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## Article

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## Issues for Development of Economic System for Subsurface Resource Management in Russia through Lens of Economic Process Servitization

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### ABSTRACT

The article dwells upon the main economic issues and development of subsurface resource management in the national economy. The question of servitization of subsurface resource management is discussed for the first time. The article focuses on the following issues: the mine rent, the necessity to restructure property in subsurface resource management considering corporate relations; managing the system for economic interests of subsurface resource users, the state, and society; optimizing the payment and taxation systems for use of subsurface resources.

**Keywords:** Economy Servitization, Use of Subsurface Resources, System of Payments for Natural Resources

**JEL Classifications:** H30, L89, O13

### 1. INTRODUCTION

Issues of the economic system development in subsurface resource management have always been of great interest in Russia. The balance of economic interests between the country's constituent regions is a required condition for improving efficiency of the mineral resource sector at all management levels.

It is common knowledge that economic interests are essential for economic system functioning; and searching for solutions in regulation of subsurface resource management is directly connected with interests of economic agents. The role of the mineral resource sector in the national economy defines the importance of regulation and development of the economic system for subsurface resource management.

Economic reforms of 1990s provoked changes in the property structure and in priorities for production and commercial activities of subsurface resource users (Johnstone and Bishop, 2007).

Russia's current opportunities for production and exports are mainly connected with the vertically integrated and diversified corporations in the mineral resource sector of the economy. So, efficient activities of participants of the market for subsurface resource management greatly depend on peculiarities of corporate relations at enterprises of this sector (Robert et al., 2018). At present, corporate relations cover not only interaction between shareholders and hired management of a company but also relations of shareholders with government bodies and financial institutions (Freeman, 1984). Corporate relations can be figuratively divided into internal and external, formal and informal. Friedman and Miles pay attention to differences in interests of people, whose interest in business is based on legislation norms, and people, whose interests do not have the legal and regulatory setting (Friedman and Miles, 2002).

Another important aspect for economic system development at all levels is as follows: development of the sixth wave of innovation is connected with a higher pace of growth in the tertiary sector in the

world economy, especially in mature markets. The same situation is observed in subsurface resource management and environmental protection activities. As a rule, the tertiary sector applies to the service industry. Its development is connected with new kinds of services “dissolved” in material production. Besides, the service sector covers a large number of activities, which borders do not always coincide with borders of an industry (Benyoussef and Zaiem, 2017; Na et al., 2017). The state is interested not only in pumping up the budget but also in improving efficiency of mineral resource extraction and in observing the principles of rational use of subsurface resources. Most of mining enterprises are systematically important: they provide new jobs, develop territories, and contribute to development of associated industries. So, arrangement of conditions for their development is one of the most important tasks for the state. The main target function of a mining enterprise is to maximize the aggregate operating profit. However, as a rule, other functions (like social, ecological, power saving and others) are always to be fulfilled as well. Matching up economic interests of the parties involved in subsurface resource management is essential for improving efficiency of reclamation and development of the mineral resource sector.

Considering the decisive influence of the system for economic interests of subsurface resource users, the authors of the article tried to reveal the main issues and trends for development of the economic system for subsurface resource management.

## 2. MATERIALS AND METHODS

As previously stated, economic relations in subsurface resource management are carried out via matching up a complex system of relation participants’ various interests. At the same time, the owner of subsurface resources, the state, plays the decisive role in them (Ilyushin and Afanasieva, 2016).

Economic relations between the subsurface resource owner and the subsurface resource user are based on the system for paid use of subsurface resources. Taxation principles determine parameters of economic relations between the state and users of subsurface resources (Busheneva and Stetsyunich, 2018). The present day fee-based system for subsurface resource management hardly considers rental income in the industry (Makarkin, 2011). The rental concept states that income of a user of subsurface resources gained as a result of difference in natural conditions (geological and economic, mining and technical, geographical and economic, as well as field infrastructure characteristics) does not depend on activities of a user of subsurface resources. So, it is not earned and must be transferred to the resource owner (the economic rent of the first order). If increasing income is connected with intensive business activities, additional investments in land (the economic rent of the second order), then it should be distributed considering participation of the subsurface resource owner in investment in development of a deposit (Jason et al., 2016).

