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FOREWORD

On September 5-6, 2019, in the Republic of Kazakhstan, in the cities of Nur-Sultan and Burabay, the Second Central Asian Expert Forum (CAEF) was held on the topic: “Dialogue on water issues in Central Asia: from the national to the regional levels”.

The event was organized by the Kazakhstan Institute for Strategic Studies (KazISS) under the President of the Republic of Kazakhstan, the UN Regional Center for Preventive Diplomacy for Central Asia (UNRCCA) and the Friedrich Ebert Foundation Central Asia.

The Forum in Kazakhstan was a logical continuation of the first CAEF meeting on the topic “Actual issues of regional cooperation in Central Asia: factors, conditions and prospects”, which was held on October 29-30, 2018 in the Republic of Uzbekistan, in the cities of Tashkent and Bukhara. The forum was held with a view to the practical implementation of the agreements of the meeting of the Heads of Central Asian states and has become a platform on which the leading analytical structures of the countries of the region cooperate.

The main goal of the Forum was the discussion by leading experts of Central Asian countries on relevant issues of ensuring regional cooperation in solving water-ecological and water-energy problems, developing tourism as an ecosystem, as well as developing common strategic approaches, practical proposals and recommendations for governments of the region in these areas.

This issue of Central Asia’s Affairs has been prepared following a discussion of the positions and approaches of Central Asian countries to address water-environmental and water-energy issues.

Welcome Speech by **Zarema Shaukenova**,
*Director of the Kazakhstan Institute for Strategic Studies
under the President of the Republic of Kazakhstan*

Dear Forum Participants!

Your Excellencies!

Ladies and Gentlemen!

On behalf of the Kazakhstan Institute for Strategic Studies under the President of the Republic of Kazakhstan, we welcome you to Nur-Sultan!

We are pleased that the Central Asian Expert Forum is becoming an established tradition, bringing together representatives of the think tanks of the region for dialogue. The political will of the heads of the Central Asian states has restarted regional cooperation and given fresh impetus to interaction in various areas. And we, being representatives of the scientific and analytical community, feel this positive change.

We welcome the delegations from the Institutes for Strategic Studies under the Presidents of the Central Asian countries, headed by the directors. And we especially welcome the delegation of the Institute for Strategic and Regional Studies under the President of the Republic of Uzbekistan (ISRS), from whom we took up the baton of the CAEF. We are deeply grateful to SCO Secretary General (ex-Director of ISRS), Mr. Vladimir Norov, for his greeting to the participants of the Second CAEF.

The First Central Asian Expert Forum, held in October last year in Uzbekistan, demonstrated the sincere interest of leading analytical bodies in deepening and expanding cooperation; and showed a wide range of issues that require thorough and expert understanding.

One of these topics is rational and mutually beneficial water-resources management.

According to UN forecasts, half of the world's population, or more than 5.7 billion people, will experience water shortages by 2050. In these conditions, the issue of international cooperation on sustainable water-resources management and preservation of this vital resource for future generations becomes critical. This problem is acute in Central Asia, which is projected to have a population of more than 90 million by the middle of the century.

In this regard, Kazakhstan is ready to make every effort to unite the potential of the countries of the region in order to address these issues effectively and in a way that is strategically beneficial for all. As the President of Kazakhstan, Kassym-Jomart Tokayev, noted in his Address to the People of Kazakhstan on September 2 this year, Central Asia remains a strategic part of our foreign policy. This is the line of policy set by our first President, Nursultan Nazarbayev.

Last year was a political breakthrough in terms of the regulation of a number of important transboundary issues related to water resources in the region. On August 12, 2018, the Convention on the legal status of the sea was adopted at the Fifth Caspian Summit in Aktau. We believe that the mutually beneficial resolution of the "Caspian Issue" is strategically important in the context of ensuring the international stability and economic development of the Caspian region, preserving its natural resources and the rational use of its unique geographical location.

The resumption of the dialogue within the framework of the Summit attended by the heads of the founder states of the International Fund for Saving the Aral Sea and held after more than nine years also inspires optimism in assessing the future prospects for cooperation. The restoration and reconstruction of water infrastructure; the provision of clean drinking water to the population; the solution of social issues; and the promotion of joint projects to improve the environmental situation in the Aral Sea region are the tasks that the states of the region should solve – and are actually solving - together.

These inspirational trends motivated us to choose the dialogue on water issues in Central Asia as the theme for the Second Central Asian Expert Forum, with an emphasis on one important point: issues of national security and national interests in the region are closely connected and sometimes even intersect, but the joint efforts of all parties are still necessary to build a sustainable system.

Today, the focus of our attention will be water and energy issues in Central Asia.

Let me remind you that in May of this year, a separate high-level panel session “Water and Peace. How to Stimulate Transboundary Water Cooperation” was held within the framework of the Astana Economic Forum organized with the support of the Swiss Agency for Development and Cooperation and Blue Peace initiative.

Just last week, World Water Week finished its work in Stockholm that was attended by representatives of all countries of Central Asia and Afghanistan, many of which are taking part in our event today. We take this opportunity to express our gratitude to the Regional Environmental Centre for Central Asia (CAREC).

I am sure that during the Forum participants will be able to exchange views and formulate practical recommendations that will provide for all important aspects of development and innovative initiatives in this area.

In conclusion, let me express my sincere gratitude and appreciation to our co-organizers, the UN Regional Centre for Preventive Diplomacy in Central Asia and the Friedrich Ebert Stiftung in Central Asia.

I wish the Forum participants fruitful work!

Welcome Speech by Natalia Gherman,
*Special Representative and Head of the UN Regional
Centre for Preventive Diplomacy in Central Asia*

*Your Excellences,
Ladies and gentlemen!*

I am pleased to welcome you today to the opening of our Second Central Asian Expert Forum. I would like to take this opportunity to express my special gratitude to our co-organizers: the Kazakhstan Institute for Strategic Studies under the President of the Republic and Friedrich Ebert Stiftung.

I would also like to warmly welcome His Excellency, Mr. Aaymdos Bozzhigitov, Ambassador-At-Large in the Ministry of Foreign Affairs of the Republic of Kazakhstan; Mr. Sergey Gromov, Vice Minister for Ecology, Geology and Natural Resources for the Republic of Kazakhstan; members of the Executive Office of the President; and all officials and representatives of a number of partner organizations.

Your participation is a clear indication of how important this Forum is to the international community.

As for the Head of the UN Regional Centre for Preventive Diplomacy in Central Asia (UNRCCA), it is indeed a great honor for me to continue our joint work at this now-annual event.

As you know, we created the Central Asian Expert Forum last year; and the first meeting was held in Tashkent and Bukhara. The event was also organized jointly with the Institute for Strategic and Regional Studies under the President of the Republic of Uzbekistan.

I am glad to see many familiar faces from among those who worked with us during the First Forum today in Nur-Sultan.

The Central Asian Expert Forum was conceived as part of the preparations for the Summit of Central Asian Heads of State in 2019. Our discussions led to a number of recommendations, which, together with the recommendations of the International Conference with the participation of experts from around the world, held in Tashkent in February this year, were sent to the Heads of State to assist them in developing the agenda of the most pressing issues of their important Meeting.

Although the 2019 Summit has been postponed, I am confident that the Meeting of the Heads of Central Asian States will take place in the very near future.

In the meantime, we will be preparing for the 2020 Summit. This process begins today, at our Second Central Asian Expert Forum.

This Forum is a unique platform for strengthening cooperation between the leading analytical structures of Central Asia. When we met last year, I was surprised to learn that such a platform did not yet exist.

The enthusiasm of the participants and the energy of the discussions clearly confirmed the need to make the Forum an annual event in the regional calendar. This idea has in fact received huge support.

The Forum is a reflection of the fact that regional cooperation has become a priority for all countries in the region. The United Nations fully supports that aspiration. I would also like to note that strengthening regional cooperation is the cornerstone of the Regional Centre's preventive mandate.

Your Excellences, Ladies and Gentlemen!

This year, your discussions will focus on water. This topic is the subject of special attention in Central Asia.

Water is essential for everyone's life. Water is life itself.

The Regional Centre has been working with the countries of the region on transboundary water use for more than a decade. Last year, we developed a new strategy in this area, which is based on three outcomes: Preventive Diplomacy and Confidence Building; Strengthening Institutions and the Legal Framework; and Enhancing Transparency, Strengthening Relationships and Promoting Partnerships.

The states of the region and the donor countries have welcomed our new strategy; and we are now embarking on its implementation. However the road to realizing our long-term goal of achieving a regional water agreement will be long and difficult. We all know that there is no quick solution to this issue.

Despite the fact that Central Asia does not suffer from significant water shortages at present, the highland glaciers of Kyrgyzstan and Tajikistan are melting. And this process is only accelerating under the influence of global climate change.

The drying up of the Aral Sea, although being not a direct consequence of climate change, also affects the melting of glaciers. To date, most of the Sea has dried up, and its bottom forms the Aral Kum desert. The sand and salt of this new vast desert is carried by the wind for miles. And when they settle on the highland glaciers, they accelerate the process of their melting, which is already in full swing.

Each of the Central Asian countries is making significant efforts to address the threats posed by climate change. Each country has a national plan for the implementation of the sustainable development goals, in which climate, water and energy are priorities.

At the same time, we must find new comprehensive approaches to solving this problem – perhaps one of the most complex challenges of our time.

As UN Secretary-General Antonio Guterres said, “We are fighting for our lives, but this is a battle we can win.” The Secretary-General is convening a Climate Change Summit in New York on September 23 to accelerate the implementation of the Paris Agreement commitments. He calls on Heads of State around the world to come up with “specific, realistic plans” to reduce greenhouse gas emissions to zero by 2050.

Perhaps one of your Presidents will present some of the recommendations and suggestions that will emerge from our discussions today at this Summit in New York.

Your Excellences, Ladies and Gentlemen!

It is impossible to underestimate the importance of your work on our Forum. The first step towards sustainable solutions to water issues in Central Asia is close regional cooperation based on respect, good-neighborliness and mutual benefit. Your presence here proves that all these conditions are met and you are all ready to move forward to a brighter future.

Let me wish you success and thank you for your active participation.

Welcome Speech by **Christoph Mohr**,
*Regional Director of Friedrich Ebert Foundation
in Kazakhstan and Uzbekistan*

*Ladies and Gentlemen,
Dear guests and partners,
Excellencies.*

It is a great honor to co-open this conference and formally welcome all of you. I want to thank our partners and co-organizers, especially the Kazakh Institute for strategic studies under the president of Kazakhstan, for the long standing and good relationship. And everybody that made the trip to Nur-Sultan.

Friedrich-Ebert-Foundation (German political foundation, part of German foreign policy) has more than 100 offices globally (could talk a lot about our global work, but emphasis one thing) and in all of them we do see ourselves as platform for dialogue. That could mean talking security at the Horn of Africa, decent work in Latin America or, as today, discussions questions on water and energy in Central Asia.

We always want to create exchange between decision makers, policy advisors, academics and experts from different countries or regions.

I firmly believe this, being a platform of dialogue, has been achieved today.

Today's conference tackles, as you know better than I do, crucial issues to the region. I can only echo what the speakers before be said. In my German translation of the program the conference's title has a subtitle that essentially catches what we are aiming for today: "from the national to the regional".

And that is exactly what we are aiming for, as we believe that questions on energy or water in Central Asia can only be discussed successfully on a regional level.

