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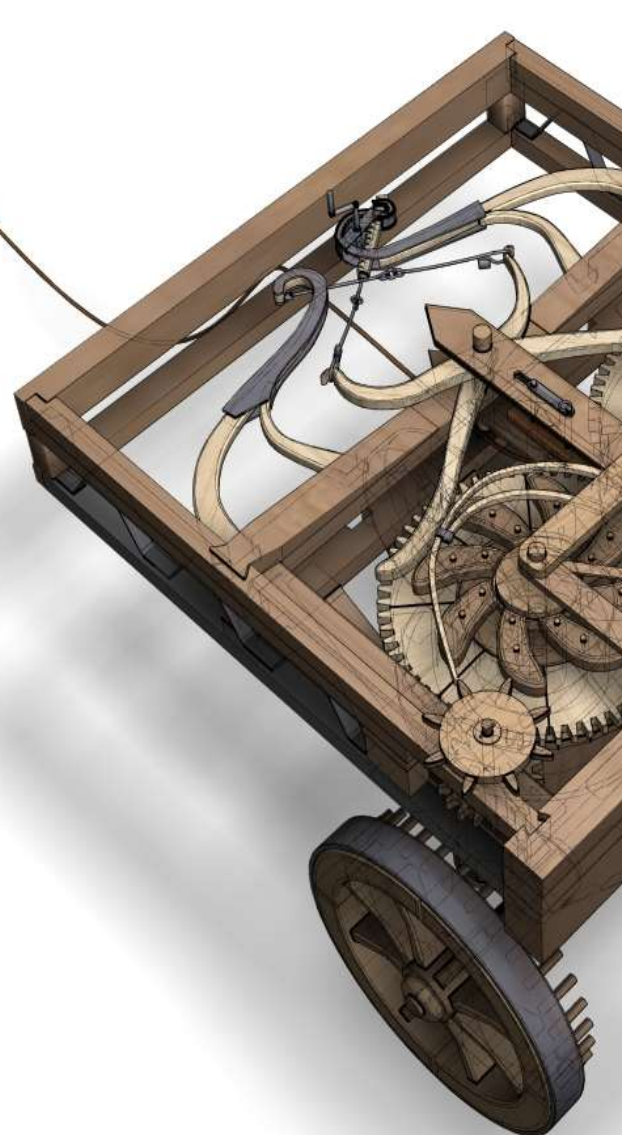
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Water Resources as the Material Basis for Further Strategic Development of the Republic of Kazakhstan

Kuanysh Daniyarovich KUSMAMBETOV
Turan University, Kazakhstan
k.k.d.1988@mail.ru

Saule Zhussupbekovna SULEIMENOVA
Turan University, Kazakhstan
s.suleimenova@turan-edu.kz

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Abstract

Of all various kinds of natural resources that provide vital activity of all kinds of living organisms, people, society and state, the most important are water resources without the presence of which it is impossible not only for human life itself but also for the whole environment.

Waters are the most important components of the environment, renewable, limited and vulnerable natural resources. They are used and protected as the basis of life and activities of the peoples living on the territory of the Republic of Kazakhstan, provide economic, social, environmental well-being of the population, the existence of fauna and flora (Fedtsov, V.G., Fedtsova, A.V. and Ezhov, Y.A. 2005).

Occupying the 9th place in the world in terms of the size of its territory, the Republic of Kazakhstan due to its geographical location, local climate, dependence on transboundary water resources and other reasons, belongs to the category of one of the poorly water-secured regions of the globe. This fact entails the need to organize the processes of the most careful attitude to water resources, the legal provision of its rational use and all-round protection from pollution, littering and depletion, in order to ensure water security not only for the citizens of the Republic of Kazakhstan, but also for all mankind.

Keywords: water; water resources; water legislation; natural resource management; nature consumption; legal regulation; water law.

JEL Classification: Q25; Q53; K32; R11.

Introduction

Effective water management ensures greater productivity in all sectors of the economy and contributes to the health of the ecosystem.

The water reforms conducted in Kazakhstan aimed at achieving market reforms and improving the welfare of the population do not always achieve the expected results, which entails the need for radical revision of the goals, objectives, principles and methods of legal regulation of water relations. There is a need for a comprehensive analysis of the new market water legislation defining the legal status and legal regime of water resources, which also includes a broad-spectrum analysis of regularities of legal regulation of all types of water relations related to rational use of water resources, their legal protection and ensuring water security.

