.S. Coordinating a Socially Responsible Supply Chain with Random Yield under CSR and Price Dependent Stochastic Demand. *Int J Supply Oper Manage (IJSOM)*, 2021, Vol. 8, No.2 рр.199-211. Available at: http://www.ijsom.com/article_2843.html. Access: May 15, 2021.

MARSHALL, A. *Principles of economics*. Preface by KEYNES, J.M. Moscow: Eksmo, 2007.

MARX, K.; ENGELS, F. *Collected Works*, 1858, Vol. 46-2. Available at: http://www.informaxinc.ru/lib/marx/46-2.html. Access: Sept. 02, 2020.

MASLENNIKOV, A.O. Global and regional natural gas markets after COVID-19. World Economy and International Relations. 2020, vol. 64, No. 10, pp. 74-83. Available at: https://doi.org/10.20542/0131-2227-2020-64-10-74-83. Access: Sept. 02, 2020.

MINAKOVA, I.; ANIKANOV, P. Modelling of Area of Possible Results of the Innovative Investment Project. *Journal of Contemporary Economics Issues, 2013, 0 (1)*. Available at: https://doi.org/10.24194/11321. Access: Sept. 02, 2020.

MINISTRY OF ECONOMIC DEVELOPMENT OF RUSSIA. Order No. 894 dated November 30, 2015. Methodology for evaluating the efficiency of a public-private partnership project, a municipal-private partnership project and determining their comparative advantage, 2015. Available at: http://docs.cntd.ru/document/420321343. Access: Sept. 02, 2020.
NASERI, M. R. A.; RAFIEE, F. M.; MOGHADAM, S. K. Modeling Portfolio Optimization based on Fundamental Analysis using an Expert System in the Real Estate Industry. *Int J Supply Oper Manage (IJsom)*, 2020, Vol.7, No.1, p. 39-50. Available at: http://www.ijsom.com/article_2804.html. Access: Apr. 02, 2020.

NEDOSEKIN A.O., REJSHAHRIT E. I., KOZLOVSKIY A.N Strategic Approach to Assessing Economic Sustainability Objects of Mineral Resources Sector of Russia. *Journal of Mining Institute*, 2019, 237, C. 354. Available at: http://pmi.spmi.ru/index.php/pmi/article/view/13204/11957. Access: June. 02, 2021.

NEMCHINOV, V.C. *Economic and mathematical methods and models*. Moscow: State Socio-Economic Publishing House, 1962.

NEWCOMBE, R. G. From client to project stakeholders: a stakeholder mapping approach, 2010. Available at: https://www.tandfonline.com/doi/abs/10.1080/014461903200072137. Access: July. 02, 2020.

NGUYEN, T.S.; MOHAMED, S.; PANUWATWANICH, K.; STAKEHOLDER. Management in Complex Project: Review of Contemporary Literature. *Journal of Engineering, Project, and Production Management*, 2018, 8 (2), p. 75-89.

NOVOZHILOV, V.V. *At the origins of true economic science*. Moscow: Nauka, 1995.

OFFICIAL PORTAL OF THE TUVA REPUBLIC. 020. Available at: http://gov.tuva.ru/investment-passport/investment-projects. Access: Sept. 02,2020.

PASHKEVICH, N.V.; GOLOVINA E.I.; TARABARINOVA, T.A. Problems of reflecting information on subsoil assets in International Financial Reporting Standards Academy of Strategic . *Management Journal*, 2018, No 17, p. 1-9. Available at: https://www.scopus.com/sourceid/19700175176?origin=recordpage#tabs=2. Access: Sept. 02, 2020.

PLEKHANOV, G.V. *Our Differences: Selected Philosophical Works*. Volume 1. Moscow: State-Publishing House of Political Literature, 1956.

PODOLYANETS, L.A. Economical assessment of comprehensive mineral processing of phosphogypsum with rare earth elements’ extraction. *Opcion*, 2018, 34 (85), p. 1491-1508.

PONOMARENKO, T.; KHAN-TSAI E.; BAVUU, C. Integrated Mining Projects In Underdeveloped Territories Of Russia: Substantiation Of Implementation Parameters, *Journal of Mining Institute*, 2019, 240, p. 724-730. Available at: http://pmi.spmi.ru/index.php/pmi/article/view/13249/12055. Access: Sept. 02,2020.

PREOBRAZHENSKY E.A *New Economy (theory and practice)*: 1922-1928. Moscow: Publishing house of the Main Archive of Moscow, 2008.

