

# Instruments for Conservation and Sustainable Use of Water Resources in the Baikal Natural Area

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## Abstract

The present paper contains the results of a review of economic instruments for water resources management in the Republic of Buryatia prepared under the OECD project “Improving the use of economic instruments for water management in the Republic of Buryatia (Lake Baikal basin)” and aimed at supporting the policy dialogue on water in Russia, in cooperation with the EU Water Initiative. Based on the analysis, some recommendations were developed for improving the use of instruments for water resources management in the Republic of Buryatia as a part of the Baikal Natural Area.

## Keywords

Economic Instruments, Water Resources, Tariffs, Paying for Water as a Resource, Pollution Charges, Budget Financing, the Baikal Natural Area, the Republic of Buryatia

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## 1. Introduction

The Organization for Economic Cooperation and Development (OECD) project “Improving the use of economic instruments for water management in the Republic of Buryatia (Lake Baikal basin)” is part of a series of projects implemented under the aegis of the OECD within the EU Water Initiative, applied to the Eastern Europe, Caucasus and Central Asia region (EECCA). The OECD engaged with a group of consultants to implement the project on a contractual basis during the period from December 2013 through March 2015. Mr. A. Martoussevitch (OECD) managed the Report preparation. The Report was prepared by a group of consultants led by the Deputy Director of the Municipal Economy department (Institute for Urban Economics), Mr. L. V. Pertsov. The Report was co-authored by a group of consultants (researchers) (Baikal Institute for Nature Management of the Siberian Branch of the Russian Academy of Sciences, the authors of this paper).

The following approach was applied in the analysis of economic instruments for water resources management (WRM): after implementation of a summary review of the general status of water resources and water infrastructure, as well as the institutional and legal frameworks of the water sector, the following points are outlined:

- Key goals and objectives of the socio-economic development of the relevant territory and major problems and challenges facing the water sector (water resources and water infrastructure management) on this territory;
- Key economic instruments for water resources management on this territory (taxes, tariffs, etc.), which are assessed with the help of the OECD-EU methodology, including environmental, financial, economic and social criteria [1] [2], with focus on the practices of application of the reviewed instruments and their conformity with the goals and objectives of the socio-economic development, problems and challenges faced by the water sector on this territory;
- Recommendations for improvement of economic instruments for WRM on the territory in question, based on the assessment of the effectiveness of WRM instruments and international best practices. This approach was earlier successfully applied in Kyrgyzstan [1] and the Russian Federation at the federal level [2].

## 2. Water Resources of the Republic of Buryatia and Their Use

In terms of available freshwater resources, the Republic of Buryatia (RB) is a truly unique place. The total volume of freshwater resources in Buryatia is estimated at 15.7 thousand cubic kilometers. The major part of Lake Baikal is located on the territory of the Republic. The lake is the deepest freshwater lake in the world and holds 1/5 of global freshwater resources of the highest quality. The region's rivers belong to three larger river basins: the Lake Baikal river basin, and the basins of river Lena and river Enisey. 52% of Buryatia's territory (*i.e.* 182.7 thousand sq·km) lies in the Lake Baikal basin [3].

In 2013, the total volume of freshwater used in Buryatia amounted to 517.8 million cubic meters. Most freshwater is used for the needs of manufacturing industry (83.2%), followed by drinking water supply for domestic needs –7.7% (mainly from groundwater sources). Irrigation and other agricultural needs amount to 6% of the total volume of fresh water abstracted.

## 3. The Baikal Natural Area

The BNA comprises the territories of three Russian regions (subjects of Russian Federation): the Republic of Buryatia, Irkutsk Oblast and Zabaikalski Krai. The total area of the BNA amounts to 386.2 thousand sq·km and can be categorized as follows: Buryatia, with 220.4 thousand sq·km (57.1% of the BNA), Irkutsk Oblast with 110.1 thousand sq·km (28.5%), and Zabaikalski Krai with 55.6 thousand sq·km (14.4%). The BNA's area is comparable with the total area of all national parks and reserves in Russia (which amount to 464 thousand sq·km in total) [3]. The BNA is a large-scale natural, social and economic system with a complex structure, performing various functions, the most important of which is the conservation of Lake Baikal. The unique environmental system of the lake is a Russian national asset and a UNESCO World Heritage Site (1996). The BNA has a number of unique natural specificities, which have no parallel on our planet, and its diversity and unique nature necessitate a multi-faceted, integrated and systemic approach to the research, conservation and use of the BNA.