In the system of natural objects of the Republic of Kazakhstan, as well as in other states, the most important place is occupied by *water resources*, which are necessary conditions and basis for social, economic and ecological well-being of the population, existence of fauna and flora.

Around the world today, the main cause of water problems is that while water is important and most of the water is used in the economy. However, water is not distributed through market mechanisms and has twofold implications for assessing economic impacts and modeling water systems. Water withdrawals are rarely observed in terms of both quantity and quality.

Improved water supply and efficient water management stimulate countries' economic growth and contribute significantly to poverty eradication. National economies are more resilient to variability in rainfall, and economic growth accelerates when water storage capacity increases.

1. Literature Review

Legislatively strict interpretation of the concept «water resources» defined by the legislator in Article 6 of the Water Code of the Republic of Kazakhstan, according to which «water resources of the Republic of Kazakhstan represent the reserves of surface and groundwater concentrated in water bodies, which are used or can be used» is also sufficiently perfect.

In characterizing the water resources of Kazakhstan, it should be assumed that they are represented by 85 thousand large and small rivers. A total of eight river water basins have been identified in Kazakhstan: Aral-Syrdarya, Balkash-Alakol, Ertis, Yesil, Zhaik-Caspian, Nura-Sarysu, Tobol-Torgay and Shu-Talas. Seven of them, except Nura-Sarysu, are transboundary (Erenov, Sakhipov, Mukhitdinov, etc., 1977; Baisalov 1966; Mukhitdinov and Tukeyev 1995; Suleimenova 2001; Bekisheva 2009; Mukasheva 2010).

In addition, the Caspian Sea and the Aral Sea, as well as thousands of lakes, the largest of which are Lake Balkhash, Alakol, Zaisan, Tengiz, etc., are located in the territory of the Republic of Kazakhstan.

The complex of lakes of Northern Kazakhstan consists of wetlands of international importance, mainly as waterfowl habitat.

The total freshwater reserves of Kazakhstan are estimated at 429 km³, including: 80 km³ account for glaciers; 190 km³ are concentrated in lakes; 101 km³ are river resources; and 58 km³ are predicted groundwater reserves (Senate of the Parliament of the Republic of Kazakhstan, 2019).

The main volume of water resources in Kazakhstan is provided by surface water in an average annual volume of 100.5 km³. Of these, only 55.9 km³ are formed in the territory of the Republic. The remaining volume - 44.6 km³ comes from neighboring states: China - 19.4 km³ Uzbekistan - 14.5 km³, Kyrgyzstan - 3.24 km³, Russia - 7.5 km³ (Senate of the Parliament of the Republic of Kazakhstan, 2019).

2. Methodology

The legal and methodological basis for differentiation of the concepts of «water», «waters», «water resources», «water objects», and «water fund» is widely enough elaborated in the modern water law literature of Kazakhstan, where a significant place is given to the analysis of issues of differentiation and institutionalization of the legal content of water resources. The most detailed data on their system and institutional distinction are reflected in works of well-known scientists of Kazakhstan, who made an invaluable contribution to development of theoretical and methodological foundations of the water law and water legislation of Kazakhstan.

3. Case Studies

Additional sources of fresh water are groundwater approved for exploitation, with reserves of about 15.6 km³, desalinated seawater and other sources (Senate of the Parliament of the Republic of Kazakhstan, 2019).

Water resources are extremely unevenly distributed over the territory of Kazakhstan. The eastern region accounts for 34.5% of resources, the southeastern region 24.1%, the southern region 21.2%, the western region 13.4%, the northern region 4.2%, and the central region 2.6%. East-Kazakhstan oblast is the most supplied with water – 290 thousand m³ per km². At the same time, Atyrau, Kyzylorda and especially Mangystau oblasts experience acute deficit.

The water supply of economic sectors is provided by 85% by surface water, the rest by underground, sea and wastewater. More than 65% of all consumed water is used for agriculture (The Concept for the Transition of the Republic of Kazakhstan to a Green Economy, 2019).