RAKHMANGULOV, A.N.; KOPYLOVA, O.A. Assessment of the socio-economic potential of the region for the placement of logistics infrastructure objects. *Economics of Region*, 2014, 2, p. 254-263. Available at: https://cyberleninka.ru/article/n/otsenka-sotsialno-ekonomicheskogo-potentsiala-regiona-dlya-razmescheniya-obektov-logisticheskoy-infrastruktury. Access: Sept. 02, 2019.

REIKHEL, M.O. Concessions in the Soviet Legislation and Practice. *Soviet Law*, 1927, No. 4, (p. 3-27).

RESOLUTION OF THE GOVERNMENT OF THE RUSSIAN FEDERATION DATED 01.03.2008 No. 134 On the approval of the rules for the formation and use of budgetary allocations of the investment fund of the Russian Federation. Available at: https://www.garant.ru/products/ipo/prime/doc/12059225/. Access: Sept. 02, 2020.

RICARDO, D. "On the Principles of Political Economy, and Taxation". 3rd edition. London, 1821, p. 493, 495.
RIMSAN, M.; MAHMOOD, A.K. Application of Blockchain and Smart Contract to Ensure Temper-Proof Data Availability for Energy Supply Chain. Journal of Hunan University Natural Sciences, 2020, 47 (10), p. 154-164.

SALEH, H.; ABUBAKAR, H.; SURIANI, S. Determining Factors Affecting the Interest in Investment in Bulukumba Area of South Sulawesi. Journal of Southwest Jiaotong University, 2020, 55 (1). Available at: https://doi.org/10.35741/issn.0258-2724.55.1.35. Access: Apr. 02, 2021.

SCHRETER, V.N. Concession Law. Bulletin of Industry, Trade and Transport, 1923, No. 9-10, p. 1-15.

SCHUKHOV, N.S.; FREIDLIN, M.P. Mathematical economy in Russia. Moscow: Nauka, 1996, p. 107-110.

SHIKHVERDIEV, A.P. Problems and ways of development of investment infrastructure in the northern region, 2011. Available at: http://koet.sytsu.ru/vestnik/2011/2011-3/14/14.htm. Access: Apr. 04, 2019.

SILVESTROV, S.N.; KUZNETSOV, N.V.; PONKRATOV, V.V.; SMIRNOV, D.A.; KOTOVA, N.E. Investment development of Russian regions backed up by natural monopolies. European Research Studies Journal, 2018, 21 (3), p. 90-103.

SLUTSKY, E.E. Towards the Theory of Consumer Budget Balance. Economic and mathematical methods. In Slutsky E.E. Economic and Statistical Works: Selected Writings, p. 448-485, [translation and foreword by P.N. Klyukin]. Moscow: Eksmo, 2010.

SMIRNOV, K.A.; BRATISHCHEV, I.M.; BRATISHCHEVA, R.V. et al. History of Russian economic thought in the twentieth century: Monograph. Moscow: INFRA-M, 2016. Available at: http://znanium.com/catalog/product/539683. Access: Apr. 02, 2019.

SMIRNOVA, N.V.; ILINOVA, A.A.; CHEREPOVITSYN, A.E. Application of Norwegian and Russian legislative basis during collaborative development of transboundary hydrocarbon fields. European Research Studies Journal, 2019, 21, p. 434-441.

SMITH, A. An Inquiry into the Nature and Causes of the Wealth of Nations, 1962. Available at: https://www.ibiblio.org/ml/libri/s/SmithA_WealthNations_p.pdf. Access: Sept. 02, 2020.

SOKOLNIKOV, G.Y. New Financial Policy: Towards a Hard Currency. Moscow: Nauka, 1991.

SOLEIMANI, F.; PIRAYESH, M.; DEHGHANIAN, F. An Integrated Production-Inventory Model for a Dual-Channel Supply Chain. Int J Supply Oper Manage (IJSOM), 2020, Vol.7, No.2, p. 139-147. Available at: https://www.scopus.com/inward/record.uri?eid=2s2085091297154&doi=10.22034%2fIJSOM.2020.2.3&partnerID=40&md5=7ef5d36bb9a835c856c5d088e6138b41a. Access: July 01, 2021.

SOSNA, S.A. Concession Agreements: Theory and Practice. Moscow: Nestor Academic Publishers, 2002.

SOSNINA T.N.; BANNIKOVA N.F. History of economic teachings. Samara: Samara State Aerospace University Press, 2010.

STEBLYANSKAYA A.; WANG ZHEN, RYABOVA, E.V.; RAZMANOVA, S.V. Russian gas companies' financial strategy considering sustainable growth. Economy of Region, 2019, 15 (1), p. 231-241.

