

Increasing the attractiveness of investment projects in the mining industry of the Russian Far East

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Abstract. The article is devoted to the issue of the possibility of economic development of the mining industry in the subjects of the Far Eastern Federal District (FEFD) and the impact of investment projects. With the vast wealth and diversity of mineral resources, their involvement in the national economy is an essential factor in the industrialization and successful development of the regions. In the case of the establishment of processing plants, for a number of minerals, the region could provide its own needs, as well as the countries, finished products from it, and develop an export focus. The article considers the export orientation of the mineral and raw materials complex of Russia and the constituent entities of the Russian Federation, as well as the commodity structure of exports of the regions of the FEFD. Special attention is paid to the implementation of major regional investment projects, which are important for the development of the regions. So, it is proposed to implement a major project in the form of an integrated mining and metallurgical complex due to the fact that the region needs its own ferrous metallurgy. The calculations carried out (in various versions: basic, in the conditions of the territory of advanced development (TAD), without the costs of infrastructure creation) showed that the implementation of the project is cost-effective, but due to the high costs, the support of the state is necessary.

1 Introduction

The attractiveness of the Far East for investment, and therefore the possibility of economic development, is determined by a complex of factors, an important place among which is natural resource capital. Despite the ambiguity in assessing the impact of natural capital (including mineral resources) on economic growth, for many regions it is an important factor in industrialization and successful development [1]. That is why the topic of the article, which examines the impact of investment projects in the mining industry on the development of the economy of the Far Eastern region of the Russian Federation, is so relevant at present. The implementation of effective projects in the mineral resource complex can serve as a “locomotive” for the development of the economy and social sphere of this region.

The special feature of the Far East is that with the enormous wealth and diversity of mineral resources, their involvement in the national economy can fundamentally change the socio-economic situation in the region. But there is a difficulty - it is the relative distance of

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cooperation with the countries of the Asia-Pacific region.

2 Materials and methods

Consider the export orientation of the mineral resource complex (MSC) of Russia. Recently, there has been a positive dynamics of gross domestic product and an increase in the country's exports, which was facilitated by the favorable global commodity price environment. In the short term, this can lead to positive results for the country's economy. But, as world experience shows, the dependence of the economy on the export of commodities does not contribute to economic growth in the long term due to the instability of world prices for raw materials [2].

In the context of globalization, exports began to largely determine the development of not only certain sectors of the national economy, but also the economy as a whole. The government is committed to ensuring the sustained expansion of long-term foreign sales. To this end, national export strategies and programs are being developed containing some new and generally more aggressive approaches to export promotion.

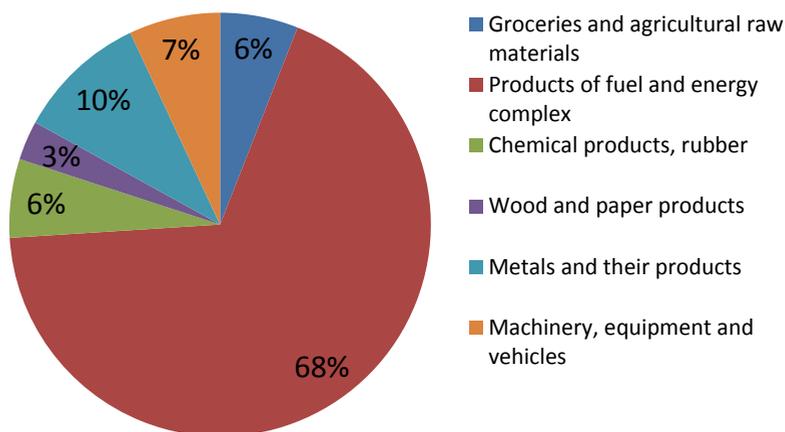


Fig. 1. Commodity structure of export of the Russian Federation in 2018, % [4]

The volume of Russian merchandise exports in value terms in 2018 reached 424.02 billion US dollars and grew by 2.33 times compared to 2004 [3]. Between 2009 and 2018 there is a gradual increase with periodic fluctuations associated with various situations in the world, including export restrictions imposed by sanctions, etc. Nevertheless, 68% falls on the products of the fuel and energy complex, 10% - on metals and products from them, with a small share of engineering products in exports - 7% (Fig. 1).

That is, the commodity structure of Russian exports remains unsatisfactory. The prevalence of raw materials and the low share of finished products in exports clearly does not correspond to the status of the industrialized country.