Water resources of Kazakhstan represent a living, unique and vulnerable natural system, which in many respects is exposed to external risks to a greater extent than in other countries and there are many reasons for this:

- First, the drainless basins and high levels of evaporation from the surface of the lakes result in significant water consumption to maintain them (30 billion m³ are needed to stabilize lake ecosystems);

- Second, dependence on transboundary rivers from China, Russia, Uzbekistan, and Kyrgyzstan, which account for 44% of surface water inflow, is rapidly decreasing due to accelerating economic and social development of neighboring countries. According to forecasts, the inflow of transboundary rivers may decrease by 40% already by 2030;

- Third, Kazakhstan's water resources are affected by global warming, and a temporary increase in glacier melting will affect future water resources (rivers in the south of the country are most at risk) (Concept for the Transition of Kazakhstan to a Green Economy, 2019). Continuing population growth, climate change and globalization have led to multi-regional, multi-sectoral dynamics of water scarcity. This situation will be a more important driving force and consequence of water scarcity.

Continuing population growth, climate change and globalization have led to multi-regional, multi-sectoral dynamics of water scarcity. This situation will be a more important driving force and consequence of water scarcity.

The annual growth of Kazakhstan's demand for water resources, which increases steadily from year to year, creates risks and a situation of tension in the ecological state of the environment. Among the key global risks of modern times in the sphere of environmental security, we should highlight the risks of water security, the presence of which is caused by many negative factors of human impact on the natural environment.

The needs of Kazakhstan in water resources are objectified in reality as a result of the cumulative impact of a set of objective factors affecting the state of water resources:

- firstly, there is a tendency of constant demographic growth of population all over the world, coupled with intensive socio-economic development of many states of the world, as permanent consumers of water resources;

- secondly, irrational nature management, careless and sometimes even predatory attitude to natural objects, expressed, for example, in the form of changing water consumption pattern, leading to limited and threatened water resources depletion;

- third, intensive pollution, contamination and depletion of surface water and groundwater as a result of application of outdated or not perfected technologies of water use and water disposal, carried out without observance of established hydro-technological norms, standards and rules or with violation of rules of nature protection mechanisms;

- fourth, lack of regulation of issues related to joint use and protection of transboundary waters at the level of international water relations;

- and, finally, underdevelopment and collision of national water legislation, which is not able to regulate water relations between subjects of water use in full, which leads to different kinds of conflict situations with many forms of negative expression and undesirable consequences, etc.

In the context of the above said, in the sphere of defects of psychology of water consumption and irrational use of water resources, one more indisputable fact should be paid attention to. As S.A. Bogolyubov rightly points out, «for many centuries, consumption of natural resources seemed boundless and unlimited: a man fought with nature, tried to subdue it, and did not expect any favors from it. Gradually it began to retaliate: mass deforestation led to the formation of landslides, ravines, washout of soil; the discharge of pollutants into water bodies dramatically reduced the drinking quality of water; the growth of motor transport, industrialization, urbanization deprive the atmosphere of the necessary amount of oxygen; chemicalization and intensification of agriculture led to the presence of harmful substances in food» (Bogolyubov 2001).

That is why the advanced international community in «the most industrially developed countries has long been sounding the alarm about an impending or already existing ecological crisis, not only on the scale of one or more countries, but on the scale of the entire planet Earth» (Bogolyubov 2001).

Today, all mankind recognizes the socio-economic importance of water resources as the basis of population life and activity. And this, first of all, is expressed in the fact that throughout the history of human development, water resources are one of the most important, vital and highly important components of the environment that is the basis of life and activity of the population and represents not only an object of nature, but also an object of law, an object of water relations.

Modern legal definition of water is regulated by Article 5 of the Water Code of the Republic of Kazakhstan dated July 9, 2003, where with categorical legal dominance, water is defined as the totality of water in water bodies, which are «concentrations of water in land surface reliefs and subsoil, with borders, volume and water

regime. These are: seas, rivers, equivalent channels, lakes, glaciers and other surface water bodies, parts of subsoil containing groundwater» (Water Code of the Republic of Kazakhstan, 2021).

Hence, it follows that the water fund of the Republic of Kazakhstan includes the totality of all water bodies within the territory of the Republic of Kazakhstan, included or to be included in the state water cadastre (Water Code of the Republic of Kazakhstan, 2021).

Waters are characterized by huge species diversity, unlike, for example, land, which is a homogeneous category as the object of the right. In addition to the species diversity, waters are personified, that is, for the most part; water bodies have their own name (the rivers Ishim, Irtys, Tobol, Lake Balkhash, the Caspian Sea, etc.) (Bekisheva 2009).

