

# PROBLEMS OF REFLECTING INFORMATION ON SUBSOIL ASSETS IN INTERNATIONAL FINANCIAL REPORTING STANDARDS

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## ABSTRACT

*The article covers to problems of evaluation of subsoil objects and reflecting information on mineral resources in financial reporting. Evaluation of the objects in the mineral resources sector depends on type of the legislative framework for the different stages of geological exploration process in International Financial Reporting Standard 6 (Exploration for and Evaluation of Mineral Resources), Russian Financial Standard, US GAAP and other normative documents. Capitalization of assets at oil, gas and groundwater producing companies is overviewed. It is proposed to capitalize costs associated with the stages of geological exploration process.*

*Capitalization of assets related to subsoil use will allow enterprises of the mineral and raw materials complex to increase their real capitalization, which will increase the resource potential and real investment attractiveness of the company. The results present possibility of capitalizing mineral reserves as mineral assets in mining oil and gas companies, groundwater extraction industry. Two examples of reflecting available mineral reserves in the reporting of oil, gas and groundwater extracting companies are depicted. The timeframe of the research has limits from 2007 till nowadays.*

**Keywords:** Subsoil Usage, Available Mineral Reserves, Geological Exploration Process, Capitalization, Assets, Mining Oil and Gas Companies, Groundwater Extraction.

## INTRODUCTION

Rational use of natural resources is a priority direction for the sustainable development of modern society. Changes in modern society approaches to assessing economic growth and determining the factors for the long-term sustainability of companies lead to the need for assessment and reflection of natural capital in resource-oriented enterprises reporting.

The issues of evaluation and reflecting information on natural resources in financial reporting are relevant for many countries of the world community, as evidenced by: the declaration on natural capital signed by 75 countries and European Commission during the UN Conference on Sustainable Development "Rio+20" (June-2012), the report "Natural Capital" (June-2014), prepared by the Institute of Chartered Accountants in Management Accounting (CIMA) in cooperation with Ernst & Young (EY), the International Federation of Accountants (IFAC) and Coalition dealing with the problems of natural capital (Natural Capital Coalition), in a special issue prepared by PricewaterhouseCoopers financial reporting by oil & gas producing companies (2015).

Analyzing the evaluation of mineral resources and reflection of information on mineral resources in financial reports, several remarks can be made.

Currently enterprises of the mineral and raw materials complex do not in fact reflect the data on the evaluation of the mineral resources in financial statements. This fact leads to a distortion of information about the resource potential of the enterprise, lack of information base for assessing the company's investment attractiveness, which makes it impossible to assess the true capitalization of the company.

Nowadays the presence of a large number of undeveloped problems of the theory and methodology of mineral prospects evaluation is indicated (Wright & Gallun, 2007; Jean, 2000; Makovey, 2007; Pashkevich & Tarabarinova, 2013). Building properly a conceptual framework that is consistent with the of professional practice of assets concepts, justification of the possibility of presenting the financial statements information on changes in the cost of exploration and evaluation of mineral resources assets is a hot topic for modern economic science in the extractive industries.

## MATERIALS AND METHODS

For the most complete and reliable assessment and reflection of information on mineral resources in the financial statements, it is advisable to consider the existing classification systems used in the Russian Federation (Underground resources law, 1992).

According to the degree of geologic certainty, subsoil resources are divided into:

1. Explored reserves-categories A, B, C1;
2. Preliminary estimated reserves-category C2;
3. Forecast resources-categories P1, P2, P3 for solid minerals and C3, D1, D2 for liquid and gaseous minerals.

Category A includes detailed explored deposits with precisely defined limits of occurrence, type, form and size of the deposit. Thus, category A includes fields prepared for exploitation.

Category B includes deposits with approximately defined boundaries, degree of exploration of which is sufficient for making development project of a deposit.

Category C1 includes explored deposits in general terms. It is believed that degree of study of deposits with C1 reserves is sufficient to compile a technological scheme for the development of an oil field or a pilot project for the development of a gas field or underground water deposit.

Category C2 includes deposits with mineral resources estimated for individual samples and examples.

The proposed classification framework makes it possible to identify from the whole aggregate those mineral reserves which will bring economic benefits and which can therefore act as an object of valuation. As a result, reflection of available mineral resources in the amount of categories A+B+C1 is recommend in the reporting of extracting organizations.