The wealth of natural resources of the Far Eastern Federal District (FEFD) is, in essence, its advantage. So, a significant share in the all-Russian balance of reserves and production are: gold (reserves 33% and production 44%), silver (35% and 65%), platinum (production - more than 15% for platinum, about 4% platinoids). Non-ferrous metals: tin (92% and 99%), tungsten (23% and 79%), lead (10% and 38%), antimony (82% and 100%), bismuth (32% and 48%), germanium (64% and 95%). Mining raw materials: boron (100% and 100%), hydrofluoric spar (40% and 82%), volcanic glass (27% and 71%), zeolites (12% and 88%) [5]. The comparative advantage of other regions less rich in natural resources should be the development of manufacturing, processing and high-tech industries [6].

district (PFD) and North-West federal districts (NWFD), they account for 4687.7 and 4145.5 million dollars, or 16.08 and 14.22%, respectively (Table 1). FEFD is in fifth place and amounts to \$1502.1 million, i.e. 5.15%.

Table 1. Export of products of constituent entities of the Russian Federation by sectors of 2018, \$ million*

Subjects of the Russian Federation	Products of the fuel and energy complex		Metals and products from them		Machines, equipment, vehicles	
	million \$	%	million \$	%	million \$	%
RF, total	286998.7	100	43633.8	100	29146.3	100
Central FD	173288.1	60.38	11551	26.47	13943.3	47.84
North-West FD	24274.3	8.46	7290.3	16.71	4145.5	14.22
Southern FD	7319.9	2.55	1934	4.43	802.4	2.75
North Caucasian FD	66.9	0.02	140.7	0.32	40.5	0.14
Privolzhskij FD	21249.6	7.40	3406.8	7.81	4687.7	16.08
Ural FD	25692.8	8.95	8734.9	20.02	2667.2	9.15
Siberian FD	18093.5	6.30	10032.5	22.99	1357.6	4.66
Far Eastern FD	17013.6	5.93	543.6	1.25	1502.1	5.15

* Compiled by source [4]

It would seem that in the export of commodities, the richer districts with natural resources should lead. But the data show that in the first place in the export of energy carriers is the Central Federal District, whose share in the export of products of the fuel and energy complex of the Russian Federation was, according to 2018, 60.38%. This can be explained by the fact that it is in Moscow that the head companies of the largest producers of energy products are registered. This is followed by the Ural Federal District (Ural Federal District) and the NWFD, which account for 8.95 and 8.46% of the exported fuel and energy raw materials of Russia. FEFD in sixth place - 5.93%. In the export of metals and products from them, FEFD in seventh place - 1.25%.

However, the analysis of the contribution of federal districts to Russian exports by industry is incomplete and should be supplemented by an analysis of the export structure and industry specialization of each federal district. Thus, fuel and energy products predominate in the structure of export of goods to the Central Federal District (80.8%), the share of engineering products is insignificant and amounts to 6.5% (Table 2).

In the structure of export of the Far East, the products of the fuel and energy complex dominate - 70.3%, followed by food products and agricultural raw materials - 15.6% and a low percentage of the engineering industry - 6.2%. These figures confirm the assertion that at present the Far Eastern Federal District continues to remain a raw-material region.

The regions where export of fuel and energy complex products predominate include: Republics of Buryatiya and Sakha (Yakutiya), Zabaykalskiy kraj, Sahalinskaya oblast and Chukotskiy avtonomniy okrug. In Khabarovskiy kraj - mechanical engineering and vehicles (29.8%). Export of metals and products from them is 9.3% in Khabarovskiy kraj, and 6.7% in Primorskiy kraj, in other regions this indicator is too low.

Central FD	100.0	3.1	80.8	3.5	0.8	5.4	6.5
North-West FD	100.0	7.0	50.1	9.1	10.2	15.0	8.5
Southern FD	100.0	42.8	37.3	5.1	0.9	9.8	4.1
North Caucasian FD	100.0	30.7	5.8	46.9	0.9	12.2	3.5
Privolzhskij FD	100.0	2.9	50.8	23.7	3.3	8.1	11.2
Ural FD	100.0	0.7	67.5	6.1	1.0	17.7	7.0
Siberian FD	100.0	2.5	50.2	4.4	11.3	27.8	3.8
Far Eastern FD	100.0	15.6	70.3	0.3	5.4	2.2	6.2

* Compiled by source [4]

X₁ – Groceries and agricultural raw materials

X₂ - Products of the fuel and energy complex

X₃ - Chemical industry products, rubber

X₄ - Products of the wood and pulp and paper

X₅ - Metals and products from them

X₆ - Machines, equipment and vehicles

We also supplement the studies with an intraregional analysis of the commodity structure of the Far East (Table 3).