The regulation of the conservation and use of the natural resources in the Lake Baikal basin differs from the legal regulations established for other water bodies on the territory of Russia. The specific status of the unique ecosystem of Lake Baikal is reflected in a number of federal legal acts: first in the Federal Law “On Lake Baikal Protection”, and the targeted federal program “The conservation of Lake Baikal and the socio-economic development of the Baikal Natural Area for 2012-2020”. The Federal Law “On Lake Baikal Protection” established requirements for the conservation of the lake and the sustainable use of natural resources of its basin. The Federal Law defines the regime of conservation and the use of natural resources in the Lake Baikal basin. Within the Baikal Natural Area (BNA), three environmental zones have been established: a central zone, a buffer zone and an atmospheric impact zone. For each zone, specific conditions and restrictions on economic activities and specific standards for environmental impacts have been defined. The most stringent restrictions and bans were set for the territories within the central environmental zone, including Lake Baikal, its water protection zone and the protected natural areas adjacent to Lake Baikal.

## 4. Water Sector Management Institutions

The federal regulatory framework distributes rather well the core functions for water sector management among several institutions. The federal executive branch plays a key role in water resources management. Institutional

responsibilities assigned to regional and municipal authorities are very limited. The mandated implementation activities are regulated in great detail by federal acts.

An Inter-Agency Commission for the conservation of Lake Baikal was established in 2007 to coordinate the activities of the public authorities with regard to the BNA and address regional socio-economic development issues based on the principles of sustainable development. The Commission contributes to enhancing the efficiency of water sector management in the region, although the most important issues to be addressed in the water sector in Buryatia are beyond its mandate.

## 5. Water Infrastructure

The infrastructure of the water sector of the region is facing a number of urgent problems, including:

- The unsatisfactory condition of the hydro-technical structures in the Republic, including almost 60 crumbling infrastructure schemes which urgently require rehabilitation;
- In 2012, the region ranked 79th among 83 RF constituent subjects for the accessibility of centralized WSS for households; more than a quarter of WSS networks needed to be replaced, but the actual rate of replacement is dozens of times lower than the standard rate;
- More than 50% of wastewater is discharged into water bodies without any treatment;
- The irrigated area of the RB shrank from 213,200 hectares in the late 1980s to 149,300 hectares in 2012. The financing of irrigation systems is not sufficient even to simply rehabilitate existing systems.

## 6. Goals for Water Resources Management in Buryatia and the Baikal Natural Area

Federal programme on the management of resources and the conservation of Lake Baikal pursue the goal of protecting Lake Baikal and the BNA against adverse effects of human and economic activities as well as natural factors. At the same time, the Republic of Buryatia, when identifying priorities for the conservation and sustainable use of water resources, has to ensure a balance between two goals: the protection of Lake Baikal and the BNA against adverse effects, and the sustainable economic development of the Republic. The task of protecting the population against the negative impact of water-related hazards is shared by both federal and regional programmes. A specificity of water resources in Buryatia is the absence of water scarcity for the majority of the populated areas. Therefore, public authorities managing water resources do not face the task of improving the efficiency of allocation of water between competing uses and users. While this approach seems fully justified due to the abundance of water resources in the Republic, it does not provide incentives for innovation. However, innovations can not only improve the efficiency of water use, but also result in economic benefits (for example, in the growth of production of goods for similar levels of effort and for the same amount of used raw materials, energy, water and other natural resources).

## 7. Paying for Water as a Resource

The system of paying for water as a resource is fully established in the federal legislation in Russia. Fees for water are made either under contracts for water use (for water abstraction from surface water bodies) or in the form of a water tax (mostly for water abstraction from groundwater bodies, and only to a minor extent for water abstraction from surface water). The water abstraction fee and the water tax are collected on a volumetric basis in the Russian Federation. The system of fees and taxes for water is used as a source of replenishment of the budget and does not perform the function of regulating water abstraction. The recovery of expenditures for the water sector through the aforementioned taxes and fees is not viewed as an objective at the state level in Russia.

The revenue generated by these fees and taxes is fully centralized in the federal budget. Aggregate revenues collected in RB in recent years amounted to RUB 200 - 250 million annually, which is by one or two orders of magnitude smaller than the total expenditure of the water sector in the region. A reduced rate (RUB 70 per thousand cubic meters of water) is established for water abstraction drinking water supply and domestic purposes (depending on the water basin, 10.3% to 28.5% of total payments are made at the full rate, without any discount). There is some duplication within the system of instruments for paying for water as a resource, as fees for water use coexist with the water tax. However, the bodies of state power of the Republic of Buryatia do not believe that such duplication may cut down budget revenue or unreasonably complicates the overall administration of the two instruments.