It is necessary to agree with postulates given in the report (Natural capital), that (in the 21<sup>st</sup> century, natural capital will become such an important issue for business as in the 20<sup>th</sup> century it was to ensure sufficient volumes of financial capital. Natural capital underlies all other forms of capital, including financial one) (Ernst & Young, 2011). The same document states that «reporting structure in its present form was historically formed at a time when it was assumed that natural abundance would continue forever».

Bernard & Colli (1994) consider that concept of "capital" in modern economic analysis "includes natural resources to the extent that they are prepared for use with the aim of production".

At the same time, information on mineral reserves is essential and necessary for the following purposes: reserves show future cash flows, therefore, they are one of the main indicators for estimating future cash flows; changes in reserves volumes can also serve as an indicator of the assessment of the enterprise activities; a sharp decline in mineral reserves can serve as an indicator for the depreciation of assets, etc. (Chaya & Pankratova, 2010).

According to international standards, the largest Russian mining companies are provided with reserves on average 20 years. At the same time, the largest international oil and gas companies can afford production at the current level without increasing reserves for 13 years. Detailed analysis shows that until 2025 companies will develop existing and prospective deposits. However, after this period, based on the current level of geological exploration, they may face the problem of reserves replenishment. Moreover, a significant part of the reserves in the existing fields is classified as difficult to recover and the level of water cut is over 80% (Ernst & Young, 2011).

In the budgets of Russian enterprises, the share of exploration costs is still insignificant, reflecting a low level of interest in such investments. One of the most important factors when investing in geological exploration is the determination of success of projects. It is expressed in terms of the ratio of capitalized drilling costs (total investment in geological exploration drilling minus the costs of write-off non-productive wells) to the total investment in geological exploration drilling and varies on average between 50% and 90% for Russian companies.

Nowadays it is customary to stipulate in advance the amount of premium for a unit of discovered reserves paid after the adoption of the final investment decision. However, it is very difficult to establish the size of such a premium, as often reserves estimates even after exploration and evaluation drilling may vary greatly. In order to exclude possible disagreements, it is necessary to involve independent consultants who can offer solutions based on effective structuring of transactions. The proposed solutions should be such that the company, in case of a negative result, had no reason to return to the negotiating table to review the initial terms of cooperation (Ernst & Young, 2011).

Currently, within the framework of resumed scientific discussion on the composition of financial statements as a whole and reflection of mineral resources in it, it is proposed to capitalize some or other costs associated with the main stages of geological exploration.

In modern economic literature, capitalization is considered in three aspects (investment, marketing and financial) and is interpreted in three main variants: market value of shares in the joint-stock company; transformation of income into capital; accumulation of own capital.

In this regard, capitalization can be defined as the result of income transformation or part of it into capital, as a result of which there is accumulation of long-term capital-growth of non-current assets through long-term sources of financing (owner's capital (equity) and long-term liabilities). In economic literature in general and encyclopedic publications, in particular, several derivatives of the capitalization of concepts are given:

1. Capitalization of assets;
2. Capitalization of income;
3. Capitalization of land rent;
4. Capitalization of the company;
5. Market capitalization;
6. Capitalization of payments upon liquidation of a legal entity;

#### 7. Shares with the right of capitalization.

Capitalization of assets needs to be observed in more details. Firstly, concept characterizing capitalization of assets, in fact, is the capitalization of costs-transfer of part of current expenditures in capital expenditures.

Secondly, capitalization of assets or capitalization of property manifests itself in absolute and relative increase in capital assets or long-term assets. They can be attributed to almost all components of non-current assets, representing the most attractive collateral in any financial transactions and the most significant part of the company's real property. The most common non-current assets in Russia today are fixed assets of productive and non-productive nature. The most promising type of non-current assets is intangible assets.

At present, capitalization research is mostly empirical in nature. Capitalization is considered in relation to the share market from the standpoint of increasing the capital of joint stock companies whose shares are in free circulation and are listed on the stock exchange. This approach was borrowed from foreign practice and before the financial crisis of 2007-2008, which had a significant influence on financial environment of the Russian Federation.