Table 3. Commodity structure of export of the Far Eastern Federal District by region in 2018, % *

Regions of the Far Eastern Federal District	Total, %	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆
Republic of Buryatiya	100.0	1.9	68.6	0.5	16.3	1.3	11.4
Republic of Sakha (Yakutiya)	100.0	0.1	97.9	0.0	0.0	0.0	1.9
Zabaykalskiy kraj	100.0	15.6	40.2	11.7	32.1	0.2	0.2
Kamchatkiy kraj	100.0	98.7	0.6	0.0	0.0	0.5	0.2
Primorskiy kraj	100.0	46.9	19.6	1.3	12.4	6.7	13.1
Khabarovskiy kraj	100.0	11.9	23.0	0.3	25.7	9.3	29.8
Amurskaya oblast	100.0	45.7	44.9	0.4	8.8	0.0	0.2
Magadanskaya oblast	100.0	98.3	0.0	0.0	0.0	1.0	0.7
Sahalinskaya oblast	100.0	5.3	93.0	0.0	0.0	0.5	1.3
Evrejskaya avtonomnaya oblast	100.0	75.0	0.4	0.2	24.1	0.0	0.4
Chukotskiy avtonom. okrug	100.0	18.2	79.3	0.0	0.0	0.0	2.5

* Compiled by source [4]

The regions of the Far East, on the one hand, have the richest mineral resources, and, on the other hand, are characterized by a mismatch in the level of development of productive forces, as well as transport and energy infrastructure, with the potential of natural resources. This leads to a significant lag in social and economic development compared to other regions of Russia, to an increase in the outflow of the population and the emergence of other systemic problems. The presence of large reserves of oil, coal, ferrous, non-ferrous and rare-earth metals, as well as geographical proximity to the rapidly developing countries of the Asia-Pacific region, including China, suggest that further development of the Far East will be associated with the intensification and intensification of economic relations with Southeast Asian countries. However, it cannot be ruled out that the natural wealth of these regions may become the main resource and financial base for the development of various industries and agriculture while reorienting the economy to the industrial development path. The full use of the wealth of the Far East for the production of goods

natural resources.

Table 4 presents the currently implemented investment projects of the Far Eastern Federal District related to the development of iron ore deposits or the creation of mining and metallurgical enterprises on their basis, as well as the development of tin ore deposits. These two areas were chosen due to the fact that the creation of a metallurgical plant with the production of products of a high degree of redistribution is one of the most important components of economic stability in the region. At the same time, there is a real supply of iron ore. And tin - because more than 95% of its reserves and resources are concentrated precisely in the Far East. So, according to the table, it can be seen that the percentage of budget (federal) funds in projects of particular importance is extremely low and mainly financing is provided at the expense of the investor.

Table 4. Characteristics of investment projects in the Far Eastern Federal District

Project, subject of the FEFD	Financial resources, billion rubles			Share B,%	Number of jobs created	Investor
	Total	including:				
		investor (I)	budget (B)			
Construction of mining and metallurgical plant (iron ore concentrate), Kamchatskiy Krai	28	27.2	0.8	0.03*	150	Petropavlovsk-Kamchatsky Processing Plant LLC
Development of Garinskoe iron ore deposit and construction of mining and processing plant, Amurskaya oblast	48.5	21.3	27.2	0.56	1485	"Petropavlovsk," LLC "Garinsky MMK," LLC "Petropavlovsk-Black Metallurgy"
Creation of a mining and metallurgical cluster in the Priamur'e, Evrejskaya avtonomnaya oblast	25.4	24.9	0.5	0.02	1562	LLC Kimkano-Sutarsky GOK
Development of the placer tin deposit on the Tirekhtyakh stream, Republic of Sakha (Yakutiya)	1.1	0	0	0*	85	JSC Yanolovo, JSC South Yakutiya Development Corporation
Construction of Mining and Processing Plant of Pravurmia Tin Ore Field, Khabarovskiy kraj	4.5	0	0	0*	400	JSC Rusolovo
Construction of Taezhny iron ore mining and processing plant, Republic of Sakha (Yakutiya)	18.7	17.1	1.6	0.09*	600	CJSC MMC Timir

* - there is no budget financing, or the company is in search of a co-investor (calculated according to the Investment portal of the Far Eastern Federal District [7])

The main problem of the mineral resource base of the iron ore industry in Russia is the significant remoteness of deposits from metallurgical plants. In regions rich in iron ore, there are no large metallurgical capacities. And the areas of concentration of the main steel mills are remote from sources of raw materials and experience an acute ore deficit. In long-distance transportation, the cost of transportation significantly (up to 30% or more) increases the cost of iron ore raw materials themselves.

Consider the implementation of an investment project in the form of a vertically integrated mining and metallurgical complex due to the fact that the region needs its own ferrous metallurgy [8, 9]. The objectives of various forms of integration in the mining and

and challenges of financial and economic independence and security of the main (metallurgical) production; increasing competitiveness in the domestic and foreign markets; implementation of long-term targeted scientific, technical and investment development programs; ensuring and improving product quality; expansion of the assortment and growth in output of products of high technological conversion; modernization of the production base; reduction in production transaction costs.

