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FOREIGN EXPERIENCE IN LEGAL REGULATION OF UNDERGROUND WATER PROTECTION AND WATER MANAGEMENT

The article considers the legal regulation aspects related to underground water protection and economics of water resources management. This issue is rapidly becoming a global socioeconomic concern because of severe shortage of potable water in many world countries. The experience of underground water control in Western countries and in the CIS is presented. Recommendations to strengthen the oversight and regulation of underground water protection in Kazakhstan are suggested subject to the most successful international experience in the field.

Keywords: underground water; water supply; state regulation; legal regulation; regional and municipal control.

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ЗАРУБІЖНИЙ ДОСВІД ПРАВОВОГО РЕГУЛЮВАННЯ ОХОРОНИ ПІДЗЕМНИХ ВОД ТА ЕКОНОМІКИ ВОДОКОРИСТУВАННЯ

У статті розглянуто правове регулювання охорони підземних вод та економіки водокористування, що у світовій практиці набирає з кожним роком все більшої важливості через те, що лишається актуальною нагальна соціально-економічна проблема – нестача питної води у багатьох країнах світу. Описано досвід регулювання охорони підземних вод у країнах Заходу та СНД. Розроблено рекомендації щодо регулювання даної сфери у Казахстані з урахуванням найбільш прогресивного досвіду у галузі.

Ключові слова: підземні води; водопостачання; державне регулювання; законодавче регулювання; регіональний та муніципальний контроль.

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ЗАРУБЕЖНЫЙ ОПЫТ ПРАВОВОГО РЕГУЛИРОВАНИЯ ОХРАНЫ ПОДЗЕМНЫХ ВОД И ЭКОНОМИКИ ВОДОПОЛЬЗОВАНИЯ

В статье рассмотрено правовое регулирование охраны подземных вод и экономики водопользования, которое в мировой практике приобретает с каждым годом все большую актуальность, поскольку сохраняется социально-экономическая проблема – нехватка питьевой воды в мире. Описан опыт регулирования охраны подземных вод в странах Запада и СНГ. Разработаны рекомендации по регулированию данной сферы в Казахстане с учетом передового опыта в отрасли.

Ключевые слова: подземные воды; водоснабжение; государственное регулирование; законодательное регулирование; региональный и муниципальный контроль.

Problem statement. Underground water is thought to be one of the sources of fresh water, it represents a vital resource for people. Recently the problem of fresh potable water shortage has been often discussed at the international level, thirst is becoming a world scale problem and not of separate countries only. In Kazakhstan the problem of potable water supply has been also noted several times at the state level. In the strategy "Kazakhstan-2050" N.A. Nazarbayev singled out 10 global challenges of the XXIst century. And it is very important that water famine is on the fourth

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place in this list. Thereby, the significance of this particular process is highlighted and its solution at the high state level is thought to be urgent. As it is stated in the Presidential Message: "For the last 60 years potable water consumption has increased by 8 times on the planet. To the middle of the century many countries will have to import water. Water is the extremely limited resource and struggle for sources possession is already becoming the major factor of geopolitics, it is one of the reasons of tension and conflicts in the planet. The problem of water supply is also thought to be sharp in our country. We do not have enough qualitative potable water. A lot of regions suffer from its shortage". At the same time it is necessary to note that Kazakhstan possesses enormous stocks of water of various quality and categories. Its use needs to be rationalized, and adjusted the internal legislation regulating this natural object to international standards.

Underground water is one of the basic sources of fresh potable water, it also has a variety of other natural properties which define multipurpose character of its use causing the presence of many subjects for the right to use underground water.

One of the features of underground water as a natural component is its renewable ability, however, at present we can observe a sharp increase of anthropogenous load on underground water during the process of its use. This fact impedes its further use and also leads to the necessity to strengthen legal regulation in the field of underground water use and protection with obligatory execution.