Water resources of the Republic of Kazakhstan represent surface and groundwater reserves concentrated in water bodies, which are used or can be used (Water Code of the Republic of Kazakhstan, 2021).

The peculiarity of waters is that categories and types of water bodies are distinguished not by the main purpose, as, for example, land categories, but by physical and geographical features. Waters can be classified according to different criteria (Bekisheva 2009).

3.1 Socio-Economic Significance of Water Resources of The Republic of Kazakhstan in the System of Their Consumption

The socio-legal, economic and political importance of water resources in the life of society and the state can hardly be overestimated. Thus, the Kazakh researchers, Mukhitdinov N.B. and Tukeyev A.Zh., exploring the problems of water ownership in the Republic of Kazakhstan during the transition to a market economy, come to the conclusion that water resources along with other natural resources constitute the material basis of sovereign Kazakhstan. The level of material well-being of the people, the whole country depends to a great extent on how they will be used (Mukhitdinov and Tukeyev 1995).

Another ground contributing to justification of social and legal importance of waters, which are the basis of life and activity of the population, is that waters, according to the Constitution and water legislation of the Republic of Kazakhstan, are in the state ownership. Thus, according to paragraph 3 of Article 6 of the Constitution of the Republic of Kazakhstan, «The land and its subsoil, waters, flora and fauna, and other natural resources are in the state ownership. Land may also be in private ownership on the grounds, conditions and within the limits prescribed by law» (Constitution of the Republic of Kazakhstan, 2021). As can be seen from the disposition of the article of the Constitution of the Republic of Kazakhstan under consideration, of all the natural objects, only land may be in private ownership on the grounds, conditions and within the limits established by the legislation. At the same time, attention should be paid to one essential detail, obviously existing as some kind of historical heritage. Thus, if the constitutional provision establishing the form of water ownership says that waters are in «state ownership», then the Article 8 of the Water Code of the Republic of Kazakhstan from July 9, 2003 defines that the water fund of the Republic of Kazakhstan is in «the exclusive state ownership». Here is how it is written about it in the law:

1. The water fund of the Republic of Kazakhstan is in *exclusive* (italics ours: - K.K.) state ownership.
2. The right to own, use and dispose of the water fund is exercised by the Government of the Republic of Kazakhstan.
3. Actions of individuals and legal entities violating the right of state ownership of water bodies are invalid and entail liability provided for by the laws of the Republic of Kazakhstan (Water Code of the Republic of Kazakhstan, 2021).

In our opinion, giving «exclusivity» to the right of state ownership of waters under the Water Code of the Republic of Kazakhstan as of July 9, 2003 is conditioned by the traditions of legal succession left to us from the Soviet past, when the environmental legislation of that time determined that all natural objects are in the «exclusive ownership of the state». In another case, such statement of the problem can be perceived as a phenomenon conditioned by the meaning of the popular wisdom that «Water is life», and such approach of the legislator is not accidental, since by that he singles out water by its use value from the total array of natural resources.

As L.I. Dembo has noted, the object of the right of state ownership over waters is water resources as natural resources that have economic significance and are used in various sectors of the water sector (Dembo 1948).

At present, the state form of water ownership is essentially the basis for all other types of water social relations that develop in the field of their rational use and protection, especially since the right of water use is derivative and dependent on the right of state ownership of waters.

The right of water use is characterized by the licensing system (except for the right of general use of waters by citizens for satisfying their personal needs that are not related to economic activities). As a general rule, the right to use waters arises on the basis of civil-law contracts, which corresponds to the spirit of market relations, or special permits of competent state bodies, which have the right to terminate this use in cases provided by law, including the need to use them for other state and public needs (Soviet Land Law, 1981).

Today, the main sense of the state's activity in the system of water relations is that the state is obliged to distribute water resources of Kazakhstan so that they could be used most expediently and efficiently by all water users without exception.

The achievements of the developed world in strengthening macroeconomic stability with sustainable economic growth are very mixed. Where success is evident, most of the economic transformation has taken place at the macro level, and there are many adjustments to be made at the water user level.

3.2 Problems of Differentiating the Concept of "Water Resources" from the Concept of «Water Objects»

It is necessary to differentiate the concept of «water resources» from the concept of «water objects», since by their legal nature and legal status they are not concepts synonymous.