STEURER, R.; LANGER, M.E.; KONRAD, A.; MARTINUZZI, A. Corporations, Stakeholders and Sustainable Development I: A Theoretical Exploration of Business Society Relations. Journal of Business Ethics, 2005, 61 (3), p. 263-281.
STRUMILIN, S.G. *On the planning front.* Moscow: State-Publishing House of Political Literature, 1958.

STRUVE, P.B. *Critical notes toward the issue of the economic development of Russia. Issue 1.* St. Petersburg: I.N. Skorokhodov’s Typography, 1894. Available at: http://books.e-heritage.ru/book/10085568. Access: Sept. 02, 2020.

SUBBOTIN, M.A. *Nasty Joke about SRP.* *Oil of Russia analytical magazine*, 2016, 9. Available at: http://www.neftrossii.ru/sites/default/files/nr-2016-9.pdf. Access: Jan. 10, 2018.

TANNOUS, K.; YOON, S. Summarizing Risk, Sustainability and Collaboration in Global Supply Chain Management. *Int J Supply Oper Manage (IJSM)*, 2018, Vol. 5, No.2, p. 192-196. Available at: http://www.ijsm.com/article_2756.html. Access: May 15, 2020.

TATARKIN, A.I. *Regional targeting of the economic policy of the Russian Federation as an institution of regional spatial development*, 2016. Available at: https://www.researchgate.net/publication/299361581_Regional_Targeting_of_the_Economic_Policy_of_the_Russian_Federation_as_an_Institution_of_Regional_Spatial_Development. Access: Apr. 02, 2019.

TATARKIN, A.I.; TATARKIN, D.A. *Self-developing regions in the economic system of Russia.* *Federative Relations and Regional Policy*, 2008, 11, p. 4-5.

TCVETKOV, P.N.; CHEREPOVITSYN, A.E.; MAKOVIKOV, A. B. Economic assessment of heat and power generation from small-scale liquefied natural gas in Russia. *Energy Reports*, 2020, 6(2) p. 391-402. https://doi.org/10.1016/j.egyr.2019.11.093. Access: June 02, 2021.

TRETYAKOVA, L.A.; LAVRIKOVA, N.I. Social infrastructure modernization as a priority regarding rural life standard improvement, 2019. Available at: https://cyberleninka.ru/article/n/social-infrastructure-modernization-as-a-priority-regarding-rural-life-standard-improvement. Access: Mar. 02, 2019.

VAN-VAN, E. A.P. The main principles of formation of mineral and raw materials sintering at high north. *Mining Informational and Analytical Bulletin*, 2011, 1, p. 367-373.

VARNAVSKY, V. G. Conceptual economic and legal foundations of the concession activities. *Polemics*, 2002, 13. Available at: http://irex.ru/publications/polemika/13/varnavsky.html. Access: Jan 21, 2018.

VASILENKO, N.V.; KIRSANNOVA N.Y.; LAPINSKAS, A.A.; MAKOVA, L.A.; KHAYKIN, M.M. *Issues for Development of Economic System for Subsurface Resource Management in Russia Through Lens of Economic Process Servitization.* *International Journal of Energy Economics and Policy*, 2020, 1, p. 44-48. Available at: https://www.econjournals.com/index.php/ijeep/article/view/8303. Access: Sept. 02, 2020.

VASILEVA, M.V.; FEDOROVA, O.V. Development of the System of Financing of Investment Projects within the Framework of Public Private Partnership in Russia. *Economic Analysis: Theory and Practice*, 2011, 10 (9), p. 16-26.

VAZHENIN, S.G.; GERA SIMOV, N.M. Constructing public-private partnerships in a modernized economy. *Economy of Region*, 2011, 2, p. 90-96. Available at: https://cyberleninka.ru/article/n/konstruirovanie-gosudarstvenno-chastnogo-partnerstva-v-moderniziruemoy-ekonomike. Access: Sept. 02, 2020.

WIKSTRÖM, K.; ARTTO, K.; KUJALA, J.; SÖDERLUND, J. Business models in project business. *International Journal of Project Management*, 2010, 28 (8), p. 832-841. Available at: https://doi.org/10.1016/j.ijproman.2010.07.001. Access: Sept. 02, 2020.

WILLIAMSON, O.E. *The Economic Institutions of Capitalism.* New York: Macmillan, 1985.

WU, G.; LIU, C.; ZHAO, X. Investigating the relationship between communication-conflict interaction and project success among construction project teams. *International Journal of...*
Project Management, 2017, 35 (8), p. 1466-1482. Available at: https://doi.org/10.1016/j.ijproman.2017.08.006. Access: Sept. 02, 2020.

