Assessment of Impact of Structural Diversification in the Mineral Sector on Economic Indicators of the Resource Region

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Abstract. Processes of structural diversification in the mineral sector of the Far East are investigated, characteristics of new branch and spatial specializations in the mineral and raw complex (MRC) of the region are received. Levels of concentration of MRC and specialization of territorial subjects of the Russian Federation in the Far Eastern Federal District (FEFD) on mining are calculated, their existential trends are revealed. Investment intentions and projects of the large mineral raw material companies planned to realization in the FEFD are investigated. Influence of development of MRC on dynamics of investment activity in the region is shown. Possible modifications in region economy taking into account qualitative characteristics of modern structure of investments are revealed.

1. Introduction
Problems of a research of a resource factor of the sustainable, balanced development of economic systems of different level, ratio between the raw (extracting) and processing branches of economy, interdependence of security natural (and in particular mineral) resources and rates of economic growth don't stop being relevant. Such perspective for the regions rich with mineral resources which use forms branches of economic specialization of these territories is of particular importance. The majority of the Far East territorial subjects of the Russian Federation belongs to such resource regions. Production of mineral resources in the Far East strongly takes positions of branch of national specialization of the region. Therefore the questions of assessment of interference of the mineral sector of the Far East and regional economy considered in article have the theoretical, methodical and practical importance.

2. Relevance and scientific significance
Researches of theoretical and methodical questions of a contribution of natural resources to social and economic development [1-3], receiving quantitative estimates for the economic systems of various level [4-8] not only don't lose the relevance, but also come to new theory-methodical level [9-14, etc]. Questions of formation and specification of a conceptual framework, application of new methods for assessment of interrelations "the resource sector – the resource region" are discussed in works [10, 11, 15, 16]. The issues of change of the initial scheme of development of resources of the territory discussed in works - leaving from the fading stage to continuous development at the expense of innovations – are characteristic also of the raw territories of the Far East of Russia considered in article. Growth of technological availability of mineral resources, development of "old" fields in new technological parameters are characteristic of them also at the present stage [14].

One of important aspects of the discussed scientific perspective is assessment of a role of resource projects in development of economy, methodical features of assessment of efficiency of such projects and their real contribution to regional development. These questions are in subject domain of a number of the research directions: resource economy, environmental management economy, regional economy, spatial economy [17-19]; efficiency of investments, and first of all investments into the
public sphere, a natural rent, assessment of multipliers and system effects of resource projects [20-26] and their localization at the regional level [8, 10, 11, 27].

The scientific importance of such researches consists in adaptation of various theoretical approaches and implementation of methods of assessment of interrelations "the resource sector – the resource region" for concrete territories.

3. Problem statement
The defining role of natural resources in economic development is characteristic feature of the Far East of Russia throughout the entire period of his development [8]. One of key resource industries is mining. In the Far Eastern Federal District (FEFD) practically all Russian stocks and nearly 100% of extraction of diamonds and tin, more than a third of reserves of gold and silver (45 and 65% of production respectively), nearly 80% of production of a tungsten concentrate and 100% of extraction of antimony are concentrated [28].

In this research structural diversification is understood as essential changes of both branch, and spatial structure of the mineral sector of economy of the Far East. The spatial aspect of diversification is characterized as change of branch specializations of the Far East territorial subjects of the Russian Federation in favor of the mineral sector, and changes of territorial structure of a complex on the macroregion in general. The estimated retrospective period is defined by the general reform transformations which result were dynamic, structural, institutional changes in the mineral sector of the Far East.

Within the present article the following tasks are set and solved: to investigate dynamic and structural changes of branch specialization of the mineral and raw complex (MRC) of the Far East; to reveal essential characteristics of spatial diversification of the mineral sector of the Far East, including modification of his role in national and regional economy; to investigate influence of MRC on investment activity in the region. For realization of these tasks a number of methodical, information and settlement stages of works are executed.