I am therefore not bringing in new information when I emphasis that global or regional challenges demand global or regional solutions and knowledge exchange. In the future, I believe, it is and will be crucial to learn from each other and talk with each other.

*Ladies and gentlemen,
Excellencies,*

I wish you all the best for doing this today. I am very much looking forward to the exchange and again want to say thank you for the partnership.

Welcome Speech by **Kuvanychbek Shadybekov**,
Director of the National Institute for Strategic Studies
(NISS) of the Kyrgyz Republic

Dear Forum participants!

Dear Madam Zarema Kaukenovna,

Mrs. Natalia Gherman, Mr. Christoph Mohr!

On behalf of the National Institute for Strategic Studies of the Kyrgyz Republic and our delegation, let me welcome all of you to the Forum, as well as express my gratitude for the invitation and warm welcome to the organizers of the event. The holding of the next Central Asian Expert Forum is an evidence of the continued development of the initiative of the Heads of our States on the need to discuss regional problems. The tradition of searching for regional commonality gives hope for the creation of a constructive and trusting platform, forming valuable guidelines for the joint design of the future of the region.

I think the Forum participants will agree with me that the agenda outlined by the Kazakhstan Institute for Strategic Studies under the President of the Republic of Kazakhstan is very relevant, multifaceted and complex for the region, which has its own history and requires a scrupulous and impartial approach. This can be observed from the resolution of the UN General Assembly approved on June 22, 2018, “Strengthening regional and international cooperation to ensure peace, stability and sustainable development in Central Asian region”, where part of the proclamation labels the years 2018-2028 as the International Decade for “Water for Sustainable Development”; and expresses the importance of holding regular consultations on the elaboration of mutually beneficial, long-term and sustainable mechanisms for the rational and integrated use of the water and energy resources of the region, taking into account the interests of all parties.

At the same time, at the Summit of Heads of State held in Turkmenistan in 2018, the President of the Kyrgyz Republic, Mr. Sooronbay Jeenbekov, stressed that: “The Kyrgyz Republic remains open to discussing the full range of water and energy issues in order to ensure sustainable development in Central Asia for the benefit of our countries and peoples.” Conservation and rational development of water resources remains one of the most important planetary tasks of mankind. Each of us understands that water is a source of life; water is a source of energy; water is the basis of the infrastructure of human life and development. It is no coincidence that the organizers of the Forum built a logical chain of interrelated session topics: Water, Energy, Ecology, People!

Let me draw your attention to some key points that have historically been present in the consideration of this issue:

First, everyone knows that the system for the use of water resources in the Central Asian countries under the Soviet Union with a centralized approach was quite effective both for irrigation and for electricity generation. Meanwhile, as noted by many scientists and experts, the destruction of the existing system of cooperation and the balanced consideration of the interests of the countries of the region has led to unresolved issues continuing up to the present time.

Second, according to some expert estimates, the efficiency of water use in agriculture in Central Asia is four to five times lower than in other developed countries. The increase in the area of irrigated land, with the unplanned use of water resources, exacerbates the problem. For comparison it was 4.5 million hectares in 1960 and at the present time it has more than doubled – to 10-11 million hectares. Moreover, according to scientists, the water resources of the region may be reduced by at least a third in 15-20 years; while, according to the UN, the need for water in the region in the coming years, taking into account the promising pace of infrastructure

development and demographic growth, will increase incrementally by 30-40%, which must affect the potential of the region. Expert forecasts are based on the facts of the reduction in the area of glaciers in the coming decades and the increase in the water content of rivers, as well as global climate and the regional ecosystem change. All this creates new challenges for the region. Are we ready for this? It is a rhetorical question.

Third, the climatic and natural resource features of our countries cause a general interdependence. Therefore, the problem of the careful and effective treatment of the water and energy resources of Central Asia requires a comprehensive solution and should be considered not only in the continuity of water and energy issues, but also through the prism of food, infrastructure and environmental security of the region.

Fourth, it is important to improve regional cooperation within the framework of the current Agreement between the governments of Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan on the use of the water and energy resources of the basin of the River Syrdarya as of March 17, 1998, which provides for a compensatory mechanism for the use of water and energy resources.

Fifth, the consideration of this issue at the Central Asian Expert Forum is a confirmation that this issue is open and requires an adequate, balanced and mutually beneficial solution. At the same time, the rapprochement of positions in the water and energy sphere is an opportunity to strengthen the space of trust, stability, infrastructure growth and development, food and environmental security in the region; and ultimately a holistic environment of comfort for our peoples. Water issues should become factors of rapprochement for our peoples and states, because each of us understands that successful regional cooperation benefits all our countries. Therefore, mutually beneficial interstate cooperation in this area is one of the first required conditions for deepening regional cooperation and achieving equal partnership.

Second: - the multifaceted task of finding a balance of country, intercountry and supra-country interests. Without doubt, national interests are a priority for each state, and it is needless to say that they are different. This fact sets the stage for a deeper analysis of the divergent interests of countries and the search for a compromise. Perhaps it makes sense to group interests regionally, with no fundamental differences within; interests formulated and having a block character within the region; and country positions. All of them should be systematized and thoroughly studied in order to interface and find mutually acceptable agreements as a platform for future expert and analytical work;

Third: - rethinking and revaluation of the existing documentation base, as well as the emphasis on a single consolidating mechanism that takes into account the water and energy balance of interests of all Central Asian countries, should become one of the regional priorities;

Fourth: - despite the different studies available, it makes sense to conduct a joint strategic analytical study of the issue of convergence of our positions and the formulation of variability of solutions to water and energy problems. Probably, the formation of a permanent analytical group of representatives of our centers would help to look at the problem from an expert and analytical perspective;

Fifth: - in order to preserve the institutional link, it may be advisable to hear information on the progress in the solution of the sphere discussed today at the next Central Asian Forum before considering new topics.

As you can see, the subject is multifaceted, and different initiatives can be proposed within the discussion field of the Forum,; but their successful implementation largely depends on the quality of the appropriate expert analytical support.

In conclusion, I hope that our Forum will become a laboratory of creative regional thought, eliminating the pretentious nature of the discussion of problems, while contributing to the achievement of the goals and objectives of sustainable development of the countries of the region.

Welcome Speech by *Dilovar Kodirzoda*,
Director of the Center for Strategic Studies (CSS)
under the President of the Republic of Tajikistan

*Dear Forum participants,
Ladies and Gentlemen!*

First of all, I want to express my sincere gratitude to the organizers of the Forum for the invitation and for creating comfortable conditions for our fruitful work.

We are very pleased that in recent years the world community has begun to attach great importance to water problems; and today water is one of the priorities of various international institutions, including the United Nations.

As a result of global development and demographic growth, water, being just the public natural environment, has become a strategically important resource that determines the further development of the mankind itself.

Possessing more than half of the water resources of the Central Asia region (55.36%), Tajikistan pursues an active international and regional water policy on the basis of internationally recognized principles, procedures and rules. In the new Concept of foreign policy of the Republic of Tajikistan, the development of water diplomacy is indicated by a separate chapter what shows the priority importance of this sector for Tajikistan.

The water policy of our country is aimed at its rational and careful use and implements the right to use water resources on the basis of common regional interests, based on the principles of good neighborliness, respect and real consideration of mutual interests, dialogue and cooperation to solve existing problems.

As you know, in recent years, the UN General Assembly has approved 4 water initiatives of President of the Republic of Tajikistan Emomali Rahmon. In particular, the UN declared 2003 the “International Year of Freshwater”, 2005-2015 the International Decade of “Water for Life” Actions, 2013 the International Year of Water Cooperation and 2018-2028 the International Decade of “Water for sustainable development” Actions. This allowed drawing the attention of all countries of the world to the increasing and complicated water problems.

Dear friends,

Tajikistan occupies one of the leading places in the Central Asian region, as well as in the world in terms of water resources. The number of glaciers in the country is 14,509 with a total glaciation area of 11,146 square kilometers. About 947 rivers flow through the territory of Tajikistan flows, the total length of which is 28,500 km. More than 80% of the Amu Darya flow is formed in Tajikistan. However, according to expert estimates, the Central Asian glaciers, which are the main source of water for the rivers of the region, lose on average from 0.6 to 1 percent of the glaciation area per year. The current situation requires urgent measures to adapt to abrupt climate change and to promote sustainable water management in the region. This can only be achieved through coordinated action by all countries within the framework of constructive regional cooperation, taking into account the interests of all participants, as well as through a significant increase in investment in infrastructure.

Water is one of the most important factors ensuring the stable development of the economies of the Central Asian countries. However, unlike many natural resources that are actively involved in market processes (especially oil and gas), water resources cannot be replaced by anything else, because water is valued more than a commodity - it is life itself.

Based on the above, it would be advisable to build, together with partners of the Central Asian countries, additional numbers of reservoirs in the territory of the Republic of Tatarstan, in order to collect water in high-water years and use it in low-water years. This initiative will address a number of issues to ensure food, hydropower and water security, which in turn is consistent with Sustainable Development Goals No. 2, 6, 7, 13 and 17.

The problem of drinking water quality affects many aspects of human society throughout the history of its existence. Currently, drinking water is both a social, political, medical, geographical, as well as an environmental and economic problem.

The impact of globalization on the socio-economic condition of states is growing every day and raises new problems such as food security, climate change and the world ecosystem. Despite the increased risk of these threats, individual regions and countries alone will not be able to confront this phenomenon. Therefore, the prevention and resolution of such issues is impossible without collective action at the regional and global levels.

Today more than ever it is clear that there is no alternative to the development of partnerships in water resources management. The stage has come to translate discussions and initiatives into real practical steps in choosing the best methods in water resources management.

We are confident that our Forum is developing specific recommendations and measures in this direction.

Welcome Speech by **Eldor Aripov**,
*Director of the Institute for Strategic and Regional Studies
(ISRS) under the President of the Republic of Uzbekistan*

*Dear Forum participants!
Ladies and Gentlemen!*

First of all, on behalf of the Institute of Strategic and Regional Studies under the President of the Republic of Uzbekistan, let me welcome the participants of the Second Meeting of Central Asian Expert Forum and express my sincere appreciation for the hospitality of the organizers of the event – the Kazakhstan Institute for Strategic Studies under the President of the Republic of Kazakhstan and personally the Director of the Institute, Zarema Kaukenovna.

Besides, I would like to thank Head of the UN Regional Centre for Preventive Diplomacy in Central Asia, Mrs. Natalia Gherman, for the ongoing support for our forum.

It is symbolic that the work of the Forum is planned in such cities as Nur-Sultan and Burabay. While Nur-Sultan is increasingly asserting itself as an authoritative international discussion platform on which the most important issues of political and economic development are discussed, Burabay is known for its natural resources, unique flora and fauna, which is very relevant to the agenda of today's meeting of the Central Asian Forum.

I would like to note the importance of the second meeting of our Forum.

What does that say? First of all, that the initiative of establishing our site is viable and, most importantly, in demand. There is a desire of the countries of the region to give the expert dialogue a systemic and long-term character.

Dear colleagues!

It is no secret that in recent years Central Asia has been going through a qualitatively new stage of its development. Thanks to the strong political will of the leaders of the Central Asian countries, interstate relations are developing along an increasing trajectory in all areas of cooperation, including the water and energy sector.

First, the operation of the Central Asian Bulk Electricity System (BES) has been practically restored. Currently, mutual electricity supplies between Uzbekistan, Kazakhstan, Kyrgyzstan and Tajikistan are actively carried out. Turkmenistan expressed a desire to join the system.