At present, there is an acute issue in choosing methods for quantitative determination of the economic rents of the first and second orders, because practically it is extremely difficult to estimate the share of the aggregate income growth that was

gained due to the best natural characteristics of a deposit and the increase connected with investments. Therefore, a system for differentiated rental payments and benefits is being developed in the world practice. This approach contributes to flexibility and rational use of resources, creates conditions for reproduction of the mineral resource base because, as many companies are working with hard to recover reserves, deposits will be developed only in case of acceptable profitability for a user of subsurface resources (Tsvetkova and Sokolov, 2011).

Every country sets own principles for fee-based use of subsurface resources. The payment system structure is connected with the state system (presence of federal and regional taxation systems), property structure (who possesses subsurface resources, land plots, and production infrastructure), and peculiarities of the tax system. The best world taxation systems in subsurface resource management are based on theoretical and methodological principles of rent: withdrawing rental income in favor of the resource owner.

In developed countries, rent is withdrawn mainly through a system of indirect taxes. For example, production sharing agreements (PSA) are not signed in the USA and the UK (Baykova, 2010). Many aspects of economic relations are regulated by the state in European countries and are not negotiated.

Developing countries as a rule use non-tax methods and SPA. Developing countries often use mechanisms based on barter/resource sharing. It is connected with several objective reasons: absence or underdevelopment of production infrastructure, lack of own investment resources etc.

The foundation for fee-based use of subsurface resources can be found in the Russian federal law “On Subsurface Resources.”<sup>1</sup> Most of payments are included in the prime cost of products, which is connected with increasing or decreasing demand of raw material consumers.

Since 2002, deductions for the reproduction of the mineral resource base and royalties have been replaced with the mineral extraction tax (MET).<sup>2</sup> These changes led to strengthening fiscal taxation in subsurface resource management, reducing motivation users of mineral resources to conduct resource-saving policy because the changes do not consider parameters and conditions for field development. MET rate depends on price for raw materials and does not include financial results of a mining company, which are greatly affected by parameters and conditions for field development. Thus, expenditure growth is not connected with the tax level. So, development of new deposits becomes less attractive. Companies become more interested in development of deposits at late stages with benefits. Companies deviate from principles of rational and efficient use of subsurface resources, exploit deposits and try to meet their current commercial interests, which leads to a significant reduction of mineral extraction (Vasilyev and Kovalchuk, 2016). Obviously, it contradicts the state’s long-term

1 Russia’s law “On Subsurface Resources”: <http://legalacts.ru/doc/zakon-rf-ot-21021992-n-2395-1-o/>

2 Mineral Extraction Tax (MET): <https://www.nalog.ru/rn77/taxation/taxes/ndpi/>

interests: ensuring the country's energy, ecological, national and economic security, as well as achieving geopolitical and geo-economic goals and objectives. Besides, transfer pricing is widely used, which allows reducing income tax payments.

At present, taxation is mainly fiscal in the segment of subsurface resource management in Russia. The payment system is not differentiated depending on profitability of a field development, hard to recover reserves, operational stage at a deposit etc. The current taxation system creates unequal conditions for users of subsurface resources. The fiscal nature of the fee-based system for subsurface resource management stimulates companies' policy for profit maximization, maximization of rental income with abandoning the principles of rational reclamation and development of deposits. Intensive resource development becomes the main task, while technological innovations are not sufficiently implemented in production.

In 2004, together with changes of the payment system in subsurface resource management, there was distribution of authority between the federal body managing the state fund of subsurface resources and constituent entities of the Federation. So, making the most important decisions connected with regulation of relations in subsurface resource management passed to the federal level. Regions became dependent; their participation in agreeing conditions for subsurface resource management was sharply restricted. Further development of the situation will lead to increasing government red tape and declining flexibility and speed of decision making. The authors of the article believe that country regions should regulate relations in subsurface resource management for small and medium-sized deposits (Thomas and Tomas, 2018).