The specific status of the BNA is accounted for, through a coefficient applied to the water abstraction rate for water reservoirs of Lake Baikal basin. The fee for water abstraction from the lake's basin is the highest in the RF and is the same of all environmental zones of the BNA.

## 8. Tariff Policy in the Water Supply and Sanitation and Irrigation Sectors

The low level of development of the water supply and sanitation (WSS) sector in RB is, to a great extent, a result of low levels of financing: the proportion of investment expenditure in the prime cost structure over the last five years was almost two times smaller than the average figure for Russia.

The revenue currently generated by the tariffs of vast majority of WSS utilities in Buryatia does not even cover the costs of a basic rehabilitation of fixed assets. Meanwhile, the scope of the budget support to the WSS sector in the Republic has been minimal, compared with other regions of the RF.

The potential for increasing WSS investments is currently limited, as the Federal legislation imposes limitations on increasing WSS tariffs for residential customers—the main users of WSS services—regardless of the obvious need to increase investments in modernizing and developing the WSS sector (primarily through increasing the amount spent on investment in capital expenditure within WSS tariffs), and in spite of the high affordability of WSS services to consumers.

Irrigation systems in the RB are mostly financed through federal budget funds. Both in the Republic and in the rest of Russia, a fee for the transportation of irrigation water is set, although the amount of this fee is very small (on average RUB 2000 per hectare and per season), and the payments collection rate is low. Irrigation systems do not pay for the costs of surface water as a resource.

## 9. The Water Sector Budget

In the 2000s, the overall financing available from the public budget for water infrastructure and water protection activities was highly unstable. There were acute fluctuations in the scope of financing, the sources and the structure of budget financing: in 2007, budget financing amounted to RUB 231.3 million; in 2009—RUB 915.7 million; and in 2011—RUB 275.1 million. At the end of 2012-beginning of 2013, the scope of budget financing for the water sector was increased, as a number of federal and regional programmes were approved and their implementation started. These programmes envisage a major growth of financing from public funds in the coming years.

The analysis of the difference between actual budget financing and planned financing needs, as well as a review of the water sector target indicators for the period up to 2020, shows that a drastic increase in direct public financing is crucial to halt further degradation of the infrastructure. Nevertheless, the condition of water infrastructure in the region will remain highly problematic, if additional sources of financing (outside of the budget) are not mobilized through economic instruments for water resources management. Moreover, decisions on financing from the federal budget are made at the federal level and, accordingly, such financing is less sustainable and predictable than financing from regional and local sources, which are directly related to the RB and BNA.

## 10. Cross-Subsidizing the Energy Sector and Neighboring Regions at the Expense of the Republic of Buryatia

In the 1960s, a cascade of hydroelectric power stations (HES) was constructed on the Angara River in Irkutsk Oblast. As a result, the level of the water table of Lake Baikal is higher than before. The major negative resulting environmental and economic effects are borne by the RB, whereas the income generated by the hydroelectric complex is perceived by Irkutsk Oblast.

## 11. Other Economic Instruments for Water Resources Management

Apart from the fees and tax levied on the use of water as a resource, tariffs charged by WSS utilities, tariffs for water supply to irrigation systems, and budget financing, the major economic instruments for water resources management include charges for a negative impacts on water resources (pollution charges), payments for ecosystem services, and external financing of the water sector and water protection measures (outside of the budget). These instruments may have a certain positive impact on water infrastructure and environmental management, but in general their role has so far been quite limited.

Charges for negative impacts on water or the environment is, obviously, a useful economic mechanism, but respective revenues in RB have so far been insignificant (from RUB 3 to 11 million per year over the last couple of years). Moreover, the mechanism for computation of the amount charged for these negative impacts is currently being reformed, and its role in fostering environmental actions is rather low. The provision of ecosystem services in Buryatia is limited and is mostly related to the use of the specially protected natural areas. According to the authors, not all private investments are accounted for in statistics. However, even with this in mind, it can be said that the role of private investments is not significant.

## 12. Administrative Restrictions and Their Implications

Administrative instruments for water resources management are based on bans and restrictions imposed on certain economic activities for environmental purposes, on the use of the resources of the BNA and on the drainage and discharge of harmful substances that generate a hazard for the ecosystem of Lake Baikal. The central environmental zone, where the strictest bans are applied, is located within 20 km of the lake's borderline on average. The bans on this territory are imposed on: extraction of mineral resources, logging and wood harvesting, construction of roads and other transport structures (with some exceptions), and construction of new industrial facilities. Serious restrictions are also imposed on wastewater removal and disposal of municipal waste [4]. The role of administrative instruments in the Republic of Buryatia is somewhat controversial:

On the one hand, administrative bans and restrictions produce an enormously positive effect on the ecosystem of Lake Baikal. Once the system of bans was established in the 2000s, the discharges of polluting substances into surface water bodies in Buryatia have been reduced from 46 to 25 thousand tons per year, despite the fact that this happened during a period of economic recovery following a deep transformational recession. At present, the Republic produces a “cleaner” GRP (Gross Regional Product) than average in Russia and in neighbouring regions.