Last research and publications analysis. Domestic and foreign legislation paid due attention to the problems of legal provision of environment protection. V.V. Bratkov (2006), A. Dante (1992), E.N. Grigoryuk (2012), R.Y. Koldysheva and M.S. Golitsyn (2011), N.S. Marcella (2003), S.M. Natalchuk (2003), I.S. Zektser (2001), A.A. Zhorov (2006) and others are the widely known authors of the studies on the issue. The analysis of these authors' works allows stating the sufficient development of theoretical positions and conclusions, however, the practical implications are insufficiently explored.

The purpose of the research is a cumulative study of institutions of protection and use of underground water in the Republic of Kazakhstan; reflections on the specificity of legal regulation for protection and use of underground water, revealing the advantages and disadvantages of the existing legal framework; study and analysis of foreign legislation in the field of underground water protection; acquaintance with key trends of the state policy in the research area, working out practical recommendations and suggestions on national legislation changes.

Key research findings. Legal regulation of underground water protection in the world practice is gaining its urgency year by year as the problem of portable water shortage in the world keeps its topicality. Natural cataclysms, which have become frequent in many European and Asian countries, and also numerous devolutions of earth crust have caused the development of legal regulation of the relations in the field of use and protection of underground water from exhaustion. Shortage of power resources fostered further development of legal regulation of the renewed energy sources, the important role among which belongs to underground water. However, even if these problems have been known for a long time, the research on legal regulation of underground water use and protection is a comparatively new direction in international law and legislation of separate foreign states, as mentioned in foreign literature.

A number of conferences held in Stockholm (1972), Mar-del-Plata (1977), Seoul (1986) consider underground water as an integral resource of the joint hydrosphere, creating the international basis for application of a complex approach in legal regulation of underground water use and protection. The problems of complex use and management of surface and underground waters resources, decrease of the level of anthropogenous load on water resources are thought to be the reason to work out the programs of complex use and protection of water objects in many European countries. In France the principle of joint management over surface and underground waters was legally consolidated by the Law "On Water" in 1992. And we cannot say this idea is utopian as in the late 1970s Soviet scientists revealed a direct impact of underground water quality on the condition of surface water, and in particular of sewage.

At the internal level the key question is the legal status of underground water resources, in other words, who possesses the property rights on them. When underground water is in legal public ownership or the government manages it on behalf of a nation, it is essentially easier to introduce measures for legal regulation and management of such resources that limit the opportunities of individual development and use of these resources.

Until recently underground water has been in private possession in many countries, including the countries where European civil law operates, such as France, Italy, the USA and Australia. However, in these countries serious reforms were carried out and now underground water belongs to the government or the government has the right of priority use.

In the droughty countries of North Africa and the Near East underground water as well as all other water resources belong to the government or managed by the government, and all required measures on its protection can be taken as it becomes necessary. In other words, determination of the legal status of underground water resources is a natural starting point for introduction of measures on their management.

Underground water is still under close attention of international organizations. A number of reports on the legal regime of underground water has been published by the researchers of Food and Agriculture Organization, UNESCO, United National Environmental Program, World Health Organization etc. According to the World program of the United Nations Organization on water resources evaluation (VWAP), 10% of the Earth population suffers from the lack of quality water. One third of the world's population depends in its existence on underwater resources. The problems of supply and access to potable water resources is becoming the subject of discussions in the international community. According to the data of the World Health Organization, more than 41 mln people have no access to pure potable water. Vulnerability of life and health of the most unprotected categories of citizens (including children at the age till 14 years) becomes a consequence of this problem. Numerous diseases are known which are caused by shortage of pure potable water such as trachoma (eye infection that can lead to blindness), plague and epidemic typhus.

While a number of international agreements and other legal instruments concern underground water, only few of them are really fully and exclusively devoted to this problem. In many cases underground water is only nominally included in considera-

tion of legal documents. There are some tendencies of working out more specialized rules concerning underground water as in international contractual and non contractual law.