A joint declaration on regional cooperation in the field of energy reforms and the creation of a single electricity market was signed.

For reference: *The First Central Asian Conference on Energy Reforms was initiated by the government of Uzbekistan and was held in Tashkent in 2018.*

Second, cooperation on water issues on a bilateral basis has been significantly intensified. A working group has been established to develop proposals for deepening cooperation in all areas of water relations between Uzbekistan, Kazakhstan and Tajikistan.

Currently, work is underway to sign an Interdepartmental Agreement on the establishment of a joint bilateral water commission with Kyrgyzstan.

Cooperation between Uzbekistan and Turkmenistan is developing fruitfully within the framework of the trilateral working group, which also includes the Amu Darya basin water management organization.

Third, in recent years, the countries of the region have shown readiness for joint construction and operation of new hydropower facilities in the basins of transboundary rivers. A striking example is the agreement reached between Uzbekistan and Tajikistan on the construction of two

hydroelectric power plants with a capacity of 320 mW on the Zarafshan river. An agreement on this issue is currently being negotiated.

Negotiations are underway between Uzbekistan and Kyrgyzstan on the draft Comprehensive Cooperation Program for the construction of Kambarata HPP-1.

Intergovernmental agreements have been reached, respectively, with Tajikistan and Kyrgyzstan on the mutually beneficial use of Farhad Hydroelectric Power Plant and Kasansai Reservoir by Uzbekistan.

Fourth, there is also some progress in understanding the future prospects for the development of IFAS. The last meeting of the Council of Heads of State-Founders of the International Fund for Saving the Aral Sea in Turkmenbashi was attended by all Central Asian countries for the first time since 2009. They expressed readiness to further improve the organizational structure and legal framework of IFAS in order to ensure mutually beneficial cooperation on topical issues of saving the Aral sea and water resources management.

At the same time, climate change, increasingly recurring natural disasters, environmental degradation and demographic pressure require us to further intensify cooperation to find conceptual points of contact in solving the remaining problems between the countries of the region in the water and energy sector.

In this context, I would like to draw your attention to the following specific challenges.

First, the deficit of water resources in the region is increasing. Thus, if in the 1980s about 5 thousand cubic meters of water per capita accounted per year, in 2018 this figure reached 2 thousand cubic meters. At the same time, the situation is deteriorating due to irrational water consumption in the region. While the world-wide average level of consumption is 700 cubic meters, this figure in the countries of the region ranges from 2 thousand to 4.8 thousand cubic meters.

According to the World Bank, shortage of fresh water can lead to a fall in the GDP of the region of 11%.

Second, particular attention should be paid to the wear of the greater part of the irrigation and drainage infrastructure in Central Asian countries with the service life exceeding 30 years. This reduces the operational performance of pumping stations and increases water losses up to 40% of total water intake.

Third, land degradation is becoming one of the major problems in Central Asia. ADB estimates that if current trends continue, irrigated land will be reduced by another 20-25% over the next 30 years. At the same time, annual losses from land degradation in the region amount to about USD 4.5 billion.

Against this background, an objective question arises as to whether the current level of cooperation between the countries of the region in the water and energy sector meets the requirements of modern realities and will allow to respond effectively and adequately to these challenges.

Unfortunately, as the analysis shows, the answer to this question is not so comforting. In particular, the states of the region either do not implement or partial comply with commitments of previously signed agreements. There are a restriction of access to information on management and monitoring of water resources of transboundary rivers and insufficient and unbalanced financing of water organizations, which, in fact, are the focal mechanisms of regional cooperation in water and energy sector.

All this demonstrates that, despite all the efforts of the Central Asian countries, **a single policy on the prospects for the use of water resources in the region has not yet been developed.**

In these circumstances, it is very important to understand new trends in the region, discuss them, and consolidate our common efforts in addressing water, energy and environmental issues.

In this regard, we are grateful to all participants of today's Forum for the fact that the issues of

development of cooperation of the Central Asian countries in the water and energy sphere were identified as the topic of discussion.

In our opinion, the main task of today's expert forum should be to develop new practical proposals and progressive ideas.

We call on everyone to consolidate efforts in this direction and to think **about developing general approaches and principles** on the distribution and use of water resources in Central Asia, in particular, **on the implementation of promising water and energy projects based on the principle of cost-benefit sharing.**

We have no great discoveries to make here. The problems we face in Central Asia are not unique. They are similar to the problems of other regions of the world, where they have already been successfully solved.

There are many examples, such as the Mekong river in South Asia, the Danube in Europe and others.

In this regard, it is important to continue moving forward basing on the consensus reached, the successful experience of other countries and regions, and the universally recognized norms and principles of international law. A real step in this direction can be **the development of a regional program or the signing of a regional agreement** that would clearly regulate our cooperation in the field of rational use of water resources, as well as ensure a fair resolution of possible contradictions and disagreements.

I would like to draw your attention to the following: if we manage to reach mutual understanding on this sensitive issue and leave it behind, we will be able to significantly expand the scope of our regional cooperation in almost all other areas.

You ask me why? I think it is due to the fact that reaching a consensus on water in Central Asia, in fact, will mean, first of all, that the parties really trust each other and are ready to take into account mutual interests. And this is the basis of any multilateral cooperation.

In conclusion, I would like to wish all of us successful work.

Welcome Speech by **Lilia Burunciuc**,
Regional Director for the Central Asia Region at the World Bank

The World Bank welcomes the organization of the *Second Central Asia Expert Forum “Dialogue on Water issues in Central Asia: from the national to the regional levels”* and congratulates the host and partners for convening this event. It is great to note that the views regarding the water issues in the region are converging.

I have **four** messages:

1. **Ample water, but low productivity and high stress:** Central Asian countries are well endowed with water. This has enabled development of more than 8.5 million ha of irrigation and considerable hydropower generation in Tajikistan and Kyrgyz Republic. However, water use in the region is very high – in parts, unsustainably high – and the economic productivity of water is very low. Additionally, in many countries, water use has a very high energy footprint. Inadequate water supply and sanitation has economic costs of more than US\$2 billion (especially from impact on health and reduced labor productivity), ranging from 0.5% of GDP in Kazakhstan to over 4% of GDP in Tajikistan.

2. **Demand for water and water management challenges are increasing:** Regional population is expected to increase 30% by 2050, and economic development and urbanization will continue, increasing the demands for water and energy. Aspects of climate change may be uncertain, but it is already clear that raising temperatures and increase in the frequency and severity of droughts will further increase water demand. Increased competition for water and greater variability and uncertainty, will make the challenges of managing water efficiently and equitably more and more difficult.

3. **“Business as usual” is no longer an option:** Serious changes are needed. Given the increasing pressures, current water allocation and water management policies are becoming a serious drag on economic growth. Increasing the economic productivity through changes in sectoral water allocations and improvements in water use efficiency in all sectors, but especially irrigation, would enable faster economic growth and help increase people’s standards of living. Irrigation modernization could increase crop yields by more than 20% by 2030, and by 50% by 2050. Improved water supply and sanitation services would especially benefit the rural population, and deliver real economic dividends. Further development of sustainable hydropower, and electricity trade within and beyond the region, are major opportunities for economic growth and for building climate change resilience. Central Asia countries – individually and collectively – need to leverage the multiple values of water for sustainable economic growth.

4. **We stand ready to help:** The World Bank, has a significant program in this area at the regional and national level amounting to billions of dollars, including investments in water supply and sanitation, irrigation, hydropower, hydromet and climate change, as well as significant analytical work. An example is also the **Central Asia Water and Energy Program (CAWEP)** – a US\$11.5 million multi-donor trust fund supported by the Swiss Secretariat for Economic Affairs, the European Commission and the UK Dept. for International Affairs aimed to support Central Asian countries in the development of a regional vision for transitioning towards modern water economies. However, the Central Asian countries need to be in the driving seat and we are ready to support you.

I wish you a successful conference which I hope will contribute to the development of practical steps and solutions for taking this critical regional agenda forward.

Welcome Speech by **Norimasa Shimomura**,
UN Resident Coordinator for Kazakhstan

Ms. Shaukenova,
Ms. Gherman,
Distinguished participants,

On behalf of the United Nations country team in Kazakhstan, let me express my gratitude to the Institute of Strategic Studies under the President of the Republic of Kazakhstan and UN Regional Centre for Preventive Diplomacy for Central Asia for organizing and kindly inviting me to join this important event. The broad attendance today by State officials, international organizations and the scientific and analytical community testifies to the high importance and relevance of international and regional cooperation around water sector and in solving emerging environmental challenges in the light of achieving the Sustainable Development Goals.

As you are aware, the world leaders adopted the 17 Sustainable Development Goals – the SDGs – at the United Nations in September 2015. The SDGs stress universality – meaning that they apply to all countries around the world – and inter-linkages between all dimensions of sustainable development (i.e., social, economic and environmental dimensions), calling ultimately for the need to leave no one behind. Goal 6 of the SDGs in particular focuses on water and sanitation for all. The United Nations system in Kazakhstan acts as a catalyst and advocate to promote sustainable use and development of natural resources and the environment. We work to help strengthen the institutional framework for environmental management and have long promoted inter-governmental platforms to develop and implement multilateral principles and guidelines to address global and regional environmental challenges.

Allow me now to zoom in a bit more: Water is Life. Yet, water continues to be one of the most under-valued resources on Planet Earth. This therefore calls for a stronger global and regional cooperation, especially against the negative effects of climate change. And this is true for Central Asia, also. Sustainable and fair use of transboundary water resources is essential for promoting sustainable development, and ultimately security and stability of our countries. One of the important enablers for sustainable management of water resources is related to having skilled specialists. This is why we believe it is important to promote inter-disciplinary water education at all levels, aimed to advance scientific knowledge and enhance the water sector through the formation of water professionals and decision makers. We need novel approaches to manage water and related resources, based on the principles of Integrated Water Resources Management.

Changing public attitudes towards treating water as a scarce resource is also crucial. It is so important that the public and decision-makers commit to the understanding that water is a common and finite resource. Engaging broad stakeholders is essential for this purpose: Mobilizing the constructive energy of youth and volunteers would also be a way to go. Finally, we believe the partnerships and confidence built through constant effort for mutual understanding and collaboration are essential for realizing sustainable use and management of water resource. This is true as the Governments and wide range of stakeholders – such as civil society involving men and women, academia, private sector, and international community – have different concerns and important expertise to offer. This is why I am particularly delighted to see that we have today among us participants with diverse background.

While I wish for constructive discussions over the next two days, I would like to thank once again the organizers of this event and express the readiness of the UN team in Kazakhstan to strengthen its cooperation towards achievement of Sustainable Development Goals.

Welcome Speech by **Johannes Stenbaek Madsen**,
Head of Cooperation of the EU Delegation to Kazakhstan

*Your excellences, distinguished experts, dear development partners,
Ladies and gentlemen,*

- I am very pleased to welcome you on behalf of the European Union Delegation to this event which brings together development partners and experts from all Central Asian countries to discuss the important issue of regional cooperation on water and energy.

- As water and energy are inextricably linked in Central Asia, **joint management of these vital resources is crucial for the region's sustainable development, poverty reduction and climate resilience.**

- I therefore thank the organisers for and welcome this opportunity speak about why and how the EU facilitates enhanced regional dialogue and collaboration on energy and water security to help improve conditions for sustainable investment and socio-economic development.

