Assessment and distribution of the hydropower rent

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Assessment and distribution of the hydropower rent

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Abstract. The paper considers the problems of rent distribution peculiar for modern society. Based on the existing external reports of companies-users of natural resources, information technology and the algorithm for calculating the differential rent, the calculations of the annual rent and its current distribution are presented. It is shown that the lack of transparent statistical and reporting information of the companies of tenants/owners of unique hydropower objects does not allow to determine unambiguously the size of a nature-resource rent, in this case a hydropower rent, and, respectively, to create the fair mechanism of its distribution between the company using natural resources (waterways, rivers), and society for the purpose of formation of sustainable ecologic and economic development of the territory. It is shown that faire distribution of a hydropower rent of the Krasnoyarsk hydroelectric power station will allow to provide sharp decrease in deficit of the consolidated budget of Krasnoyarsk Region and increase in financing of ecological actions.

1. Introduction

25 years have passed since the end of the historical in its representativeness (leaders of more than 190 countries of the world) and the results of the UN Conference on Environment and Development in Rio de Janeiro (Rio de Janeiro, 1992). In the Agenda for the 21st Century, in particular, they agreed and approved a new concept of the existence of Mankind - the concept of sustainable development. Sustainable is such a development that leads to meeting the needs of the living generation without reducing the ability of future generations to meet their needs. Ensuring equal opportunities for present and future generations is a pledge of peaceful coexistence of states and respect for human rights. The draft Concept of Sustainable Development was developed in Russia in 1993.

Sustainability of development can be strong when the element of fixed capital - natural capital does not decrease $\frac{dK_N}{dt} \rangle 0$, and weak, where compensation is expected to be created for future generations as a result of a reduction in natural capital $\frac{dK_m}{dt} + \frac{dK_n}{dt} + \frac{dKh}{dt} \rangle 0$.

At the present stage of human development, it is necessary to realize weak sustainability. The most important factor in the implementation of sustainability is the identification and assessment of rental income (rent) at the first stage, as well as their investment (distribution) in the capital created by man.

The issues of equitable distribution of rental income from the use of non-renewable, relatively renewable natural resources, unique natural objects and natural conditions are always relevant.

2. Assessment and distribution of hydropower rent

Currently, considerable attention from government agencies and the scientific community is paid to issues and methods for assessing and distributing rental income from the use of non-renewable energy resources (crude oil, natural gas). Due to export duties, mineral extraction tax, profit tax, dividends of state oil and gas companies, more than 50% of the federal budget of the country is formed. A significant part of the federal budget is replenished by the extraction and use of the natural resources of the regions of Western and Eastern Siberia.

In Krasnoyarsk Region there are 10 legal entities, 7 of which are companies of the subsoil users, which form 53% of taxes of regional budget revenues or a little over 90 billion rubles per year [1]. So, in particular, the share of revenues from the main taxpayer of the region - the company JSC MMC Norilsk Nickel to the budget of Krasnoyarsk Region decreased from 65% in 2012 to 26% in 2015 and amounted to about 42 billion rubles. In 2015, the consolidated budget of Krasnoyarsk Region received 3 billion rubles in tax revenues from the second-largest taxpayer in the region - Rosneft, which produced liquid hydrocarbons in Krasnoyarsk Region in the amount of more than 22 million tons (the Vankor oil cluster), which makes up about 8% of the total production of the company - the oil giant, and in the tax revenues of the budget of Krasnoyarsk Region it made only 1.8-2%.

The imbalance in the distribution of rental income between the federal center and the region leads to a decrease in revenues to the regional budget from enterprises engaged in the extraction and production of products from the subsurface located in Krasnoyarsk Region, as well as an increase in the public debt of the entity. So for the last 10 years (2006-2016) the national debt of Krasnoyarsk Region has increased from 10 billion rubles to 95.7 billion rubles. Planned expenses for the servicing of public debt for the period 2017-2019 total respectively 7.8; 9.2; 9.6 billion rubles [1]. This situation is not sustainable, the attention of regional leaders should be drawn to the activities of the financial and industrial group, which has concentrated in private hands the most important branch of the region - hydropower for the production of primary aluminum.

At the same time, the formation of hydropower rents remains in the background, the importance and scale of which should not be underestimated. The importance of assessing the value of hydropower rents and the efficiency of its use is especially great for the regions of Eastern Siberia (Irkutsk Region, Krasnoyarsk Region, Khakassia Republic). The competitiveness of these regions' economies is largely determined by the use of electricity from hydropower plants.

In the operating area of the branch of JSC SO Unified Energy System (UES) Krasnoyarsk RDU (uniting the power capacities of Krasnoyarsk Region and the Republic of Tyva) there are 19 generating facilities with a total installed electrical capacity of 15,860.88 MW (as of 01.01.2018).

According to the reporting data for 2017, the electric power generation by the power stations of the Krasnoyarsk RDU operating zone (Krasnoyarsk Region and the Tyva Republic) amounted to 59,207.50 million kWh, electricity consumption - 44,755.35 million kWh.

The main generating facilities are as follows: the branch of JSC EuroSibEnergo Krasnoyarsk Hydroelectric Power Plant (controlled by the EN+ Group), Berezovskaya GRES PJSC Unipro (until 23.06.16 - E.ON Russia PJSC), Krasnoyarsk GRES-2 PJSC OGK-2, JSC Nazarovskaya TPP and PJSC Boguchanskaya HPP (RusHydro and Rusal). Hydropower plants of Siberia produce almost 10% of the total output of all power plants of the UES of Russia.