Distinction between the notions of «water resources» and «water objects» is given by the legislator himself. Thus, according to Article 5 of the Water Code of the Republic of Kazakhstan, «water bodies of the Republic of Kazakhstan include water concentrations in the land surface topography and subsoil having boundaries, volume and water regime. They are: seas, rivers, canals equated to them, lakes, glaciers and other surface and underground water objects» (Water Code of the Republic of Kazakhstan, 2021).

Defining the notion of «water resources», the legislator focuses on the fact that water resources of the Republic of Kazakhstan «are the reserves of surface and groundwater concentrated in water bodies, which are used or can be used» (Water Code of the Republic of Kazakhstan, 2021).

From provisions of the above-mentioned norms of the Water Code of the Republic of Kazakhstan, it becomes obvious that the concept «water object» is much wider than the concept «water resource» because it includes the whole natural complexes: «seas, rivers, equivalent channels, lakes, glaciers and other surface and underground water objects». For example, the notions «sea» or «river» imply their beds, shores, coastal zone, flora and fauna, for which waters they contain are the habitat of fish and aquatic animals, have borders, volume, water regime, etc.

Water objects can be used as a place and condition for navigation, construction of power-generating and other structures, breeding and extraction of fish and animals, breeding of plant crops, etc.

In our opinion, in the literal understanding of the meaning of «water resources» in its legislative formulation, these are water resources, which are contained in surface and ground water bodies and can be used to meet drinking, domestic, industrial and other human needs, as well as needs in waters of other natural objects.

Pressures on water resources are exacerbated by climate change, increased global demand for agricultural products driven by population growth and the need for renewable energy, the ongoing global rural-to-urban transition and migration flows in a changing world. Efficient water distribution is a challenge for managers, users and researchers, especially in areas with relative water scarcity.

Certainly, we do not claim for universality and moreover for indisputability of our conclusion, as we clearly understand that the concept of «water resource» can be interpreted in broader aspects of interpretation of legal meaning and content of this concept, which is reflected in the works of many specialists, who laid the foundation for the theory of water relations (Baisalov 1966; Kolbasov 1972; Mukhitdinov and Tukeyev 1995; Suleimenova 2010).

At the same time, as it seems to us, the concept of «natural resource» should be understood as those components of the natural environment, which can be withdrawn from nature without causing it significant harm and used to meet material and other needs. In the literal sense, this can be illustrated by the example of withdrawal of water from its natural environment represented in the form of seas, lakes, rivers, etc. At that, it is necessary to understand that seas, rivers, and lakes are the whole natural complexes that include various components besides water and cannot be withdrawn without violating the integrity of a natural object and its natural purpose.

3.3 Prospects of Further Improving the Efficiency and Sustainable Use of Water Resources of The Republic of Kazakhstan

Socio-economic importance of water resources is largely conditioned by their ecological condition, suitability of their use in various directions of the country's economy. Analysis of the ecological state of the environment of the

Republic of Kazakhstan as a whole and the ecological state of water resources in particular shows that, apart from other factors, many specific objective factors, characteristic only for Kazakhstan, and influence on the state of water resources of the republic. They include:

- peculiarities of the geographic location of Kazakhstan;
- its direct dependence on the condition of transboundary rivers
- Changes in the local climate parameters;
- environmental degradation, etc.

All the above-mentioned factors are undoubted conditions for recognition that water security of Kazakhstan, as one of the water-dependent countries, is ecologically critical. In this regard, it is enough to give as an example the ecological state of water resources of the Aral Sea and its region.

Ecological criticality of water resources of Kazakhstan represents a special problem and is singled out among problems related to deterioration of the whole environment.

All-round deterioration of the environment, including water resources, the tension of the ecological situation in the global sense of its understanding, lead to the need for the state to organize and implement a set of environmental measures aimed at restoring ecological well-being and bringing it to the criteria favorable for human life and health, especially since according to paragraph 1 of Article 31 of the Constitution of the Republic of Kazakhstan: «The state aims to protect the environment, favorable for life and health».