YANG, J.; SHEN, P. Q.; BOURNE, L.; HO, C. M.; XUE, X. A typology of operational approaches for stakeholder analysis and engagement. Construction Management and Economics, 2011, 29, p. 145-162. Access: Sept. 02, 2020.

YUMASHEV, Y. M. Foreign Concessions in Russia and the USSR (the 20s-30s). State and Law, 1993, No. 10, p. 100-111.

YUROVSKY, L.N. Essays on the theory of prices. Saratov: Publishing House of the Consumer Societies’ Union of the Saratov Region, 1919.

ZAVLIN, P.N.; VASILIEV, P.N. Evaluation of the economic efficiency of innovation. St. Petersburg: Business-book, 1998.

ZHIQIANG, L.; HAOXUE, Z. Resource Investment Problem with Activity Splitting and Resource Window. Journal of Hunan University Natural Sciences, 2020, 47 (4), p. 40-48.

ZHOU, L.; ZHAO, X.; CHUA, D. K. H. Agent-based debt terms’ bargaining model to improve negotiation inefficiency in PPP projects. Journal of Computing in Civil Engineering, 2016, 30 (6), article ID: 04016014. Available at: https://doi.org/10.1061/(ASCE)CP.1943-5487.0000571. Access: Sept. 02, 2020.

ZHUKOVSKY, J.G. History of Political Literature of the 19th Century. From the threshold to the middle of the 19th century, 2015, Vol. 1. Moscow: Lenand.
Resumo
O objetivo da pesquisa é fundamentar a metodologia para uma avaliação abrangente da eficiência dos projetos de investimento no formato de contratos de concessão implementados nas regiões russas especializadas no desenvolvimento de minerais e matérias-primas, considerando os resultados econômicos diretos do investimento e indiretos destinados a avaliar os indicadores sociais e ambientais da produção industrial. Resultados do autor. O estado atual da metodologia para uma avaliação abrangente da eficiência dos projetos de investimento baseados nos princípios da PPP na Federação Russa e no exterior foi analisado refletindo os aspectos econômicos do conceito liberal de desenvolvimento, as disposições da teoria dos stakeholders e com base nos princípios da parceria público-privada. Abordagens metodológicas foram desenvolvidas para avaliar de forma abrangente a eficiência dos projetos de investimento no formato de contratos de concessão implementados nas regiões russas de especialização mineral e de matérias-primas, que considera tanto os resultados de investimento direto quanto os indiretos, ambientais e sociais.

Palavras-chave: Projeto de investimento. Eficiência econômica. Avaliação abrangente. Contrato de concessão. Instalações de infraestrutura.

Abstract
The purpose of the research is to substantiate the methodology for a comprehensive evaluation of the efficiency of investment projects in the format of concession agreements implemented in Russia’s regions specializing in mineral and raw materials development by considering the direct economic results of investment and indirect ones aimed at assessing the social and environmental indicators of industry production. Author’s results. The current state of the methodology for a comprehensive assessment of the efficiency of investment projects based on PPP principles in the Russian Federation and abroad was analyzed reflecting the economic aspects of the liberal concept of development, the provisions of the theory of stakeholders and based on the principles of public-private partnership. Methodological approaches were developed for evaluating comprehensively the efficiency of investment projects in the format of concession agreements implemented in the Russian regions of mineral and raw materials specialization, which considers both direct investment results and indirect, environmental and social ones.

Keywords: Investment project. Economic efficiency. Comprehensive evaluation. Concession agreement. Infrastructure facilities.

Resumen
El propósito de la investigación es fundamentar la metodología para una evaluación exhaustiva de la eficiencia de los proyectos de inversión en el formato de acuerdos de concesión aplicados en las regiones de Rusia especializadas en el desarrollo de minerales y materias primas, teniendo en cuenta los resultados económicos directos de la inversión y los indirectos destinados a evaluar los indicadores sociales y ambientales de la producción industrial. Resultados del autor. Se analizó el estado actual de la metodología para una evaluación integral de la eficiencia de los proyectos de inversión basados en los principios de la APP en la Federación de Rusia y en el extranjero, reflejando los aspectos económicos del concepto liberal de desarrollo, las disposiciones de la teoría de las partes interesadas y sobre la base de los principios de la asociación público-privada. Se elaboraron enfoques metodológicos para evaluar de manera integral la eficiencia de los proyectos de inversión en el formato de acuerdos de concesión aplicados en las regiones rusas de especialización en minerales y materias primas, que considera tanto los resultados de la inversión directa como los indirectos, ambientales y sociales.

Palabras-clave: Proyecto de inversión. Eficiencia económica. Evaluación integral. Contrato de concesión. Instalaciones de infraestructura.