The basis of the Krasnoyarsk energy system, which occupies the 2nd place among the power systems and is included in the UES of Siberia, consists of two large hydropower plants - Krasnoyarskaya (with an installed capacity of 6,000 MW) annual output of about 19 billion kWh and Boguchanskaya (3,000 MW) - with an annual generating about 15 billion kWh, which accounts for about 60% of the electricity generated.

The largest consumers of hydropower energy are the enterprises of RUSAL United Company (Location: Jersey, Channel Islands, registration number 94939, 48.13% of the company's shares belong to En+ energy holding, controlled by Oleg Deripaska, Sual Partners shareholders - 22.8%, ONEXIM Group of Mikhail Prokhorov - 6, 7%, 8.75% - Glencore through Amokenga Holdings, 13.37% are in free circulation, 0.25% of the shares are in the possession of the company's management, including 0.23% of the shares owned by the company's general director) which are main Russian exporters of primary aluminum to the world market - JSC RUSAL Krasnoyarsk and CJSC Boguchansky Aluminum Plant (50% of the shares belong to UC Rusal and 50% to RusHydro - 60.54% in the hands of the Federal Agency for Property Management).

3. Differential rent estimate

The hydropower rent is understood as the additional profit arising as a result of different expenses in the production/generation of a unit of electrical energy/power by hydropower facilities and traditional (thermal power plants, thermal power plants) running on fossil fuels.

The method of estimating the rent/differential rent known, in particular, with reference to hydropower is given in the work of S. Podkovalnikova [4].

Hydropower rent is a sustainable economic effect over the years, obtained through the use of hydropower resources in the regional electric power system and calculated as the difference between the costs of electricity generation by thermal condensation power plants, which close the energy balance of this power system, and hydro power plants using these resources [4].

More than 17,000 million kWh or 87% of the electricity generated by the Krasnoyarsk Hydroelectric Power Plant is used by the aluminum giant JSC RUSAL Krasnoyarsk Aluminium Plant [3]. The cost of production of 1 kWh was 0.128 rubles in 2014, the average selling price (tariff), taking into account the capacity, amounted to 0.57 rubles/kW·h at the end of 2014, the volume of effective supply of electric energy to the grid amounted to 19,598 million kW·h. Profit before tax amounted to 7020.4 million rubles.

Following the algorithm of calculating the differential rent taking into account the specifics of the hydropower industry [2], an estimate of the hydropower rent of Krasnoyarsk Region was obtained - about 29 billion rubles per year. The differential rent distribution is as follows: 22 billion rubles - RUSAL, 7 billion rubles – JCS "EuroSibEnergo" represented by PJSC "Krasnoyarsk HPP". At the same time, annual payments of taxes to all levels of the RUSAL budget system amount to about 1 billion rubles, PJSC Krasnoyarskaya HPP - 3 billion rubles, including 1.44 billion rubles to the budget of Krasnoyarsk Region and the budget of the municipal entity of the Divnogorsk town - 0.157 billion rubles.

The issues of evaluation and fair distribution of hydropower rents with a deep level of understanding and practical application have been studied for more than 20 years by scientists and leaders of Irkutsk Region. In contrast to Krasnoyarsk Region, the leadership of the Irkutsk Region on the basis of the academia research did not allow the full transition of the hydropower industry to private hands. Another example of a rational environmental policy is the inclusion of the clause on the provision of natural gas in natural terms to consumers in the Irkutsk Region if industrial production begins into the license agreement between PJSC Gazprom Rosnedra and the Irkutsk Region regarding the Kovykta OGKM.

Revenues and net income for the 12 months of the reporting period reached a record in the Company's history and amounted to 19.351 billion rubles and 5.400 billion rubles respectively.

The share of electric power generation of the Krasnoyarsk Hydroelectric Station in Russian production is about 2%, in the United Energy System of Siberia - 10%, and in the Krasnoyarsk Energy System - more than 46%. According to the installed capacity, the Krasnoyarsk Hydroelectric Power Plant is among the 10 largest hydropower stations in the world, ranking 2nd in the Russian Federation.

The controlling interest of PJSC Krasnoyarsk HPP is owned by the largest Russian private energy company OJSC EuroSibEnergo (part of the group of EN+ Group companies). It is also worth noting that 2014 was a landmark in terms of corporate governance of the Company. The main shareholder, OJSC EuroSibEnergo, has increased its interest in the Company, becoming the owner of more than 90% of the shares of PJSC Krasnoyarsk HPP.

As a result of the international sanctions policy, since the beginning of 2019, two-thirds of the seats in the board of directors of the leading international vertically integrated aluminium and electricity producer PLC EN+ Group are occupied by independent directors and nearly two-thirds of the company's shares are controlled by minority shareholders and independent US managers. The time will show if these innovations in corporate governance monopolies will allow achieving a positive effect for the economy and the environment of the region.

4. Conclusion

Thus, based on the use of information technology, a systematic approach is used to analyse the sources of hydropower rent generation and the features of the distribution of rental income from the use of natural resources. Algorithmic and informational support was developed for the calculation of differential rent taking into account the specifics of the hydropower industry. Using the example of the Krasnoyarsk Hydroelectric Station, estimates of hydropower rents and options for its distribution have

been obtained. It is shown that accounting for hydropower rents, its fair distribution in favour of the region can provide a positive dynamic for the development of the economy of Krasnoyarsk Region.

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