The authors agree with Kryukov and Tokarev (2005) who think that the most important feature of the institutional environment in subsurface resource management is a relatively high degree of autonomy of norms and rules regulating reclamation and deposit development from the norms and rules determining taxation peculiarities). The existing problems and issues are indicative of the required reforming taxation in subsurface resource management.

The federal law #199-FZ dated 19 July 2018 came into effect on 1 January 2019. It adopted a tax on excess-profit from hydrocarbon production.<sup>3</sup> The reform aims at increasing universality and unity of the tax system (Smirnova and Rudenko, 2016). Taxation is switched from money flows to volumes of produced and sold hydrocarbons, i.e., to financial results of a company; benefits for some deposits are abolished. The changed object of taxation is expected to lead to the following results: dependence of the excess-profit tax on profitability will allow withdrawing surplus income of mining companies; it will increase investment attractiveness of the industry projects as the excess-profit tax will not be applicable at early deposit development stages without surplus profit; it will minimize investors' risks; companies will be interested in completing deposit development at late production stages and/or

with hard to recover reserves with low profitability. More flexible taxation in subsurface resource management will be observed together with strengthening state control and monitoring because mining companies may unreasonably overestimate expenses trying to "optimize" the tax burden. The necessity to tighten the institutional environment in the oil and gas industry will lead to higher state transaction costs in administering. The efficiency of the proposed reform will depend on the ratio of possible benefits to expenses of all participants of economic relations.

Analyzing current patterns of servitization processes in economic systems, it is necessary to mention that at present, service terminology exists in studies devoted to natural resource management and subsurface resource management, for example in the concepts of "geophysical services" (Krainova and Kuznetsov, 2013), "oil and gas services" (Avilova and Parfiryeva, 2014), "oil and gas service" (Tokarev, 2014), which characterize complex activities accompanying oil and gas production and "ecosystem services" connected with an attempt to add environmental activities to market relations (Rosenberg, 2015; Costanza and Daly, 1992). The mentioned concepts consider the main peculiarities of the term "service" in subsurface resource management. The main tasks of these services are as follows: To ensure power, environmental (Rumyantsev, 2015), national and economic security of a country, as well as to fulfill the geopolitical and geo-economic goals and objectives of the state (Rubtsov et al., 2015).

The expediency of combining services and goods into a complex product is confirmed by modern trends in development of the service sector, which is organically integrated into the economic system of subsurface resource management. Firstly, provision of a number of services involves consumption of certain goods, objects of the material nature. Secondly, consumption of a number of goods is complemented by acquisition of accompanying services. Thirdly, the main service is accompanied by receipt of related goods and services. A complex product almost always including a service product is inherently multi-attributive, while its constituents are interdependent and interchangeable, which creates opportunities for consumer choice and customization of the offer.

### 3. RESULTS

Companies of the mineral resource sector play a meso- and macroeconomic role based on project implementation and both formal and informal agreements between corporations and stakeholders.

The current state of the mineral resource sector with a number of discussed above issues is accompanied by accelerating processes of servitization of the economic system in subsurface resource management. The future development of the mineral resource sector of the economy greatly depends on development of the "integrated" service sector. Due to the service sector, the effectiveness of economic agents' interaction improves, innovations are developed and implemented into activities of subsurface resource users, processes of accumulation and usage of the human capital are activated etc., i.e., all factors without which the mineral and resource economy cannot enter a new

3 The Federal law #199-FZ dated 19 July 2018: <http://www.kremlin.ru/acts/bank/43354>



qualitative level adequate to the modern economic realities (Carmignani, 2013).