Water resources of Kazakhstan are exposed to strong anthropogenic and anthropogenic impact, which requires the state to make necessary efforts to provide the population of Kazakhstan and all sectors of the economy of Kazakhstan with quality water, to create favorable conditions for their functioning, protect water resources from depletion and pollution. It is explained by the fact that extreme aggravation of water problems all over the world, including our country, changes society's attitude to nature protection as a condition of its existence. The logic of social thinking and social behavior leads to the awareness of the need to find out the origins of harm caused to nature and to find ways to prevent it in the future. Along with this there is now a tendency, although not fast enough, to eliminate negative consequences rather than just talk about them. There is a growing demand for persons responsible for the adoption and execution of environmental decisions (Dubovik and Zhalinsky 1988).

Taking into account this situation, Kazakhstan has to take a set of measures to ensure water security, including by improving the efficiency of water resources management.

In order to fill the resulting gaps in the system of water relations, on May 30, 2013 the Decree of the President of the Republic of Kazakhstan approved the Concept for the transition of the Republic of Kazakhstan to a «green economy» (hereinafter - the Concept).

According to the norms of the said Concept, the concept of «green economy» is defined as the economy with a high quality of life of the population, careful and rational use of natural resources in the interests of present and future generations and in accordance with international environmental obligations assumed by the country.

Thus, «green economy» is a multidimensional, comprehensive concept, adopted to ensure a high quality of life of the population and conservation of the natural environment for the sake of present and future generations.

«Green economy» is one of the important tools to ensure sustainable development of the country. So, according to calculations, by 2050 transformations within the framework of «green economy» will allow to additionally increase GDP by 3%, to create more than 500 thousand new workplaces, to form new industries and service sectors, to provide everywhere high standards of quality of life for the population. In general, the volume of investments necessary for transition to green economy will be about 1% of GDP annually, which is equivalent to 3-4 billion dollars per year.

On a national scale, the task is to solve problems with drinking water supply to the population by 2020 and agricultural water supply by 2040, and to solve all water supply problems once and for all by 2050 (The Concept of Transition of the Republic of Kazakhstan to a «green economy», 2019).

It seems to us that achieving the outlined objectives, *i.e.* the expected results of the «green economy» is possible only when solving the following priority tasks for the transition to a «green economy»:

- 1) improving the efficiency of the use and management of resources (water, land, biological, etc.);
- 2) modernization of existing infrastructure and construction of new infrastructure;
- 3) improving the welfare of the population and the quality of the environment through cost-effective ways of mitigating the pressure on the environment;
- 4) improving national security, including water security (Concept for the Transition of the Republic of Kazakhstan to a Green Economy, 2019).

Improving efficiency and sustainable use of water resources can be carried out with or without withdrawal (water withdrawal) (discharge, use as waterways) of water resources, provided for use to meet one or more purposes, to one or more water users, with or without withdrawal of land, with or without restriction of nature use. The regime of environmental protection and use of water bodies is determined by the goals of water use (Bogolyubov 2001). At the same time, the environmental component of water resources - stability of ecosystems, development of fish farming, eco-tourism, and preservation of unique natural resources - should not be infringed in favor of industrial development.

In addition, it is necessary to create conditions for further improvement of water management policy in the following directions:

1) improving the water management system at the national and basin levels to ensure effective interaction with water users in all sectors and at all levels;

2) determination of water limits for tariffs reflecting full water cost, revision of subsidies and incentives for encouraging water saving.

In addition to water scarcity, Kazakhstan faces the problem of pollution, both from industrial enterprises and due to insufficient wastewater treatment (Concept for the Transition of the Republic of Kazakhstan to a Green Economy, 2019).

Today, all world powers are inspired by digital technologies and therefore companies need to be customer-centric. However, this system needs a State-Public Partnership (PPP). This cooperation between is based on increasing the capacity and efficiency of one partner in the provision of public water supply services. PUPs are built around shared values and goals that exclude the pursuit of profit and avoid risks such as: transaction costs, non-performance of contracts, renegotiation of terms, complexities of regulation, commercial opportunism, monopoly pricing, trade secrets, foreign exchange risk and lack of public legitimacy.

In general, the objectives of the PNP can improve the capabilities of the partner and can be divided into five categories: training and human resource development, technical support on a wide range of issues, efficiency and institutional capacity building, financing of water services.

Conclusion

Continuing population growth, climate change and globalization have led to multi-regional, multi-sectoral dynamics of water scarcity. This situation will be a more important driving force and consequence of water scarcity.