Over the past five years, placement of shares at western exchanges has become a fairly common tool for attracting financial resources by Russian companies and their owners. So, if in 2004 five Russian companies placed their shares on Russian and foreign platforms for a total of \$ 640 million, then in 2007 there were already 40 such companies for a total amount of attracted funds of \$ 41 billion (Money or reputation, 2008). But in just a few months of the financial crisis owners of public Russian companies lost a total of more than \$ 200 billion as a result of a fall in the value of shares. Thus, at present it would be more appropriate to deal with the real capitalization of assets in the mineral resource complex.

## RESULTS AND DISCUSSION

Capitalization of assets related to mineral resources management will allow enterprises of the mineral and raw materials complex to increase their real capitalization and that will lead to increase of the resource potential and real investment attractiveness of the company.

It is suggested to review the problem of reflecting information on subsoil assets in international financial reporting standards using examples of oil and gas industry and also groundwater extraction system. The choice of definitely these mineral resources is very clear. Oil, gas and groundwater represent a very specific, strategic and important for population types of natural resources. That's why it is more vital to learn the experience of capitalization for these fossil fuels.

As it historically formed, the biggest companies leading their business in oil industry were based on two basic standings groups. The first one, representing the most comprehensive instruction, is Generally Accepted Accounting Principles (GAAP), developed by the American Council accounting to the financial standards of accounting and supplemented by the №1 (SEC).

Until recently, the accounting standards for investors in Russia have been US GAAP, as they regulated the accounting of real situations in oil industry in detail.

Oil and gas industry is a specific one, as special financial accounting regulations were established directly for it:

1. SFAS 19 «Financial Accounting and Reporting by Oil and Gas Producing Companies»,
2. SFAS 25 «Suspension of Certain Accounting Requirements for Oil and Gas Producing Companies»,
3. SFAS 69 «Disclosures about Oil and Gas»,

4. SFAS 143 «Accounting for Asset Retirement Obligations»,
5. SFAS 144 «Accounting for the Impairment or Disposal of Long-Live Assets».

US GAAP involve the requirements of the content of the additional oil and gas activity information which is included in annual company statements. Companies are obliged to submit the following information:

1. Capitalized costs in the sphere of oil and gas extraction.
2. Costs for the acquisition of the reserves their exploration and development
3. Results of oil and gas extraction.
4. Information of the value of reserves.
5. Standardized evaluation of discounted net cash flows.
6. Fundamental reasons for alterations in the standardized evaluation of discounted net cash flows.

The second standards are the International Financial Reporting Standards of Accounting (IFRS) 6 «Exploration and Evaluation of Mineral Recourses» and developed on their bases the Russian standard (Russian accounting standards, 2011) «Accounting for the development of national recourses».

These standards do not apply to cost that arose before the exploration phase, that is, until of acquisition licenses for exploration activities and the cost incurred after the determination of the technical capabilities and commercial viability of mining operations of minerals. They apply only to the mineral assets that occurred during exploration, as well as during evaluation of mineral reserves. It was as a result of evaluation of mineral deposits forms information about the quantity and quality resources in the subsoil. However mineral reserves as mineral assets in the financial report don't reflect.

In the work of Wright & Gallun (2007) it is pointed out that the true cost of the oil and gas company-the cost belong to it reserves that can fairly be attributed to each mining enterprises.

According to PWC's explanations on IFRS, key indicators in assessing the performance of oil and gas companies are their available reserves, as well as their future production and cash flows, which are expected from this production. In accordance with IAS 1, it is necessary to disclose key assumptions and key sources of uncertainty in estimates at the balance sheet date. It is given that reserves and resources affect many important indicators of financial reporting; companies usually disclose information on the valuation of hydrocarbon resources and reserves.

Based on the above, it is possible to state that the first step in the reflection of mineral resources in mining industry balance is the opportunity to disclose information about hydrocarbons stock levels as supplementary information. Nevertheless, the opportunity to take into account mineral reserves in the mining companies' financial reports should be considered.

Asset creation in the International Financial Reporting Standard (IFRS) is analyzed. According to IFRS, mineral reserves including hydrocarbons reserves levels can be considered as an asset if they have the following features:

1. Asset provides economic benefits. Mineral wealth in the assets of financial report is considered to be substantial and necessary asset for purposes definition of company capitalization.
2. Asset can be controlled. It means that company has property rights to objects, thereby taking the right to freely own, use and dispose of its property at own discretion.