Discussing objectivity of servitization processes in the economic system for subsurface resource management, the authors suppose that potential of the service approach in studying the subsurface resource management can be significantly expanded, while its opportunities are determined by the institutionalization state of the service sphere itself. Systematization of the existing approaches and analysis of the economic practice allow identifying promising areas for application of the service approach in subsurface resource management: arranging a detailed classification of services and service products; designing quality assessment models and certification procedures for services related to use of subsurface resources and environmental protection activities considering their peculiarities compared with goods; development and optimization of complex services provided by a company based on the service product concept; identification of promising areas for servitization of the subsurface resource management based on intellectualization, automation and clustering; improvement of patterns for provision of services related to subsurface resource management and environmental protection depending on the recipient, which cover servicing, pricing, marketing, resource provision and so on; improving methods of state regulation including its international aspects.

## 4. CONCLUSION

As a result of the research, it is necessary to define peculiarities of property relations in subsurface resource management: Excessive concentration of property (shares) in one's hands leads to virtually sole proprietor, who heads the board of directors; corporations using subsurface resources are not controlled by a large number of owners, but by a group of people or the state (represented by the government), while this group receives over 50% of dividends as a corporate rent; the insider management model based on unifying property rights and asset control significantly reduces role of the general shareholder meeting as the supreme corporate body; the negative scale effect (as a result of property and control concentration) leads to a significant rise of "intra company" transaction expenses and declining efficiency, gives rise to opportunist behavior (opposed to corporate behavior of company's subjects); ouster of minority shareholders from managing production and financial flows, discussing mergers and acquisitions, diversifying production and marketing, selling assets, changing the charter capital and other important questions of a corporation's development; absence of external regulation, underdevelopment of corporate control; abuse of administrative resources; non-transparent financial information; complicated property structure; not always reasonable mergers and acquisitions; receiving insider rent via cutting down investments and wages, misuse of funds, non-transparent deals with affiliates, usage of offshore schemes, tax evasion and so on. Many authors treat all these peculiarities of the modern Russian reality as signs of degradation of investment and innovation processes.

Nevertheless, even with significant peculiarities of corporate relations, Russian corporations working in the mineral resource

sector are quite efficient, which is evident due to their stability and tight oligopolistic competition, including on the level of world markets for respective resources.

The currently prevailing fiscal nature of the tax payment system allows the state to cut down transaction costs for control and monitoring economic relations in subsurface resource management and to guarantee budget receipts in mid-term, leaving aside socially significant pace of deposit development. Besides, it leads to increasing exports. All these factors prevent the Russian economy from changing its role and place in the international division of labor. Thus, it continues specializing in raw materials. Rising production and exports of mineral resources, mainly hydrocarbons, allow Russia to have a strong position in the geopolitical arena. On the other hand, the focus on exports of mineral resources does not encourage their processing, and consequently, creation of new jobs, increase of the population's income, development of the related industries as a result of the multiplier effect.

As for economy servitization processes in the modern sense, a service product is a system combining material products and related services. So, the following criteria can be used for classifying services and service products in subsurface resource management: A role of a company in activities (main, additional accompanying, related); the level of intermediate consumption (acquired independently from other consumer goods; bought in a complex product, i.e., "a service package"); purpose (final services with absolute value and a purpose for the final consumer versus infrastructure services representing a condition for consumption of final services); safety level (with danger and without potential danger for human health and life); service origin (internal and external for an enterprise); interaction pattern between a customer and servicing personnel (high and low contact); type of guarantees for provision of a service (state, private, with state support); new result of a service process (creating new consumer values, changing, raising or restoring consumer properties of tangible and intangible objects); the service process algorithmization level (standard provided in accordance with strictly established procedures and non-standard, which can be formed and changed in accordance with consumer's requirements); the need for after sale control of the result of consumption of a service or a service product (requiring, admitting, without warranty services); possible participation in international exchange (imported, exported, for domestic consumption), seller's ethics (voluntary chosen and imposed).

It is necessary to define the basic parameters and quality indices for each type of services in order to assess the quality of services under consideration. The paradigm "meeting expectations — not meeting expectations" can be applied for it (Gronroos, 1991).

Development of the fee-based subsurface resource management is to focus on setting up a system for differential taxation. It will allow considering different interests of users of subsurface resources and the state, motivating companies to lead socially oriented behavior and to use mineral resources efficiently.

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