At the bilateral level the unique exception is regarded to be the accepted in 1977 "Agreement on protection, use and replenishment of stocks of Franco-Swiss Genevese Aquifer", where the norms of underground water quality, its volume, extraction and replenishment are determined. It is a rare example of the agreement devoted exclusively to transboundary aquifer and establishing the joint commission on water bearing stratum resources management.

Other agreements consider the issues related to underground water among other things under discussion, as for example the agreement in 1973 between Mexico and the United States on the Constant and Definitive Decision of the Problem of Salinity of the River Colorado. This agreement mentions the problems of surface water, but it also contains one regulation which limits pumping out ground water from the aquifer of Yuma Mesa by both countries in the direct proximity from the line of division of Arizona – Sonora near St.-Louis.

At the regional level it is necessary to mention two frame agreements, which are applicable as to surface and underground waters: Convention on Protection and Use of Transboundary Water Streams and International Lakes, accepted by UN ECE in 1992 and Updated Report on Joint Water Streams in the Southern African Development Community (Updated Report of SADC).

The problems of negative influence on underground water was the reason of acceptance in 1979 the Directive of the Council №80/68/EEC "On the protection of underground water against pollution by some dangerous substances". The Directive of 1979 existed for 21 years and lost its validity due to the acceptance of the Directive 2000/60/EC (better known as Framework Directive on Water of 2000).

The Framework Direction on Water of 2000 consolidated in its contents a considerable number of regulations on qualitative and quantitative condition of underground water (ground water), highlighting the joint character of surface water and ground water protection. Special attention in the Framework Direction of 2000 is dedicated to regulations on ground water protection of subsoil waters from pollution and exhaustion. The Directive identifies the legal protection of ground and underground waters. In the field of protection of ground water by the Framework Directive on Water of 2000 defines the objects of ground water within water resource areas, classifying them in respect of water pressure and influence of human activity on the quality of ground water.

The Directive on ground water 2006/118/EC reflects the specificity of legal regulation of ground water use and protection, its basic requirement is thought to be the approval of quality standards of ground water as well as the tendencies of underground water pollution.

Thus, the Frame Directive on Water contains the norms of general character on the protection of ground water as well as some other water objects, and the Directive on Ground Water 2006/118/EC contains special norms only on the particular natural object.

The latest researches studying the stocks of underground water mention that the Earth contains huge reservoirs of fresh underground water. And in the conditions of

practically universal pollution of surface water the role of underground water becomes irreplaceable, especially considering the fact that the quality of underground water is much higher than the quality of surface water and demands much less manipulations for cleaning.

The Directive 98/83/EC "On the quality of potable water" reflects the problems of drinking water supply. The attempts to develop the united international quality standard of potable water were undertaken several times. However, these attempts are really difficult to carry out as the requirements to potable water quality are various and depend on the variety of drinking resources of this or that country. For instance, identical norms on potable water in Switzerland and in South Africa cannot be established.

Today working out and consolidating the drinking water quality specifications are thought to be the prerogative of separate countries. The experience of rationing the quality of potable water in the USA attracts special interest. According to the Law on potable water safety (Safe Drinking Water Act, 1974) of the Environment Protection Agency (EPA) in the USA the national specifications of potable water quality (primary specifications) were developed. Besides, at the states level specifications (secondary) also can be developed. Earlier the American Society on Testing Materials (ASTM) established their own standards which were recognized as national in the countries of Northern, Central and South America, South East Asia and in the Near East.

One of the international instruments of this problem is the Report on problems of water and health of August 4, 2005 accepted as an addition to the Convention on protection and use of transboundary water sources and international lakes of 1992. The Republic of Kazakhstan is the Convention party, which ratified it, however it is going to join the Report in 2014–2015, which is not so clear in connection with the latest tendencies in the area of underground water use mentioned by the President within the Program "Kazakhstan-2050".