- The EU puts increased focus on promoting green investments to pursue SDGs. To this end, the EU is ready to assist countries in the process of identifying sources of finance for projects that have a direct positive impact on the environment and long-term sustainable development.

First, allow me to draw attention to the UN Agenda 2030 and the European Consensus on Development

- The EU attaches great importance to environmental protection and sustainable development policies. This has been outlined in several strategic documents developed to implement the **UN Agenda 2030 for Sustainable Development** and its 17 Sustainable Development Goals (SDGs).

- **Under the European Consensus on Development**, adopted in June 2017, the European Union institutions and our Member States commit to supporting universal access to safe drinking water, sanitation and hygiene as an essential condition for health, well-being, growth and productivity. Over the last decade, the European Union has provided more than EUR 2.5 billion to improve water and sanitation in 62 countries, mainly in the Africa, Caribbean, Pacific and European neighbourhood regions.

Secondly, I would like to say a few words about how the new EU Strategy for Central Asia addresses water and energy issues:

- When reviewing the 2007 Strategy in June 2015, the Council of the European Union stressed the importance of **respecting the strategic interests of all five Central Asian countries, while promoting multilateral and regional frameworks of dialogue and increased adhesion to international conventions and legal principles governing the environment, trans-boundary resource management, and the consequences of the disappearance of the Aral Sea.**

- **The new EU Strategy on Central Asia**, which sets our fresh vision for future relations with the region, was **presented** by HR/VP Federica Mogherini and Commissioner Mimica **to all five Central Asian Foreign Ministers at the 15th EU-Central Asia Ministerial meeting** on 7 July 2019 in Bishkek.

- The region has witnessed important changes in recent years and its geostrategic importance has increased. The new dynamics have created a strong demand for the EU as a partner and opened new avenues for EU engagement.

Last, but not least, I would like to mention the ongoing EU funded support provided to the region on water and energy:

- The EU renders support to Central Asian countries to better define approaches to the sustainable use and efficient management of natural resources while addressing climate change

impacts and ensuring the preservation of environment. This is done by making full use of the existing **EU-CA Platform for Environment and Water Cooperation and its Working Group on Environment and Climate Change (WGECC)** that are supported through a dedicated EU-funded project on Water and Environment Cooperation, **WECOOP**. The new phase of WECOOP is expected to start in mid-October 2019.

- **The Sixth High Level Conference** of the EU-CA Platform for Environment and Water Cooperation on 24-25 January 2019 in Tashkent reaffirmed that transboundary water cooperation is essential to share water resources and thereby ensure peace and stability, as confirmed at the **Eighth Meeting of the Parties to the UNECE Water Convention** hosted by Kazakhstan and held in Astana on 10-12 October 2018.

- The EU will continue to support Central Asian countries in defining optimal approaches to the sustainable use and efficient management of water through **Water National Policy Dialogues (NPDs)** carried out by UNECE in cooperation with OECD in the framework of WECOOP.

- To meet the growing demand for water, energy and food, EU development cooperation also promotes the “Water-Energy-Food (WEF) Security Nexus” approach as a fundamental shift from a pure sectoral approach to solutions that embrace a cross-sectoral, coherent and integrated perspective. That is why the EU funds another regional project – the “**Central Asia Water-Energy-Food Nexus Dialogue**” – to help Central Asian countries identify relevant transboundary cross-sectoral investment projects.

- CAWEP (Central Asia Water & Energy Programme) is another major regional programme. It is implemented through the multi-donor trust fund established by the World Bank back in 2009 for the benefit of Central Asian countries. It has been financially supported by the EU and **other development partners – Switzerland (through SECO) and the United Kingdom (through DFID)**¹ with the aim to help the region develop as an **area of cooperation and connectivity rather than one of competition and rivalry**.

- The EU welcomes the growing recognition in the region that national approaches are insufficient to address effectively the complex water, energy, food and environment challenges. Together with its development partners, the EU will therefore work to improve regional cooperation which is deemed crucial for sustainable water management.

- EU will continue to work on integrated water resource management and scale up the work at the regional level, if there is a demand, primarily through CAWEP and EUWI Water National Policy Dialogues (NPDs) to be carried out by UNECE in the framework of WECOOP.

- EU will continue to work on Disaster Risk Reduction and to support work in nuclear remediation. Climate change and environmental degradation are potential threat multipliers. We will therefore further integrate the link between the environment, climate and security in our policy dialogue, conflict prevention, development and humanitarian actions and disaster risk reduction strategies across Central Asia.

- EU is ready to help the countries to intensify cooperation on implementing the Paris climate commitments and tackling trans-regional environmental challenges to turn them into opportunities.

In conclusion, I would like to reaffirm the **EU’s long-term commitment** to regional cooperation on water and energy management in Central Asia.

Thank you for your kind attention.

¹ Switzerland was the only financing partner in the first phase. The EU’s first grant of EUR 1 million was given to CAWEP for its second phase. The third phase started in January 2018.

MULTILATERAL DIPLOMACY TO SOLVE WATER AND ENERGY PROBLEMS IN CENTRAL ASIA

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Abstract. Attempts to solve water and energy problems between the countries of Central Asia have been repeatedly made over the years. Back in 1997, the Interstate Council of Kazakhstan, Kyrgyzstan and Uzbekistan decided, and the Council of Prime Ministers of these countries approved, the Regulations on the International Water and Energy Consortium of March 17, 1998. Further work was continued within the framework of the Eurasian Economic Community (EurAsEC). The main reason for past failures in this direction is that initially the developers were tasked with preparing and signing an Agreement on the establishment of a water and energy consortium without carrying out preparatory work justifying all sides of its activities.

Keywords: *Central Asia, Water and Energy Policy, International Fund for saving the Aral Sea, The United Nations Economic Commission for Europe, The International Water Assessment Center*

ОРТАЛЫҚ АЗИЯДАҒЫ СУ-ЭНЕРГЕТИКАЛЫҚ МӘСЕЛЕЛЕРДІ ШЕШУДЕГІ КӨПЖАҚТЫ ДИПЛОМАТИЯ

Мұхтар Жакенов

Аңдатпа. Бірқатар жылдар бойы Орталық Азия елдері арасындағы су-энергетикалық мәселелерді шешуге талпыныс жасалды. 1997 жылы Қазақстан, Қырғызстан және

Өзбекстанның Мемлекетаралық Кеңесі және осы елдердің Премьер-Министрлер Кеңесі 1998 жылы 17 наурызда «Халықаралық су-энергетикалық консорциум туралы ережені» бекітті. Әрі қарай Еуразиялық экономикалық қоғамдастық (ЕурАзЭҚ) шеңберіндегі жұмыстар жалғастырылды. Осы бағыттағы өткен сәтсіздіктердің басты себебі, бастапқыда оның жұмысының барлық жақтарын негіздейтін дайындық жұмыстарынсыз су-энергетикалық консорциум құру туралы Келісімді дайындау және қол қою міндеті қойылды.

Түйін сөздер: Орталық Азия, су-энергетика саясаты, Халықаралық Аралды құтқару қоры, БҰҰ Еуропа үшін экономикалық комиссиясы, Су бағалау бойынша халықаралық орталық

МНОГОСТОРОННЯЯ ДИПЛОМАТИЯ ДЛЯ РЕШЕНИЯ ВОДНО-ЭНЕРГЕТИЧЕСКИХ ПРОБЛЕМ В ЦЕНТРАЛЬНОЙ АЗИИ

Мухтар Жакенов

Аннотация. Попытки решения водно-энергетических проблем между странами Центральной Азии неоднократно предпринимались на протяжении ряда лет. Еще в 1997 году Межгосударственным Советом Казахстана, Кыргызстана и Узбекистана было решено, а Советом Премьер-Министров этих стран 17 марта 1998 года утверждено «Положение о Международном водно-энергетическом Консорциуме». В дальнейшем работа была продолжена в рамках Евразийского экономического сообщества (ЕврАзЭС). Был подготовлен проект Концепции эффективного использования водно-энергетических ресурсов Центрально-Азиатского региона. Основной причиной прошлых неудач в этом направлении является то, что изначально перед разработчиками была поставлена задача по подготовке и подписанию Соглашения о создании водно-энергетического консорциума без проведения подготовительной работы, обосновывающей все стороны его деятельности.

Ключевые слова: Центральная Азия, водно-энергетическая политика, Международный Фонд спасения Арала, Европейская экономическая комиссия ООН, Международный центр оценки вод

The Central Asian countries, not finding common ground on regional water and energy issues, started to solve them from the point of view of purely national interests. In the absence of alternative energy sources to meet their own needs, the upstream countries have increased electricity generation in the winter. This led to flooding in the middle and lower parts of the river, which caused significant damage; and accordingly forced

others to build fortifications and other structures there. Subsequently, Uzbekistan and Kazakhstan have taken measures to increase the water storage capacity.

As a result of all these measures, the water situation has changed significantly in contrast to 2000. Meanwhile, all reservoirs of the Syrdarya basin are seasonally regulated. Only the Toktogul reservoir has the possibility of long-term regulation. In

the case of low-water period, one of the main factors determining the degree of water supply will be flow augmentations from the Toktogul reservoir. Thus, there is no alternative source of water supply. The issue of the Syrdarya river basin regime should be solved jointly, including through water and energy cooperation.

The need to develop water and energy cooperation was discussed at the highest political level.

Thus, at the IFAS Summit held in August 2018 in Turkmenbashi, the First President of the Republic of Kazakhstan Nursultan Nazarbayev stressed the importance of returning to the issue of creating an International Water and Energy Consortium of Central Asia. President of the Kyrgyz Republic, Sooronbay Jeenbekov, proposed to resume cooperation within the framework of the Agreement on the use of water and energy resources of the Syrdarya river basin of 1998.

To draw attention to this issue, within the framework of the XII Astana Economic Forum held in Nur-Sultan on May 17, 2019, we initiated a high-level panel session “Water as a factor of economic growth and security in Central Asia”. The panel session was attended by high-level representatives of Central Asian countries and international organizations, including the World Bank, the European Union, the Geneva Water Centre and the Swiss Agency for Development and Cooperation. The panel session was another step towards developing a common vision for water security in Central Asia. Strengthening water resources management at the national level and systemic cooperation on transboundary waters will yield multiple benefits for all countries based on the principles of joint management of shared resources. Participants confirmed the need

for technical expert meetings to discuss the concept of the International Water and Energy Consortium. In the future, we plan to continue discussing the technical aspects of this issue at the expert level.

It is no secret that a key factor contributing to the improvement of water and energy security in Central Asia is the creation of a sustainable regional mechanism for the distribution of water and energy, taking into account the economic interests of all stakeholders and at the same time corresponding to the current economic realities.

At the same time, the very creation of the consortium will not solve all the problems of the water and energy system of the region: it is necessary to work in other areas, such as legislative, methodological, financial, economic, technical, organizational, institutional, information and others.

One of the most important points is the *development of a coordinated economic mechanism of relations in the water and energy sector; the ultimate goal of which is the formation of a common market for water, energy and services*. It is in this direction that the attention of the expert community of our countries should be focused. I propose to discuss this issue not only at the meetings of the Expert Forum, but also throughout the year, for which it is necessary to work out the issue of financing such case studies.