These criteria are fully met by such a special economic category as mineral reserves in the subsoil.

Also according to IFRS 6 (Romanuk, 2009), it is possible to capitalize costs in the exploration and production stages, which will be fully reimbursed in future. At the same time, the efficiency of an enterprise is determined by the volume of reserves and future cash flows. In world practice, costs are accounted for at the stage upstream ("Exploration-production"), based on one of two methods: the method of cost-effective costs (at the initial cost, only those costs that are related to future economic benefits are capitalized); the method of accounting for full costs (most of the costs are capitalized at the exploration and mining stage).

An illustrated example of recommended reflecting the available mineral reserves in the reporting is represented for the well-known company «LUKOIL». Lukoil is one of the largest public vertically integrated oil and gas companies in the world in terms of proven hydrocarbon reserves. The Lukoil Group has proven (available) hydrocarbon reserves in six countries. The main part of them (about 90%) is traditional, which is an important competitive advantage. It allows the company to maintain low unit costs for development and production.

The Group's proved hydrocarbon reserves by SEC standards at the end of 2016 amounted to 16.4 billion barrels of oil equivalent, where oil accounts for 76.1% (oil-12.5 billion barrels, gas-23.5 trillion cubic feet). Reserves life was 20 years with an average of 12 years for the world's largest private oil and gas companies. Available hydrocarbon reserves, taking into account the share of affiliates in 2015, counted 16.56 billion barrels of oil equivalent.

Taking into account the average cost of oil and gas in Russia at the considered time intervals, as well as the dollar exchange rate, the value of these reserves in the ruble equivalent was calculated. Thus, additional indicator (line), called «Available oil and gas fields», proposed by the authors was introduced into assets side of the balance-sheet of the publicly held corporation Lukoil (Table 1).

Explanations	Indicator name	Code	At the date of December 31, 2016	At the date of December 31, 2015
	ASSETS			
	I Non-current assets			
1	Intangible assets	1110	367 697	347 421
1	Results of research and development	1120	31 867	33 719
	Available oil and gas fields		3 951 918 000	3 675 876 000
2	Fixed assets	1150	15 426 612	14 781 123
3	Long-term financial investments	1170	1 135 472 697	1 143 632 674
	Deferred tax assets	1180	532 596	493 340
	Other non-current assets	1190	82 833	214 286
	Total for section I	1100	5 103 832 302	4 835 378 563

As it has already been mentioned above, only available mineral resources in the amount of categories A+B+C1 are recommended in the reporting.

Due to the stated task, groundwater resources evaluation system should be analyzed. Groundwater, which is both a part of subsoil and part of total water resources, is a valuable mineral, the use of which in the economy and social sphere and mainly for household and drinking water supply of the population is increasing every year (Golovina & Chvileva, 2017). Groundwater resources undoubtedly belong to strategic types of minerals, since they are in fact

the only source of drinking water supply for the period of emergency situations and the possibility of their use has a significant impact on national security of the countries. The importance of groundwater as the most protected from pollution sources of drinking water supply has increased especially in recent years due to the frequent man-made disasters and terrorist acts (Borevskiy & Yazvin, 2003).

It's vital to notice that during the extraction of groundwater of all types, the assessment of operational reserves is very important. The reserves are counted for the estimated period of water withdrawal (usually 25 years). After that it is necessary to overestimate the reserves. The category of reserves determines the degree of reliability-the higher the category of reserves is, the greater is the guarantee of the subsoil user. Hence the degree of capitalization should be higher. A high category of groundwater reserves means a small risk. As a rule, at large groundwater intakes, revaluation of reserves to a higher category is made forcibly. Large groundwater users are obliged to conduct it, especially if they extract groundwater for domestic and drinking water supply.

The valuation of reserves is tied to the estimated period of the action of water intakes, which means that capitalization must be tied to this. If the category of groundwater resources is low, then a reassessment should be carried out in future, especially if it is a socially significant object. Typical features of groundwater that determine the strategy for the development of its resource base and their capitalization process are outlined:

1. Drinking groundwater, of course, should be considered as a mineral, the extraction of which cannot be carried out in any other way, either through access to the subsoil.
2. Drinking groundwater is a part of the general water resources of the land and planning for their use should be carried out within the framework of schemes for the integrated use and protection of water resources.
3. Underground drinking water as well as other types of minerals, as well as other life support products of the population, should be considered as a commodity produced and marketed in a market economy. In this regard, the quantity and quality of groundwater is subject to preliminary assessment at various stages of subsoil exploration, but also their cost. The cost of groundwater exploited in unvalued areas cannot be determined without a procedure for assessing their operational reserves.
4. In this connection, as for other types of minerals, the question of the capitalization of groundwater resources is raised.