This project envisages the construction of a metallurgical complex with two modules (with coke technology and direct iron reduction) on the basis of Kimkano-Sutar and Garinsky GOKs and its further work for 50 years as part of a single enterprise. Calculations were made for three options: 1) basic, 2) Advanced Development Territory (ADT), 3) without infrastructure costs (Table 5).

Since the Far Eastern Federal District provides measures of state support for investment projects (according to the program "Socio-economic development of the Far East and the Baikal region" [10]), the corresponding indicators for the second option were calculated on the basis of the ADT. Namely: income tax of 5% during the first 5 years, and the next 5 years - 12%; land tax 0% for 5 years; property tax 0% for 5 years, in the next 5 years - 1.1%; for mineral extraction tax, reduction factors were applied to the tax base. For the third option, it is assumed that the costs of creating infrastructure are provided at the expense of state support.

Table 5. The main economic indicators for the operation of the mining and metallurgical complex

Index	One measuring	2019 г.		
		base	ADT	without infrastructure costs
Annual volume of metal produced	million tons	6	6	6
Price 1 ton of metal	\$/t	580	580	580
Working time	years	50	50	50
Sales proceeds	million \$	174000	174000	174000
Total investment:	million \$	6924,1	6924,1	5335
including infrastructure costs	million \$	1589	1589	-
Net profit	million \$	79503	83614	90961
Number of jobs created	persons	3047	3047	3047
Taxes, total:	million \$	33903	29792	35950
including payments for nature recovery	million \$	375	375	375
payment for the right to use mineral resources	million \$	1740	1575	1740
tax on production	million \$	8352	7350	8352
property tax	million \$	3560	2580	2743
income tax	million \$	19876	17912	22740
Net present value (NPV) at a rate of 5%	million \$	23126	26452	28684
Internal Rate of Return (IRR)	%	13	13,81	13,91
Profitability Index (PI)	units	4,34	4,82	6,38
Payback period	years	5	4	4

Calculations have shown that all three options are cost-effective. Considering the position of both the investor and the state, the third option is the most acceptable. So, having spent budget funds on the creation of infrastructure of \$ 1,589 million, the state as a result will receive \$ 35,950 million in tax revenues for the entire duration of the project. At the same time, the state currently partially finances such projects as the development of the Garinsky iron ore deposit and the construction of a mining and processing complex, as well as the creation of a mining and metallurgical cluster in the Amurskaya oblast (see Table 4). In relation to the calculations made, this represents 25% of the required investments to create a full-volume steel industry in the region with a high degree of conversion. And as

enterprises. A zero rate has been introduced for tin mining in the eastern regions of the country for a period of five years, which allows restoring production at previously developed deposits and commissioning new facilities. The tin specialization of the territory of the Russian Far East is, following gold ore, one of the leading specializations. During the period 1990-2014, production at most fields was stopped. In recent years, tin production was carried out periodically only in Khabarovskiy Kray, in Primorskiy Kray it was associated production. At the same time, Russia's annual demand for tin is determined at 7.5 thousand tons. The missing volumes of tin are imported and processed at the Novosibirsk Tin Plant [11]. According to table 4, it is clear that none of the projects related to tin mining has budget support. Their indicators are shown in table 6.

Table 6. Characteristics of development projects for tin deposits in the Far Eastern Federal District [7]

Index	Units	Project	
		Mastering alluvial tin on the Tirechtyakh stream	Construction of GOK Pravourmiiskiy
Investments	billion rubles	1.1	4.5
Net present value	billion rubles	145	-84.2
Payback period	years	6	7.3
The coefficient of specific efficiency of the investment project	units	0.5	0.99
Internal Rate of Return (IRR)	%	19.1	13.1
Discount payback period	years	10	-

3 Conclusion

The main problems that inhibit investment activity in the Far Eastern Federal District, taking into account regional characteristics, include:

- lack of own investment funds of enterprises due to low profitability and a large number of unprofitable industries;
- weak role of the banking system in lending to the real sector of the economy;
- underdevelopment of the stock market, especially regarding sub-federal and municipal borrowing;
- weak development of non-traditional forms of investment (mortgage lending, leasing, etc.).

However, the main problems are the infrastructural support of resource projects and the high costs of their implementation due to remoteness and severe climatic conditions. Especially in these conditions, state support is necessary for the full development of the Far Eastern Federal District. It is advisable to consider additional opportunities for priority federal financing of activities in the Far Eastern Federal District as part of the implementation of national (federal) projects, including using inter-budgetary subsidy mechanisms [12]. To ensure further economic growth, conditions should be created aimed at redistributing financial resources for the development of the real sector, and stimulating the development of manufacturing industries taking into account the potential opportunities and comparative advantages of the region.

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