4. Results discussion
As for dynamic and structural changes regarding branch specialization MRS of the Far East during 1990-2015, the following became the most important:
- volume of extraction of ores of such metals as tungsten (43.3% in 2015 relatively 1990), lead (37.3%), zinc (21.4%), tin (9%) and copper (7%) have significantly decreased (in kind);
- new branch specializations of MRS have begun to be formed: extraction of raw materials for production of nickel and cobalt (Kamchatka Krai), titanium magnetite (Amur region) and iron ore (Jewish Autonomous Region) of concentrates;
- the role of precious metals as "the structural leader" of the mineral sector of the Far East has become stronger: gold mining volumes in 2015 were 111% relatively 1990 (having overcome a situation of critical failures during the considered period), extraction of silver has increased more than by 6 times;
- the internal structure of gold mining in the region has changed: if in the 1990s prevailing was production from loose fields, then after 2010 more than 70% of gold in the region are extracted from radical fields;
- technological availability of resource base of gold mining has increased in the FEFD at the expense of an entrance to the region of the large companies and development of new technologies of assessment by them, production, processing of mineral resources (for example, revaluation of the Natalka field; autoclave technologies, etc.).

However, in the presence of a number of positive changes, the main result of a research of changes of branch structure MRS of the Far East is a conclusion about her essential narrowing and strengthening of monoraw character of the mineral sector of the Far East.

For assessment of spatial diversification in the mineral sector of the Far East existential trends of territorial structure of a complex have been revealed, concentration levels of MRS and specializations
of territorial subjects of the Russian Federation in the Far Eastern Federal District (FEFD) on mining are calculated.

As for territorial structure of the mineral sector of the Far East, the role of northern regions (Yakutia, the Magadan region and Chukotka Autonomous Okrug) has remained – nearly 4/5 productions of a complex are still made here. In the southern zone, at preservation in general her shares in structure MRS of the FEFD, by 2016 have occurred essential intra zone changes in comparison with 1990: sharp decrease in a share of Primorsky Krai (by 6.4 times) with a growth of a contribution of Khabarovsk Krai (by 1.3 times) and the Amur region (by 1.2 times). The reasons of such changes of steel various intra-branch structure of a complex in these territorial subjects and multidirectional dynamics of production of types of mineral raw materials, various on the competitiveness.

The role of the mineral sector in economy of certain territorial subjects of the Russian Federation has changed. Concentration of MRS has significantly increased in the industry of the Magadan region and Chukotka Autonomous Okrug – approximately from 55-56% at the beginning of the reform period (on the uniform then territorial subject of the Russian Federation) up to 84-88% by 2016 on each of territorial subjects of the Russian Federation respectively. Significant growth in this indicator in the Amur region (from 12.5 to 44.9%) and in Khabarovsk Krai (from 4.8 to 15-17%) indicates structural changes in rather diversified industrial complexes of these territorial subjects of the Russian Federation. It is actively formed MRS in those regions where this kind of activity didn't belong to branches of national specialization earlier. So in 2016 the share MRS in structure of industrial output has made in Kamchatka Krai 16.4%, in the Jewish Autonomous Region – 13.3% that removes them in the territory with mineral commodity dependence (with coefficients of localization rather average Russian 5,5 and 4,4 respectively). The share of a mineral and raw complex in structure of the industry in general in the FEFD - from 14-15% in the 1990s has increased to nearly 30% by 2016. Strategically significant is a role of the mineral sector of the FEFD and in national economy.

In these conditions the question of assessment of a contribution of resource branches to social and economic development of regions doesn't stop being relevant.

One of conditions of economic growth is vigorous investment activities. As indicators of assessment of quality of economic growth (and stability of regional development) are rather often used as indicators of dynamics of the absolute volumes of investment into fixed capital (as reflection of investment activity), and the specific weight of investments into branches with high value added (as an illustration of quality of investments) [6, p. 47]. Besides, their structural ratio between investments into raw and not raw spheres of regional economy can be one of measuring instruments of "quality of investments". We have calculated such structural ratios which have developed in economy of the FEFD in general and certain territorial subjects of the Russian Federation during 2005-2016. The analysis has shown that at the level of the Russian Federation during the considered period the share of investments into the mining in the general structure of investments into fixed capital has increased by 1.44 times (having reached nearly 20% of all investments). In the FEFD this growth was 1.87 times, at the same time the share of investments into mining has reached 40% in fixed capital. Certainly, these estimates significantly differ on certain Far East territorial subjects of the Russian Federation. Totals estimates for a start and the end of the considered period are presented in table 1.