Creation of a reliable base for such capitalization is impossible without unification of modern ideas about different categories of forecast resources and operational reserves of groundwater, ensuring investment attractiveness of their development. The process of groundwater resources capitalization is directly connected with geological and economic assessment (monetary valuation) of a groundwater deposit. Among the main provisions of this area these directions should be listed:

1. Actual geological and economic assessment of the operational reserves of groundwater;
2. Estimation of the value of identified, assessed and explored deposits of groundwater distributed and undistributed fund (monetary valuation) and their investment attractiveness;
3. Creation of the bases for the capitalization of groundwater resources and the principles of the rental basis for their extraction;
4. Development of an uncertainty insurance system (assessment of insurance risks), depending on the rational level of study of groundwater deposits.

An illustrated example of recommended reflecting the available mineral reserves in the reporting is also represented for groundwater extracting company. The state unitary enterprise (SUE) "Vodokanal of St. Petersburg" provides water and sewerage services to residents of St.

Petersburg-5.2 million people, as well as tens of thousands of enterprises and organizations of the city. The owner of the property of SUE "Vodokanal of St. Petersburg" is the city of St. Petersburg in the person of authorized state bodies.

The company's mission is to provide affordable water supply and sewerage services that supply a decent quality of life for consumers, sustainable development of a megacity, the formation of a culture of water consumption and preservation of the Baltic Sea basin.

Although the share of the company's use of groundwater is low (only 3%), the cost of available groundwater resources is calculated, an example of its reflection in financial report is shown. Krasnoselsky groundwater intake is the largest in the city. It is owned by SUE "Vodokanal of St. Petersburg" and equipped with wells and captures to the underground waters of the Ordovician and Kambro-Ordovician aquifers. In 2016, groundwater abstraction from this water intake amounted to 13.23 thousand m<sup>3</sup>/day. As a basis for calculating the cost of groundwater resources, an average water tariff of St. Petersburg is taken (Table 2).

Explanations	Indicator name	Code	At the date of December 31, 2016	At the date of December 31, 2015
	ASSETS			
	I Non-current assets			
1	Intangible assets	1110	333 787	310 995
1	Results of research and development	1120	49 103	63641
	Available (operational) groundwater reserves		336.6	306
2	Fixed assets	1150	227 860 299	219 781 934
3	Long-term financial investments	1170	117 795	117 795
	Deferred tax assets	1180	534 725	476 474
	Other non-current assets	1190	828 341	1 317 711
	Total for section I	1100	229 724 050	222 068 856

Analyzing this example, it is important to note that operational reserves of groundwater mean the amount of water that can be extracted per unit of time from the aquifer rationally in a techno-economic sense by water intake for a given operating regime and with water quality that meets the requirements throughout the estimated service life. Operational reserves are one of the main criteria for the possibility and feasibility of using groundwater for various purposes.

## CONCLUSION

According to the results of our research several inferences can be made. First of all, at present, economic growth, profit maximization, estimating future cash-flows requires the reliable information concerning the company assets. Secondly, such an asset can be considered special economic category-mineral reserves in the subsoil, which in accordance with IFRS meets the characteristics of the asset of financial reporting: asset provides economic benefits, asset can be controlled. Thirdly, at present, companies of the mineral and raw materials complex do not in fact reflect the data on the evaluation of the mineral reserves in financial reports. These companies reflect information about the value of reserves of hydrocarbons stock as supplementary information to the financial report. And finally, information of the most significant asset of mining, oil and gas, groundwater extracting companies-mineral reserves-



possible to be reflected in their financial reports that distorts the capitalization of assets and as a result the company's investment attractiveness.

It is recommended to calculate the market value of water resources using the possible amount of capitalization of the owner's (state's) revenues that it receives or that can be obtained from the possible value of revenues in the form of taxes, water use charges and other sources, taking into account the available physical volume of water resources, existing environmental restrictions, tax and capitalization rates.

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