Last October, the Meeting of the Parties to the UNECE Convention on the protection and use of transboundary waterways and international lakes was held in Astana. At its Eighth session, the Meeting of the Parties adopted the Work Programme for 2019-2021, which includes, inter alia, clause 3.3: “Support for sustainable and equitable distribution of water resources in a transboundary context”. It provides,

on the basis of existing practice, for the development of the “Guide to the allocation of water resources in a transboundary context” regarding key aspects of sustainable and equitable allocation of water resources in a transboundary context for both surface and groundwater, as well as environmental flows.

In this regard, the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan with the support of the Government of Kazakhstan initiated analytical work in the following areas: “Sustainable distribution of water resources in a transboundary context” and “Ecological river flow as the basis for the conservation of the ecological system”.

During the implementation of the projects, it is planned to collect scientific and methodological approaches, principles and practices of assessment, existing regulatory framework for assessing the environmental flow of transboundary water bodies and sustainable distribution of water resources of the Region with the active participation of experts from Central Asian countries. The Project experts will also analyze the collected materials in comparison with international treaties and soft law documents regulating the provisions and articles on the environmental flow of transboundary water bodies. These activities will provide an opportunity to assess the situation in the

Region on this issue and jointly explore the relevance and potential value of international best practices. The results of the work will of course be used in the development of the Guide.

To date, we have sent requests to the countries concerned in the appointment of national experts for this work. We look forward to your support and request your assistance in appointing national experts. Thus, this work will be not only the contribution of Kazakhstan, but also of all the countries of Central Asia.

The International Water Assessment Centre (IWAC), as a subsidiary joint body of the Water Convention, will assist in the implementation of these projects in terms of interaction with the Secretariat of the Water Convention. In conclusion, I would like to note that Kazakhstan, based on the principles and provisions of the Convention on Transboundary Waters, intends to increase cooperation between countries on joint management of transboundary waterways.

Water resources management in the Central Asian region requires a holistic approach. The region’s water sector, which combines water, food, energy and ecosystems, should be seen as inextricably linked to national security, regional stability and sustainable economic growth.

WATER AS A FACTOR OF REGIONAL INTEGRATION IN CENTRAL ASIA

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Abstract. Cooperation with the countries of Central Asia is one of the main guidelines in the foreign policy strategy of Kazakhstan. This is due to geographical situation, and in addition, to the fact that these countries have similar socio-economic goals and objectives. Among the problems facing the countries of Central Asia today, one of the most urgent is the problem of developing coordinated approaches to the issue of joint use and protection of water resources of the region.

Keywords: Central Asia, Regional Integration, Water Resources

СУ ОРТАЛЫҚ АЗИЯДАҒЫ АЙМАҚТЫҚ ИНТЕГРАЦИЯ ФАКТОРЫ РЕТІНДЕ

Санат Көшкімбаев

Аңдатпа. Қазақстан үшін Орталық Азия елдерімен ынтымақтастық сыртқы саясаттағы басты бағыттардың бірі болып табылады. Бұл географияға байланысты, сонымен қатар бұл елдердің әлеуметтік-экономикалық мақсаттары мен міндеттері ұқсас екендігі. Бүгінгі Орталық Азия елдерінің алдында тұрған маңызды сұрақтарының ішінде, аймақтағы су ресурстарын бірлесіп қолдану және қорғаудағы өзара келісілген іс-әрекеттерді дайындау проблемасы ең өзекті болып табылады.

Түйін сөздер: Орталық Азия, аймақтық интеграция, су ресурстары

ВОДА КАК ФАКТОР РЕГИОНАЛЬНОЙ ИНТЕГРАЦИИ В ЦЕНТРАЛЬНОЙ АЗИИ

Санат Кушкумбаев

Аннотация. Для Казахстана сотрудничество со странами Центральной Азии является одним из главных ориентиров во внешнеполитической стратегии. Это обусловлено географией, а помимо того, еще и тем, что эти страны имеют сходные социально-экономические цели и задачи. Среди проблем, которые стоят сегодня перед странами Центральной Азии, к числу наиболее актуальных относится проблема выработки согласованных подходов к вопросу совместного использования и защиты водных ресурсов в регионе.

Ключевые слова: Центральная Азия, региональная интеграция, водные ресурсы

The increased attention to water is explained by the fact that it becomes one of the main factors determining the state of most sectors of the economy, primarily the agricultural sector, in the countries of Central Asia.

Water shortage and reduced river flow limit the solution of socio-economic and

environmental problems. The main part of the water used in the region is taken from the two main rivers – the Amu Darya and Syr Darya, formed in the Pamir and Tien Shan mountains. Tajikistan and Kyrgyzstan account for the bulk of surface water flow in the region (see Table 1).

Table 1. The share of the countries of the region in the formation of the basin of the largest rivers of Central Asia

	Syr Darya	Amu Darya
Kyrgyzstan	74.2 %	2.0 %
Kazakhstan	6.5 %	-
Uzbekistan	16.6 %	8.5 %
Tajikistan	2.7 %	72.9 %
Turkmenistan	-	1.9 %
Afghanistan	-	13.9 %

All forecasts of the future development of the region come to the conclusion that over time the water problem in Central Asia will become even more acute. Today, more than 40% of the population does not have access to centralized water supply, and this figure is projected to increase significantly in a

decade. It is estimated that the population of the Central Asian countries, which today is about 70 million people, will increase by 20% by 2025, which will require additional water resources. For this reason, the issue of stable access to this type of resources becomes a priority for the countries of the region.

Nature itself is pushing countries to deepen regional cooperation. However, in practice, we face a number of chronic problems in this area. Despite the fact that the Central Asian countries agreed to establish an expert group to develop a form of water use acceptable to all countries, regular meetings, both at the highest level and at the level of ministries, have not yet led to the signing of a mutually acceptable comprehensive and long-term agreement on this issue.

Since 2016, the political climate in Central Asia has significantly changed, becoming more favorable for the discussion of regional issues and problems. Earlier, as is known, there was a sharp debate around the construction and operation of hydropower facilities and dams in the upstreams of large rivers. The “upstream” states – Tajikistan and Kyrgyzstan - considered water their national strategic resource and sought to translate this issue into an economic plane. At the same time, the “downstream” countries - Uzbekistan, Turkmenistan and Kazakhstan - were convinced of the artificiality of this approach and rightly feared for the stability of water flow.

At the same time, international conventions on Transboundary Rivers set two conditions: the amount of water “leaving” the country should be comparable to the amount of water entering, and the quality of water should not deteriorate after its passage through the territory. When such rules are observed, as on the Danube in Europe, for example, the solution of economic, social and environmental problems becomes quite real. But not all Central Asian countries have signed these agreements, and therefore all the water does not reach the neighbors and the quality also leaves much to be desired.

Therefore, Tashkent has always spoken with great concern about the importance of a mutually acceptable regime for the operation of various large-scale hydro-power facilities in the basins of transboundary rivers. It is unquestionable that given the single ecological zone in the river deltas, there was an issue of environmental safety throughout the region.

Uzbekistan’s arguments are very serious. As you know, agriculture in Uzbekistan is completely dependent on the availability of irrigation water, and therefore the operation of potential hydropower plants can create a shortage of water in the irrigation season. In addition, the construction of such large-scale hydroelectric power plants in a seismically unstable zone increases technogenic and environmental risks. It is also known that Uzbekistan and Kazakhstan have questions on the operation regime of hydropower facilities in Kyrgyzstan, in particular on the Toktogul Hydroelectric Power Plant (part of the Naryn Hydroelectric Power Plant Cascade), as well as the Kambarata Hydroelectric Power Plant under construction, affecting the flow of the Syr Darya.

With large water resources and potential for electricity generation, Tajikistan and Kyrgyzstan are experiencing a large shortage of electricity. This is why they justify the construction of large hydroelectric power plants, which, in turn, increases the risks of lack of water for irrigation in the summer in the countries located downstream of the Amu Darya and Syr Darya. A number of politicians in Tajikistan and Kyrgyzstan say that water is the same commodity as oil and gas, significant reserves of which are located in Uzbekistan, Kazakhstan and Turkmenistan. Accordingly, in the irrigation period, the change from energy to

irrigation mode of operation of HPPs should be compensated by the “downstream” countries. This issue should be discussed in a dialogue format and resolved on a mutually beneficial basis.

Kazakhstan is sympathetic to the energy problems of its neighbors in the region – Tajikistan and Kyrgyzstan. All countries are interested in mutually acceptable operation of various hydraulic facilities - dams and power plants on transboundary rivers. This requires an international comprehensive examination of facilities under construction and potential hydraulic structures. The essence of Kazakhstan’s position is to maximize the use of dialogue and negotiation mechanisms to address water, energy and many other economic issues in Central Asia.

Thus, our country offers its Central Asian partners to consistently move towards close regional cooperation on a pragmatic basis, taking into account the peculiarities of each country.

Kazakhstan announced the desire for closer cooperation and intends to consolidate positive trends both politically (bilateral and multilateral dialogue) and economically (investments in energy, transport, etc.). These efforts are conditioned by the state of bilateral and multilateral relations of the countries of the region, the need to ensure

stability and security in the region and to create a favorable foreign economic and political environment.

Examples of successful regional associations and, above all, the EU, show that the establishment of productive cooperation must begin with several key sectors. In the case of Europe, as is known, the creation of the EEC (1957) was preceded by the successful operation for a number of years of such an agreement as the European Coal and Steel Association (1951).

It should be recalled that the package of proposals includes the creation of industry consortia: water, energy, transport and food; joint investment structures and a number of others. These initiatives are certainly open to discussion and new proposals from our Central Asian neighbors. It is obvious that it is necessary to address extremely topical issues related to the distribution of water resources and the work of the regional energy system.

Water issues already require not just cooperation, but the development of integrated approaches. In fact, transboundary rivers and water bodies are natural integrators in Central Asia. Sustainable development of regional countries, their socio-economic situation, and ultimately peace and stability will depend on their rational use.

WATER PROBLEMS OF CENTRAL ASIA AND THEIR SOLUTIONS

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Abstract. The article deals with the general context: of global demand for water, water problems of Central Asia and ways to solve them, water strategy of the Republic of Kazakhstan; the final part describes the fundamental issues of regional cooperation, including in the field of scientific.

Keywords: *Central Asia, Water Resources, Water Strategy, Kazakhstan*

ОРТАЛЫҚ АЗИЯНЫҢ СУ ПРОБЛЕМАЛАРЫ ЖӘНЕ ОЛАРДЫ ШЕШУ ЖОЛДАРЫ

Медеу Ахметқал

Аңдатпа. Бұл мақаланың мазмұнында мынадай мәселелер қарастырылады: әлемдік суға деген сұраныс; Орталық Азияның су проблемалары және оларды шешу жолдары; Қазақстан Республикасының су стратегиясы және қорытынды бөлімінде аймақтық ынтымақтастықтың маңызды, сонымен қатар ғылыми зерттеулер саласындағы мәселелері.

Түйін сөздер: *Орталық Азия, су ресурстары, су стратегиясы, Қазақстан*

ВОДНЫЕ ПРОБЛЕМЫ ЦЕНТРАЛЬНОЙ АЗИИ И ПУТИ ИХ РЕШЕНИЯ

Медеу Ахметқал

Аннотация. В статье в общем контексте рассматриваются: глобальный спрос на воду; водные проблемы Центральной Азии и пути их решения; водная стратегия

Республики Казахстан и в заключительной части приводятся основополагающие вопросы регионального сотрудничества, в т.ч. в области научных исследований.