The most unprotected from negative influence is underground water used in non-centralized water supply. So, according to the Global Consulting for Environmental Health (the USA), the majority of infections episodes of water origin are associated with the use of well water for drinking purposes. In 1994 in Finland the episode of severe gastroenteritis was caused by the use of well water. In the process of well water study the conclusion was made that the use of underground water from non-centralized sources of water supply increases the risk of population disease and requires special measures of legal protection. Priority use of underground water in centralized systems of water supply becomes the common rule for many developed countries. Autonomous or non-centralized systems are used only in case of absence of centralized systems and also with observance of sanitary and hygienic requirements. Many researches carried out in the USA, Japan, Taiwan, Argentina established the direct dependence between the use for drinking purposes the underground water polluted by chemical substances and the growth of oncological diseases.

In many countries of Western and Eastern Europe the amount of underground water in economic and drinking water supply estimates 50–75%, in Denmark this indicator reaches 98%. Besides, high indicators of underground water use for drinking water supply are noted in such countries as Austria, Croatia, Hungary, Italy,

Switzerland, Lithuania, Slovenia, Belarus, that testifies the decrease of risk of diseases transferred by poor-quality potable water among the population in these countries.

It is necessary to pay special attention to the problems of legal protection of drinking underground water in the CIS countries. This issue is regulated by a separate branch of some CIS countries legislation (Belarus, Ukraine, Moldova, Turkmenistan, Tajikistan). For legal regulation of drinking water supply in these CIS countries a wide range of relations refers to drinking water supply where there is no specificity of legal regulation particularly for underground water as the basic source of drinking water supply. At the same time, some CIS countries can be singled out where the priority of underground water use as a source of drinking water supply is observed. For example, in Kyrgyzstan in the water legislation the norm on drinking water supply is fixed, according to which the use of underground water of drinking quality for needs that do not relate to drinking and household water supply is prohibited. However, for those areas where the resources of underground water are sufficient and prevail over the surface water resources their use for other purposes is permitted. A similar norm of prohibiting drinking water use for other purposes is in article 48 of the Water Code of the Republic of Azerbaijan.

The legislation of the Republic of Uzbekistan consolidates the norm, according to which it is possible to grant any water object (including underground) for use to satisfy drinking and household needs of the population. According to the Water Code of Ukraine, underground water of drinking quality should be extracted first of all for the satisfaction of requirements of drinking and household water supply of the population, and also for food industry as well as animal husbandry. Thus, traditional restriction on the use of drinking quality underground water is established in many CIS countries, namely: prohibition for the use of underground waters of drinking quality for the needs which are not related to drinking and household water supply.

Kazakhstan in the development of national nature resource legislation analyzes the experience of its neighbors and of more advanced countries in Europe and Asia. So the article 120 of Water Code of the Republic of Kazakhstan sets the requirement about performing the monitoring of underground water by individuals and legal entities, whose industrial activity can have harmful impact on the condition of underground water, as we have already mentioned.

The Water Code of Belarus has a similar requirement about the regime of local network of observation for control over the condition of underground water. This requirement extends not only to subsoil users, but also to all people who open underground aquifers. Thus, we see that legislation of the CIS countries has some kind of agreements and homogeneous rules which is significant for international cooperation.

Restrictions in the use of drainage areas of underground water objects used for drinking and household water supply are thought to be a widespread measure of water objects legal protection provided by the water legislation of the CIS countries. According to Article 73 of Water Code of Belarus, the norm on prohibition of waste burial and placing industrial and household wastes in the areas of underground water bedding used for drinking water supply extends not only to drainage areas of underground water used for drinking and household supply, but also to the whole area of underground water deposits. This regulation in Belarus water legislation is extended

including the deposits of therapeutic underground water. This norm is also very topical for Kazakhstan. This is proved by the researches results, obtained while constructing a regenerative system of pumping down and cleaning underground water of Ust-Kamenogorsk and its vicinities. Thus, the most serious factor is the presence of toxic substances on dumping places for dangerous waste which pollute underground water and the rivers in the Irtysh basin. It was also established that within Ust-Kamenogorsk pollution is connected with the filtrate from mine dumps and sediment bowls of metallurgical enterprises, liquid industrial waste of factories and polluted drains from the territory of industrial enterprises. In the Water Code of the Republic of Kazakhstan there is a norm forbidding arranging of dumps of household and industrial wastes within water security zones, however there is no exact indication on the area of underground water deposits, this is certainly a blank in the legislation.