At the same time, the system of bans and restrictions does not reach a balance between protection of the BNA and the need to ensure the economic development of the Republic. The existing restrictions increase production costs and result in lost economic opportunities for the Republic: as estimated by the regional public authorities, every year the Republic loses between 5% and 7% of the GRP due to these restrictions [5]. In terms of per capita GRP, the RB dropped from 44th place in 2007 to 59th place in 2011 (among all constituent subjects of the RF). The ratio of the GRP per capita in the RB to the average for the RF decreased from 56.9% (in 2007) to 51.5% (in 2012).

Environmental restrictions are not the only factor impeding the economic development of the region. However, they obviously produce a negative impact on the standards of living.

## 13. Major Issues Facing the Water Sector

We concluded that the most acute problems facing the water sector in the RB are as follows:

- Inadequate alignment between target setting and inefficient coordination of public authorities activities in the process of management of the BNA, including its water resources management;
- The slowdown of the socio-economic development of the RB as the result of administrative restrictions and bans established for the BNA (but not always justified);
- A major funding gap for the rehabilitation of water infrastructure of all types;
- Insufficient incentives to discourage polluters from discharging pollutants into water bodies and to implement environmental interventions;
- Deterioration of WSS systems and irrigation systems;
- Littering near water bodies and near the shores or river banks, diffuse pollution and pollution with liquid domestic wastes;
- Inadequate risk management for the negative impacts of water-related hazards (floods, under flooding, mudflows) in the RB territory.

## 14. Key Areas of Improvement for Economic Instruments for Water Resources Management

The recommendations are based on the need to ensure a balance between two goals: protecting the ecosystem of

Lake Baikal and promoting a sustainable socio-economic development of the Republic of Buryatia. They take into account the current condition of the water sector in the Republic and the specificities of water sector management in the RF in general.

Specifically, the key areas of improvement of economic instruments for water resources management in the RB are as follows:

- Optimizing water abstraction fees, taking into account the fact that there is no shortage of water resources in the RB;
- Improving the collection rate of tariffs for irrigation of agricultural land, and introducing a payment for water as a resource;
- Introducing a large-scale system of payments for ecosystem services, with subsequent ringfencing of the revenue generated in a dedicated fund for targeted use. The introduction of a “resort fee” could become a first step toward payments for ecosystem services;
- Assessing the environmental and economic damage incurred by the RB because of the Angara cascade of HES, and implementation of a system of compensatory payments and re-distribution of hydroelectric revenue inclusive of the RB;
- Imposition of a special tax on products sold in the BNA which may potentially contaminate the environment and could be replaced by environmentally safe equivalents;
- Introduction in the Baikal Natural Area of compulsory environmental risk insurance and relevant liability insurance for elimination and reimbursement of damages to the environment and third parties.

An additional measure deserving attention is:

- Implementation of a set of projects for rehabilitating and upgrading water infrastructure, which will be financed through the establishment of higher rates for WSS tariffs and/or through additional federal financing for the Republic of Buryatia.

The main recommended measures, complementary to the development of the above economic instruments, are as follows:

- Relaxing the complete ban currently in effect on a range of activities necessary for the development of settlements in the central environmental zone (based on thorough research aimed at identifying the limits of such reforms, given the current and expected human influence on the ecosystem of the region);
- Designing a regulatory framework for compulsory disclosure of information on the environment performance indicators of industrial and infrastructure facilities located in the BNA with their subsequent rating and benchmarking, as well as the assignment of eco-status and eco-labelling;
- Implementation of measures that are aimed at ensuring that the fluctuations of Lake Baikal’s water table level are as close to natural fluctuations as possible (by regulating operations of the hydroelectric power stations (HES) of the Angara cascade, and through the monitoring of the fluctuations of the water table level).

We would like to highlight that the most important task of the RB Government, as outlined in many strategies and programmes, is the creation of proper conditions for changing the structure of the economy of the Republic in order to ensure the development of environmentally-oriented activities. To address this, further research is needed in order to help evaluate the feasibility of revising current bans on activities, which are necessary to the development of settlements in the central environmental zone.

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