Ключевые слова: *Центральная Азия, водные ресурсы, водная стратегия, Казахстан*

As we know, authoritative international organizations, primarily the UN and UNESCO, attach great importance to solving water problems.

Global demand for water is increasing at a rate of about 1% per year, depending on population growth, economic development and changing consumption patterns, and it will grow over the next two decades. The vast majority of the growing demand for water will occur in emerging economies.

Due to climate change, there is an intensification of the global water cycle in nature – in regions with a humid climate, the latter becomes even wetter, in regions with a dry climate - even drier. The UN estimates that 3.6 billion people (almost half the world's population) now live in water-scarce areas. By 2050, this number could be between 4.8 and 5.7 billion people.

Typical contradictions and tasks of water resources management in the development and functioning of water management systems of river basins are:

- interstate, due to the difference of national interests in the use of transboundary water resources;

- natural and economic, associated with conflicting requirements for water sources according to economic development and conservation of the natural environment;

- intersectoral, arising in connection with the difference in requirements for the volume, mode and quality of water resources of individual sectors of water management (industrial and municipal water supply, irrigation, hydropower, fisheries, water transport);

- interregional, due to conflicting requirements to the hydrological regime of the water source of the upper and lower water users of river basins.

Security level. National security aspects

There are six levels of security in political science: individual, group, societal (security of an individual society or a community of culturally close societies), national (security of the state), international and global.

When analyzing the threats to national security posed by the water problem, it is necessary to consider the international, in this case regional, level.

The most important aspects of national security are economic, military, social and environmental aspects, relevant to solving water problems in Central Asia.

All transboundary water bodies create hydrological, social and economic relationship between the countries of the Central Asian Republics. The vital nature of freshwater is a powerful incentive for cooperation and dialogue, reconciling conflicting positions of countries. Water should be seen as a unifying factor. The conceptual basis of relations on transboundary waters should be the fundamental principle of equal use of common water resources by different countries and mutual responsibility for their protection.

Water threats: problems and solutions

Water resources, being an integral component of the environment, can manifest itself as a formidable element, bringing destruction and disaster. In the context

of global and regional climate change in the CAR, there is a tendency to increase the frequency and depth of manifestation of water-related emergencies: droughts, floods, mudslides, landslides, breakouts of glacial lakes.

Each of the formulated tasks requires specific methodological approaches, principles and criteria, as well as certain initial information.

Effects of climate change

In the territory of the CAR, taking into account the identified climatic trends, the reduction of river flow resources is possible in the future. In connection with the projected decrease in available water resources, there may be noticeable changes in the size and structure of water consumption and it may be possible to strengthen the contradictions between individual water users.

Water Resources Management: structure and functions

In the context of increasing water problems in the CAR, the functions, principles and mechanisms of water resources management are changing significantly. The new water paradigm combines “resource management” with “demand management” for water through water conservation and improved water efficiency. Priorities in the use of water resources are shifting in favor of society and environment in relation to manufacture. Environmental aspects of management are implemented through meeting the water requirements of ecosystems and preventing the harmful effects of water.

The main tool for the choice of further ways of development of water management systems of the CAR is the creation of geospatial information systems and development of a set of mathematical

models, which will be an effective means of improving the efficiency and reliability of decision-making on water resources management.

Water Security of the Republic of Kazakhstan: problems and solutions

Taking into account the aggravation of water problems in the world and the Central Asian region, as well as the special importance of water resources for the country, the Institute of Geography, with the support of the relevant authorities, developed a concept of water security, formulating a vision of solving the problem of water shortage in Kazakhstan.

According to the Water Security Concept of the Republic of Kazakhstan, water security is the state of protection of vital interests of society (human health, habitat, production) from water threats - water-conditioned natural and anthropogenic phenomena and processes, as well as properties of water bodies that can cause damage to society in certain conditions.

Water security of the Republic of Kazakhstan in conditions of limited and vulnerable water resources is considered as a component of national security, including public, economic and environmental security.

Ensuring water security includes identification of water threats of the Republic (including climatic, transboundary, water-resource, water management, water-ecological threats), cardinal ways of solving the problem of water shortage, the action program for sustainable water supply of the economy, social sphere and ecology with the definition of target indicators, strategic directions and system tasks.

Water threats of the Republic of Kazakhstan

Threats of climate change. The territory of Kazakhstan is expected to further increase the surface air temperature in all months of the year by 0.8-1.2°C, as well as to change in the average annual rainfall by 1-3% by 2035. Evaporation on river catchment areas with a decrease in the inflow of water into rivers and falling levels of the Aral and Caspian seas, the growth of household demand for water resources, including increased rates of irrigation of crops are also expected.

Transboundary water resource threats. Due to the unfavorable geographical position in the lower reaches of transboundary basins, the Republic of Kazakhstan is largely dependent on water management activities in the neighbouring countries of China, Uzbekistan, Kyrgyzstan and Russia. Reduction of the volume, change of the regime and deterioration of the quality of transboundary water flow are expected in connection with the projected population growth in the CAR states.

Threat of groundwater intake. With the development of all proven groundwater resources, there will be a reduction in river fans.

Threat of reduction in the resources of river flow. With the implementation of climate and transboundary hydrological threats in the future by 2030, it is possible to reduce the resources of river flow in Kazakhstan as a whole.

Hydroeconomic threats. Hydroeconomic threats of the Republic of Kazakhstan are associated with the application of water-consuming technologies in economic sectors and imperfection of technical means of water regulation and water distribution.

Water environmental threats. There is a real threat of new zones of ecological instability in a number of river basins of Kazakhstan, including those manifested

at crisis and catastrophic levels in the Ile-Balkash, Zhaiyk-Caspian and Aral-Syr Darya basins.

Due to the reduction of the transboundary flow of the Ile river, lake Balkash may repeat the fate of the Aral sea.

Threat of water shortage. Water resources shortage is expected in the Republic as a whole even under conditions of intensification of water use in production sectors.

Two ways (two groups) of measures for elimination of water shortage in the Republic are defined as follows: reducing the burden on water resources and increasing freshwater resources. The first group provides for the implementation of measures to reduce the consumption of fresh water. The second group implies an increase in available water resources for use by: improvement of interstate water allocation; regulation of river flow; use of underground fresh water reserves; desalination of salty and brackish waters.

Water Resources Management: goal system

General goal: sustainable water supply of natural and economic systems of Kazakhstan

Goal 1: Management of the “resource” - increase of water supply of natural and economic systems of Kazakhstan,

Goal 2: Management of the “demand” - increase of efficiency of used water in natural and economic systems of Kazakhstan

Goal 3: Improvement of administrative and organizational system of water resources management.

Improvement of administrative and organizational system of water resources management:

- Increasing water availability in Kazakhstan

- Compensation of anthropogenic and climatic reduction of water resources.
- Improvement of the efficiency of water use
- Sustainable water supply of population and production, conservation and restoration of water bodies.
- Improvement of water resources management system
- Increasing the level of validity and efficiency of state decisions in the field of water resources management.

Innovative program of action

The strategy development is based on the method of system analysis, which considers the object of research - water supply systems of the Republic of Kazakhstan (WSS RK) - as a complex system with its inherent properties of multidimensionality, uncertainty and conflict.

Methods and technologies of simulation dynamic-stochastic modeling of water balances in the basin and administrative sections on the calculated levels of development were used as a research tool of the WSS of the Republic of Kazakhstan.

The water security strategy (innovative development scenario) formulates a vision of solving the problems of water scarcity in Kazakhstan and aims to substantiate the principal long-term solutions in response to climate and transboundary water threats with the formation of a hierarchically organized system of goals, strategic directions, system tasks and key activities until 2050.

Interstate water allocation in transboundary basins

On the basis of the principles of international water law, the methodology of interstate water allocation in transboundary basins was developed taking into account

the interests of Kazakhstan.

The Trans-Kazakhstan Canal (TKC) is a strategic priority for sustainable water supply in Kazakhstan

In Kazakhstan, the spatial unevenness of the distribution of river flow and water demand is sharply expressed. Up to half of Kazakhstan's renewable water resources are formed in the Yertis basin. River basins of Central and Southern Kazakhstan are the most water-intensive. The transfer of part of the Yertis flow into the perspective water-stressed basins shall contribute to solving national and regional problems of sustainable development.

Transit potential and development of the TKC

The transit potential of the TKC is to use part of the canal route to transfer part of the flow of Russian rivers in the direction of Ob-Amu Darya, as well as to form the shipping route Russia – Kazakhstan – Uzbekistan. “Astana branch” can become the primary link of development of the TKC.

Using the flow of Russian rivers in the direction of upstream of the Katun river will allow Russia to compensate for the reduction of the Yertis inflow due to the water intake of Kazakhstan, as well as to participate in the development of efficient hydropower resources on the transfer route.

A potential way of preserving the integrity of lake Balkash – a water body of special national importance – is to attract part of the flow of the Yertis river from the Buktyrma reservoir.

Infrastructure solutions have been developed for the conservation and restoration of Delta lakes by the construction of river waterworks simulating the natural regime of water exchange of wetlands with river flow.

Scenario analysis

Dynamic-stochastic modeling of water supply systems

The simulation dynamic-stochastic model of analysis and forecast of scenarios of water supply of natural and economical systems of Kazakhstan with identification of deficits and surpluses of water for estimated stages of development as a basis of development of actions for their balancing was elaborated.

Scenarios of water supply of the Republic of Kazakhstan

3 scenarios of water supply of the Republic of Kazakhstan have been developed: Inertial - assuming the implementation of existing trends in water use, fraught with deep shortages of fresh water, severe economic damage and violation of the natural environment; Water-saving - stabilizing economic water consumption, which does not exclude the possibility of forming a shortage of fresh water in terms of reducing transboundary runoff; Innovative – in addition to water conservation, compensating for the reduction of water resources by transboundary and inter-basin transfers of river flow, ensuring a balance of water use in all basin natural and economical systems of the Republic.

Proposals for regional cooperation

Area of cooperation:

- in the political aspect - prevention and peaceful resolution of controversial issues of transboundary water cooperation;
- in the economic aspect - mutually beneficial use of water resources of transboundary basins on the principles of integration;
- in the environmental aspect - conservation of resource potential and environmental sustainability of water systems of transboundary basins;

- in the social aspect - strengthening and development of mutually beneficial regional cooperation on scientific, technical, organizational and investment aspects of the water sector of Central Asia.

Areas of joint research

In order to achieve the sustainable development goals and objectives of the CAR countries, it is necessary to consolidate the existing scientific, technical and production potential, to interact with scientific communities at the national and international levels and to strengthen capacity and increase awareness in conducting new and continuing research in the following areas:

- Development of new technologies, methods, models for assessing and forecasting the quantity and quality of water resources, as well as demand for water to make effective management decisions in the context of climate change and economic activity.
- Development and implementation of the principles of integrated water resources management, taking into account the best international experience, ensuring reliable and safe operation and development of water management systems, taking into account the development of economic sectors and environmental protection.
- Development and implementation of geoinformation technologies and methods of optimization and simulation modeling of functioning and development of water management complexes as an effective tool of scientific research, design development and operational management of water resources.