We have allocated three groups of regions concerning their "raw" specialization. The first group had included regions in which economy the role of the mineral sector is rather high, but isn't defining. This group has included Primorsky and Khabarovsk Krai, the Amur region. In the considered period the share of investments into the mineral sector in their total amount significantly has decreased only in Primorsky Krai, was rather stable in the Amur region and more than by 2.7 times has increased in Khabarovsk Krai. Change of concentration of the extracting sector in the industry of these territories – essential decrease in Primorsky Krai, her growth in Khabarovsk Krai and essential growth in the Amur region can be reflection of such structural orientation of investment activity in these regions.
Table 1. Dynamic of share mining in volume of the production of the industry and share of investments in mining in the general structure of investments into fixed capital, %

| Groups of regions       | Share mining (without fuel and energy resources) in volume of the production of the industry, % | Share of investments in mining in the general structure of investments into fixed capital, % |
|-------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
|                         | 2005 | 2016 | 2005 | 2016 |
| Average values          |      |      |      |      |
| Russian Federation      | 2.8  | 3.0  | 13.4 | 19.3 |
| FEFD                    | 31.2 | 29.6 | 21.0 | 39.3 |
| Group 1                 |      |      |      |      |
| Primorsky Krai          | 5.7  | 3.1  | 1.8  |
| Khabarovsk Krai         | 15.6 | 19.9 | 3.1  | 8.8  |
| Amur region             | 20.4 | 44.9 | 6.4  | 5.5  |
| Group 2                 |      |      |      |      |
| Yakutia                 | 63.4 | 51.7 | 45.5 | 51.2 |
| Magadan region          | 67.5 | 83.6 | 14.1 | 69.5 |
| Chukotka Autonomous Okrug | 31.7 | 88.4 | 0.3  | 36.4 |
| Group 3                 |      |      |      |      |
| Kamchatka Krai          | 11.8 | 16.4 | 4.4  | 21.9 |
| Jewish Autonomous Region | 5.0  | 13.3 | 0.3  | 36.4 |

Source: It is calculated with use of official data of Rosstat.

With traditional mineral commodity dependence (Yakutia, the Magadan and Sakhalin regions, Chukotka Autonomous Okrug) the share of investments into the raw sector during the considered period grew in group of the Far East regions that has provided also the corresponding growth of concentration of this kind of activity in the general structure of the industry (tab. 1). Essential growth of a share of investments into a mineral and raw complex in 2005-2016 is noted as well in regions of the third group (Kamchatka Krai, the Jewish Autonomous Region) that removes also these territorial subjects of the Russian Federation to regions with mineral commodity dependence.

The given dynamics characterizes, in our opinion, two important things:
- for the FEFD in general and for the majority of the Far East territorial subjects of the Russian Federation of investment into a mineral and raw complex make, in fact, a basis of investment activity in the region;
- such structure of investments not only sets commodity dependence of certain Far East regions, but also "works" for formation of next raw image of economy.

5. Summary

Within implementation of the tasks processes of structural diversification in the mineral sector of the Far East are investigated, characteristics of new branch and spatial specializations in the mineral and raw complex (MRC) of the region are received. The main result of a research of changes of branch structure of MRC of the Far East is a conclusion about her essential narrowing and strengthening of monoraw character of the mineral sector of the Far East.

For assessment of spatial diversification in the mineral sector of the Far East existential trends of territorial structure of a complex have been revealed, concentration levels MRS and specializations of territorial subjects of the Russian Federation in the Far Eastern Federal District (FEFD) on mining are calculated. The analysis has shown increase of a role of the mineral sector of the Far East both in regional, and in national economy.

In these conditions the question of assessment of a contribution of resource branches to social and economic development of regions doesn't stop being relevant. The research has shown that for the FEFD and for the majority of the Far East territorial subjects of the Russian Federation of investment
into a mineral and raw complex make its basis. At the same time the prevalence of a share of investments in MSR in their general structure definitely characterizes quality of investments. Such structure not only sets commodity dependence of certain Far East regions, but also "works" for formation of next raw image of economy.

The conducted research allows to gain new knowledge and methodical advances in the field of assessment of interference of development of resource sectors and economy of regions. The scientific novelty consists in adaptation and implementation of various theoretical approaches and methods for the concrete region.

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