The problems of underground water exhaustion and fall in the level of ground water along with contamination have gained the character of the global problem. These problems are placed in the first place in such countries as Germany, Spain, the Netherlands, France, Japan, China and India. In America since 1985 the state policy has been carried out on preservation and restoration of the territories where soil cover is sated with surface water or underground water. In the Netherlands dehydration of natural territories is recognized as an environmental problem of the national scale, in this regard legal regulation on underground water extraction from the sources of drinking and industrial water supply is differentiated.

The exhaustion of underground water is accompanied by aquifer drainage that can lead to surface collapse. In 1962 the pumpdown of mine and miner waters caused a surface collapse in Johannesburg. Low level of ground water owing to anthropogenic effect is the common problem of many megalopolises in the world. Pumpdown of ground water in Mexico city caused settling of the city on more than 8,5 m, in the seaside cities of Japan – Tokyo, Osaka, Niigata the settling reaches 50 cm, and the settling area reaches hundreds of square kilometers. In London due to a decrease in the level of ground water on 100 m the area of subsidence of the surface was 2 ths m, and in some cities of California surface settling was 3–4 m. This problem is also crucial for Kazakhstan, since the country is actively developing the mineral raw materials extraction for which extraction of underground water is also a concern.

Legal protection against negative effects on springs deserves special attention. In particular, according to American legislation, relations in the field of underground water use and protection are regulated. And any activity regarding underground water extraction, including springs and wells, is carried out with the permission of state authorities. In Germany legal regulation of underground water and springs protection refers to separate lands jurisdiction.

Thus, we can note the countries where regional and municipal control in the field of underground water and springs protection against negative influence is believed to be a priority. In such countries as Italy, Spain, the Netherlands, France, in the majority of CIS countries legal regulation of underground water protection against negative influence is carried out on the centralized basis within the general water legislation.

The problems of legal regulation of underground water use and protection are highlighted in international law in connection with negative influence on them. The problems of potable water quality, underground sources of water supply and also the problem of underground water exhaustion which cause numerous downfalls and collapses of whole districts in cities of the world are really urgent nowadays.

The following **conclusions** can be drawn from all of the abovestated:

1. Some problems and concepts have been accepted recently at the state level devoted to the issues of protection and use of water objects which highlight the significance of underground water as a strategic resource. On the basis of this it is necessary to introduce changes and additions to statutory acts regulating protection and use of underground water, inter alia:

- Introduction into the Code of Administrative Law such a measure of administrative responsibility as deprivation of the right for water use as an exclusive measure of punishment for the related crimes.

- Amending the Criminal Code with the article covering such an offence as unauthorized capture of water because the object of encroachment in this case is not only public relations and the order of protection and use of water resources, but also state property on natural resources.

2. Within the given research the following suggestions on the practical use of underground water have been offered:

- Application of underground water at soil irrigation which will allow lowering the risks at grain crops deposit in the regions with limited quantity of seasonal precipitation to increase general republican agricultural crops volume.

- Construction of the network of spa resorts and holiday houses with the feature of underground water use in medical and therapeutic purposes. This in its turn will encourage the growth of tourist business in the country and attract foreign capital.

- Application of thermal water for premises heating. This method will allow reducing the expenses of population on gas consumption for heating. Underground water in this respect is used in some regions in Kazakhstan, however, it has not found its wide application until now.

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