HYDROPOWER POTENTIAL OF KAZAKHSTAN: PROSPECTS OF DEVELOPMENT

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Abstract. Ensuring energy security is one of the key strategic priorities of Kazakhstan. The Republic is interested in accelerating the process of transition to a diversified and “green” power technology-oriented model of economic development. In recent years, the strategy of expanding the use of renewable energy sources (RES) can be considered as one of the most important activities of the government of Kazakhstan on the modernization of the national energy system. The increased attention paid to the creation of a stable functioning renewable energy system is reflected in the formation of relevant legislation in Kazakhstan, which provides opportunities for local and foreign investors to implement projects for the construction of energy generation facilities using renewable energy.

Keywords: *Hydropower, Water Policy, Kazakhstan, Energy Efficiency*

ҚАЗАҚСТАННЫҢ ГИДРОЭНЕРГЕТИКАЛЫҚ ӘЛЕУЕТІ: ДАМУ ПЕРСПЕКТИВАЛАРЫ

Лидия Пархомчик

Аңдатпа. Энергетикалық қауіпсіздікті қамтамасыз ету - Қазақстанның басты стратегиялық басымдықтарының бірі. Республика әртараптандырылған және жасыл энергетикалық технологияға негізделген экономикалық даму моделіне көшуді жеделдетуге мүдделі. Соңғы жылдары қайта қалпына келетін энергияны пайдалануды дамыту Қазақстан Үкіметінің энергетикалық кешенді

модернизациялаудағы маңызды бағыттарының бірі ретінде қарастыруға болады. Тұрақты жұмыс істейтін қайта қалпына келетін энергия кешенін құруға баса назар аудару Қазақстанда жергілікті және шетелдік инвесторларға жаңартылатын энергия көздерін пайдалана отырып энергия өндіретін объектілерді салу жобаларын жүзеге асыру мүмкіндігін беретін заңнаманың қалыптасуынан көрінеді.

Түйін сөздер: гидроэнергетика, су саясаты, Қазақстан, энергия тиімділігі

ГИДРОЭНЕРГЕТИЧЕСКИЙ ПОТЕНЦИАЛ КАЗАХСТАНА: ПЕРСПЕКТИВЫ РАЗВИТИЯ

Лидия Пархомчик

Аннотация. Обеспечение энергетической безопасности является одним из ключевых стратегических приоритетов Казахстана. Республика заинтересована в ускорении процесса перехода к диверсифицированной и ориентированной на «зеленые» энергетические технологии модели экономического развития. В последние годы стратегию расширения сферы использования возобновляемых источников энергии (ВИЭ) можно рассматривать как одно из важнейших направлений деятельности правительства Казахстана по модернизации энергетического комплекса. Повышенное внимание, уделяемое созданию стабильно функционирующего комплекса ВИЭ, отражается в формировании в Казахстане соответствующего законодательства, которое предоставляет местным и иностранным инвесторам возможности для реализации проектов по строительству объектов генерации энергии с использованием ВИЭ.

Ключевые слова: гидроэнергетика, водная политика, Казахстан, энергоэффективность

Kazakhstan intends to modernize most of its infrastructure over the next 20 years through the introduction of environmentally friendly technologies. There is a strong political momentum in the country to move towards a green economy. Thus, Kazakhstan-2050 Strategy and other strategic program documents stated ambitious goals to achieve 50% of the share of alternative and renewable energy by 2050 in its electricity generation sector, as well as to reduce the energy intensity of GDP by 25% by 2020, compared with the baseline level of 2008 [1]. Kazakhstan's plans to introduce alternative energy

sources into electricity production are shown in Diagram 1.

The proposed scheme is quite feasible. According to the estimates of the Minister of Energy Kanat Bozumbayev, the share of renewable energy sources in Kazakhstan will be 42% by 2050 due to the reduction of coal use [2].

The total potential of RES in Kazakhstan is very significant and is estimated at more than 1 trillion kWh per year. The most promising area for development in Kazakhstan is wind energy (technical potential of 929 billion kWh). The total hydropower potential of Kazakhstan is

170 billion kWh per year, with 62 billion kWh being its technical potential, of which 30 billion kWh per year is economically feasible for use. Nevertheless, Kazakhstan

produces on average about 8-9 billion kWh per year, which indicates the insufficient use of hydropower resources of the country [3].

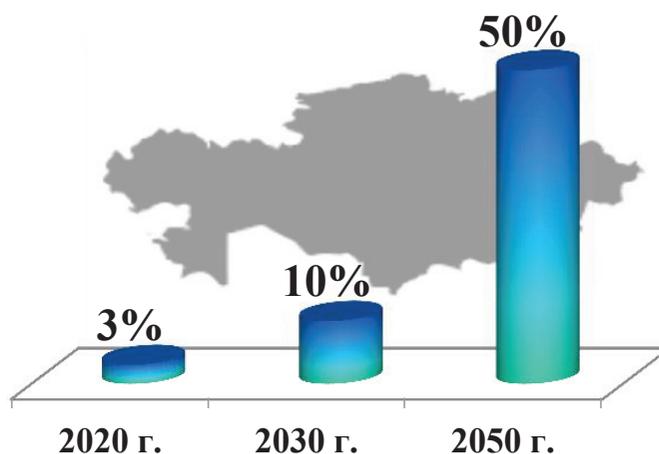


Diagram 1. Share of RES in electricity production according to Kazakhstan-2050 Strategy

The total potential of RES in Kazakhstan is very significant and is estimated at more than 1 trillion kWh per year. The most promising area for development in Kazakhstan is wind energy (technical potential of 929 billion kWh). The total hydropower potential of Kazakhstan is 170 billion kWh per year, with 62 billion kWh being its technical potential, of which 30 billion kWh per year is economically feasible for use. Nevertheless, Kazakhstan produces on average about 8-9 billion kWh per year, which indicates the insufficient use of hydropower resources of the country [3].

However, today the hydropower segment is the most developed renewable and alternative energy source in Kazakhstan. Hydroelectric power plants installed in both the Soviet and post-Soviet periods play an important role in the country's energy balance. Gross electricity production from hydroelectric power plants (HPPs) in Kazakhstan increased from 7.3 billion kWh in 1990 to

10.3 billion kWh in 2018. However, here you need to consider a number of nuances. Thus, over the past 3 years, the share of electricity produced by large hydropower plants tends to decrease. Thus, in 2016, the share of hydraulic structures accounted for 11.6 billion kWh of electricity produced, while in 2017 this figure fell to 11.1 billion kWh. In the first quarter of 2019, hydropower facilities produced 2.038 billion kWh, which is only 10 million kWh more than the same period in 2018. In this respect, the share of hydroelectric power plants in total electricity production is steadily decreasing from 12.3% in 2016 to 10.9% in 2017 and 9.7% in 2018. If we take into account the 1st quarter of 2019, this figure was even 7.3%.

In general, it should be noted that according to the International Renewable Energy Agency (IRENA), the installed capacity of hydroelectric power plants in Kazakhstan in 2018 amounted to 2755 MW. In fact, Kazakhstan ranks third among

Central Asian countries after Tajikistan (5631 MW) and Kyrgyzstan (3679 MW) in determined hydropower capacity [4].

The mode of operation of the HPP of Kazakhstan was determined by the water balance and hydrological situation. The decrease in generation at hydroelectric power plants of Kazakhstan in 2018 comparing with last year is due to reduced water consumption at HPPs. The decrease in electricity production in Almaty region occurred due to the decrease in generation at the Kapshagai HPP of AIES JSC (-314.5 million kWh or -21% of the level of 2017), Moynak HPP JSC (-180.3 million kWh or -15% of the level of 2017). In the East Kazakhstan region, the decrease in electricity production is associated with a decrease in generation from hydroelectric power plants: AES Shulbinsk HPP LLP (-171.6 million kWh or -8% of the level of 2017), Bukhtarma HPP of Kazzinc LLP (-195.7 million kWh or -6% of the level of 2017), AES Ust-Kamenogorsk HPP LLP (-56.2 million kWh or 3% of the level of

2017). This decrease in generation in the reporting period is due to a decrease in water consumption relative to 2017 [5].

A similar situation developed in 2017. The decrease in generation was observed in the hydroelectric power plants of Kazakhstan (-448 million kWh or -3,9%), due to lower water flow at the Irtysh HPP Cascade and hydropower plants of Almaty region.

Of course, it is premature to talk about the criticality of the situation, especially in view of the factor of seasonality of changes in the water content of rivers and climatic features of the region. At the same time, it should be noted that, despite the decrease in the productivity of large hydropower plants, the general trend for steady growth is observed both in the production and consumption of electricity. Electricity production in 2018 in Kazakhstan amounted to 106.7 billion kWh (an increase of 4.3% by 2017). Electricity consumption in the country amounted to 103.2 billion kWh (an increase of 5.5% by 2017).

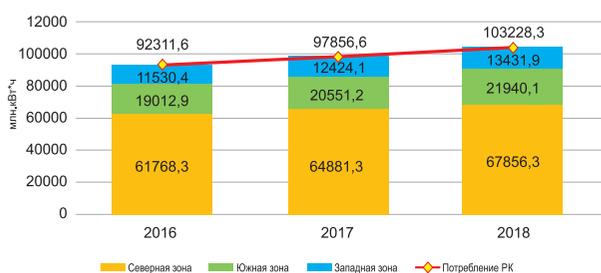


Diagram 2. Dynamics of electricity consumption of the Republic of Kazakhstan for 2016-2018

Source: according to the Kazakhstan Electric Power Association

It is estimated that more than 66% of the total water intake in Kazakhstan, mainly from the Syr Darya, Ili, Chu, Talas and Irtysh rivers, is used for agriculture, including irrigation and animal husbandry,

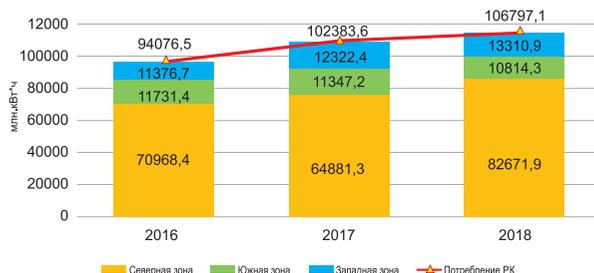


Diagram 3. Dynamics of electricity production of the Republic of Kazakhstan for 2016-2018

and 30% is used for industry. The remaining 4% is used for human consumption. In fact, Kazakhstan is currently facing the need to improve the regional water strategy and strengthen measures to preserve the

resource potential of the river system and its environmental safety.

As can be seen from Figure 1, there are three hydropower-rich regions in the country: Irtysh river basin with large

hydroelectric power plants (Bukhtarma, Shulbinsk, Ust-Kamenogorsk), Ili river basin (Kapshagay, Moynak) and Syr Darya, Talas and Chu river basins (Shardarinsk).