In recent years, the Republic of Kazakhstan has noted the drying up of a number of lake systems, which affects both the regulation of water flow and natural fluctuations in their levels. Drainage of major rivers such as the Irtysh, Ili, Syr Darya, Amu Darya and others has led to undesirable changes in their lower reaches. Arid climate and shortage of surface water sources put the problem of water supply in our country into the category of strategic ones. Without its solution, offensive and sustainable economic development is not possible (Suleimenova S.Zh., 2001).

The first step in solving these problems can be the development and adoption of water protection and environmental norms and laws corresponding to European emission standards. The European Union has a long history of regulation in this area and can become an example for construction of legislation, control measures and implementation of specific technologies.

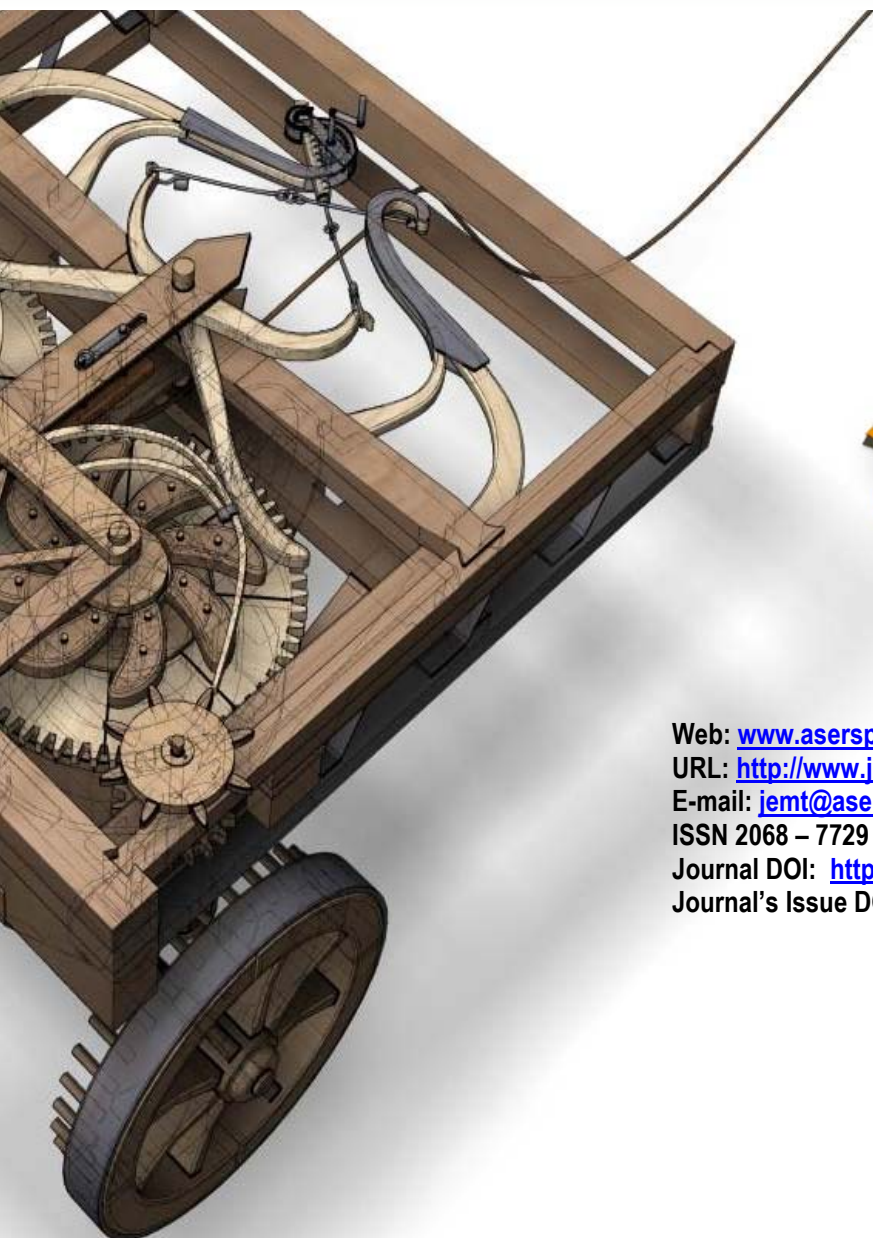
In order to radically solve problems on further sustainable use of water resources in today's conditions, it is necessary to adopt a set of state water management programs of the Republic of Kazakhstan aimed at their conservation and further reproduction.

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