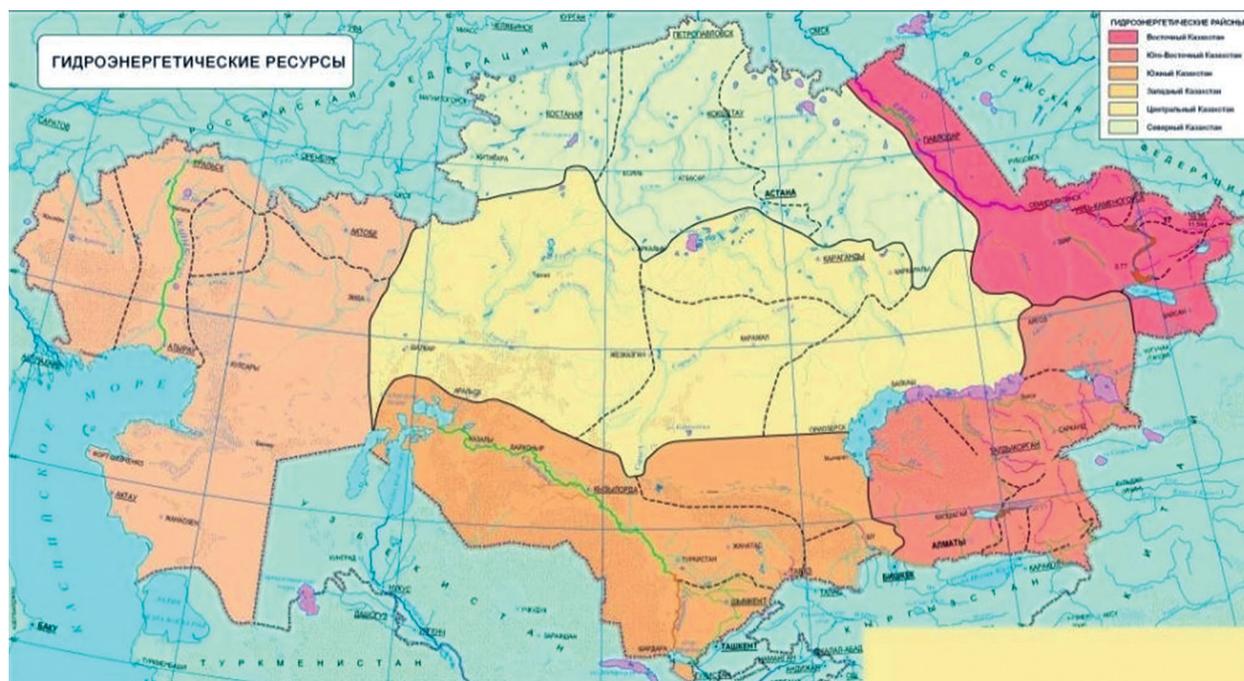


Figure 1. Distribution of hydropower resources of the Republic of Kazakhstan

Source: KAZENERGY Association, National Energy Report 2015

It is worth noting that water resources are extremely disproportionately distributed within the country and are characterized by significant seasonal dynamics. For example, the basins of the Balkhash-Alakol and Irtysh basins in the Eastern and North-Eastern regions account for almost 75% of the surface water resources generated domestically, while there is a significant water shortage in the Western and South-Western regions. Today there are eight main river basins in Kazakhstan:

- The basin of the Syr Darya (Turkestan and the Kyzylorda region);
- Balkhash-Alakol (Almaty region and part of Zhambyl, Karaganda and East Kazakhstan regions, part of China and a

small part of Kyrgyzstan);

- The Chu-Talas-Assa rivers basin (part of Zhambyl region, including part in Kyrgyzstan);
- The Irtysh river basin (East Kazakhstan and Pavlodar region);
- The Nura-Sarysu river basin, as well as lakes Tengiz and Karasor;
- The Ishim river basin (Akmola and North Kazakhstan regions);
- The Tobol-Torgai basin;
- The Ural-Caspian basin (West Kazakhstan and Atyrau regions and part of Aktobe region). [6]

It should be noted that about 90% of all rivers of the country are small, which makes the construction of small hydropower plants

economically feasible. In fact, Kazakhstan systematically implements projects related to the commissioning of small hydropower plants. In Kazakhstan there are 2174 rivers with a length of more than 10 km with a total length of more than 83.2 thousand km. The number of rivers from 10 to 50 km long is 1889 (86.9%), from 50 to 100 km – 130 (6%), more than 100 km– 155 (7.1%) [7].

It should be noted that the newly created small hydroelectric power plants are classified by the Kazakh authorities as RES. While large and medium-sized hydroelectric power plants are classified separately. However, this gradation is quite understandable, and correlates with the national approach to the transition to a “green” economy.

	2017	2018	1 Half of 2019
Small Hydroelectric Power Plants	649.1	807.4	393.8
RES	1102.4 (1.08%)	1352 (1.27%)	922.95 (1.77%)

Table 1. Electricity Generation by Small Hydroelectric Power Plants in the Republic of Kazakhstan in 2017-2019 (million kWh)

Source: according to the Ministry of Energy of the Republic of Kazakhstan

Sufficiently low cost, reliability and environmental friendliness are strong arguments in favor of the construction of hydropower projects of low capacity. East Kazakhstan, Zhambyl and Almaty oblasts are the leaders in the implementation of relevant initiatives.

In fact, local authorities of Almaty region have already formed a special program for the development of hydropower potential. This is not surprising, because 65% of the reserves of hydropower resources of mountain rivers of all Kazakhstan are concentrated in the Almaty region. Due to the developed program, 28 facilities will be built in the region until 2025, which will additionally produce more than 850 MW of their own electricity [8].

In addition, a study conducted by a specialist in the Turkestan region identified more than 43 potential sites for small hydropower plants on 20 rivers with a total capacity of 119.84 MW. For example, we are talking about the construction of two small hydropower plants with a total capacity of

4.2 MW on the Mashat river in the Tulkubas district of the region [9].

During 2015, the Kazakh authorities managed to implement a number of hydropower projects, such as Intumak HPP with a capacity of 600 kW in Karaganda region, Ryshzhan HPP with a capacity of 2 MW in Turkestan region, Karash HPP and Verkhne-Baskan HPP-1 in Almaty region with a capacity of 125 kW and 4.2 MW, respectively. In addition, in 2016, the authorities of Almaty region launched a small hydroelectric power plant with a capacity of 17 MW, located on the Lepsy river of Sarkansky district. Two more HPPs with a total capacity of 13 megawatts will be put into operation in Almaty region. Their construction is planned to be completed in 2020. The cost of construction of the Verkhne-Baskan HPP is 2-4 billion tenge. Its capacity will be 8.8 MW. The Verkhne-Baskan hydroelectric power station-3 will cost 3.4 billion tenge. Its capacity will be 4.2 MW [10].

Zhambyl region has also confirmed its

intention to install four chains of small hydroelectric power plants in Koksay district of Zhualyn in addition to the hydroelectric power plant at the Tasotkel reservoir with a capacity of 9.2 MW and the Karakystak Hydroelectric Power Plant with a capacity of 2.3 MW, launched in 2013 [11].

Despite the fact that since 2013 the country has started the active launch of new hydropower facilities, the average age of hydroelectric power plants in Kazakhstan is more than 30-40 years. Moreover, since HPPs in Kazakhstan, with the exception

of large hydroelectric power plants, have relatively low capacity, they are aimed at regulating the distribution of electric load while readjusting the energy supply during periods of peak consumption.

Nevertheless, the hydropower sector is a key element of the country's energy security. After decades of ups and downs, the total energy production generated by HPPs in Kazakhstan is finally stabilizing, giving prospects for further development of the industry.

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PROBLEMS OF INTERSTATE WATER COOPERATION IN CENTRAL ASIA AND WAYS OF THEIR SOLUTION

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Abstract. In natural terms, Central Asia is a single territory, and this unity is provided, first of all, by river systems of the *Amu Darya*, *Syr Darya*, *Chu* and *Talas*. At present, the borders of the former Soviet republics of Central Asia have become state borders. Many natural resources are on opposite sides of borders, and new modern rules for their efficient and rational use are required.

Keywords: *Central Asia, Water cooperation, Water Regulation*

ОРТА АЗИЯДАҒЫ МЕМЛЕКЕТАРАЛЫҚ СУ ЫНТЫМАҚТАСТЫҒЫ МӘСЕЛЕЛЕРІ ЖӘНЕ ОНЫҢ ШЕШІМДЕРІ

Догдурбек Чонтоев

Аңдатпа. Табиғи тұрғыдан алғанда, Орталық Азия - бұл біртұтас территория бірлігі ең алдымен - Амудария, Сырдария, Шу, Талас өзен жүйелерімен қамтамасыз етіледі. Қазіргі уақытта Орталық Азияның бұрынғы одақтас республикаларының шекаралары мемлекеттік шекараларға айналды. Көптеген табиғи ресурстар шекараның әртүрлі жақтарында қалды және оларды тиімді және ұтымды пайдаланудың жаңа заманауи ережелерін әзірлеу қажет.

Түйін сөздер: *Орталық Азия. су ынтымақтастығы, суды реттеу*

ПРОБЛЕМЫ МЕЖГОСУДАРСТВЕННОГО ВОДНОГО СОТРУДНИЧЕСТВА В ЦЕНТРАЛЬНОЙ АЗИИ И ПУТИ ИХ РЕШЕНИЯ

Догдурбек Чонтоев

Аннотация. В природном отношении Центральная Азия представляет собой единую территорию, это единство обеспечивается, прежде всего, речными системами - Амударьей, Сырдарьей, Чу, Таласом. В настоящее время границы бывших союзных республик ЦА превратились в государственные границы. Многие природные ресурсы оказались по разные стороны границ, и требуется разработка новых современных правил их эффективного и рационального использования.

Ключевые слова: Центральная Азия, водное сотрудничество, водорегулирование

There are three main problems, the solution of which depends on the reasonable cooperation of the countries of Central Asia.

First problem. In the period of emerging market relations between the sovereign states of Central Asia, integrated Application Schemes and Provisions on water allocation developed and adopted in the Soviet period remain. These Schemes and Provisions were normative documents regulating the distribution and use of water resources in river basins. According to these schemes, quotas of water intake volumes, irrigation norms and irrigation areas were established in the context of each Republic.

Currently, this approach to the use of water resources for Kyrgyzstan and Tajikistan is unacceptable, since it limits the interests of these states, on whose territory almost all the surface outflow of the region is formed.

According to long-term average data, 50 billion m³ of surface flow is formed on the territory of Kyrgyzstan (*that is 10 thousand m³ per person*). According to these indicators, the Kyrgyz Republic is among the leaders of the Central Asian countries.

The country's development strategy

outlines the development of new irrigated lands, and this trend has already been indicated. But now the question arises, given the limited water consumption, of how to take water to the newly put into circulation land? For the entire available land fund of 3 million hectares, Kyrgyzstan will need *not 10-11, but 30 km³/year*, and taking into account the needs of the municipal and industrial sectors, the prospective total volume of water consumption will be *about 35 km³*.

This figure should be announced now, so that neighbouring states that use water resources from the mountains of Kyrgyzstan know the prospects for the development of the Republic in the future.

At the regional level, the problem of changing the water allocation system was actively considered in the period from 1994 to 1997, when the newly-formed interstate Council on the Aral sea problems drafted a Program of the Aral Sea basin, in which the first item was indicated as "To develop a **common water allocation strategy**".

In 1997, the development of a "Regional Water Strategy" was completed with a detailed definition of the formation and use of water resources by all states and

recommendations for the development of a modern water allocation strategy were given. However, the mountain republics of Kyrgyzstan and Tajikistan, without showing proper persistence, remained at the same level of water allocation.

The *second* important problem is the lack of economic principles of interstate water use. Having moved to a market economy in all spheres, for some reason the water industry is left on outdated positions. By introducing a fee for water supply services for their own (domestic) water users, the Central Asian states have not taken into account the market mechanism of payment for water received from the territory of neighbouring states, and they still use it free of charge, without reimbursing any costs to Kyrgyzstan for the maintenance and operation of reservoirs and other irrigation facilities of interstate use...

It should be noted that the reservoirs regulating the flow of rivers and irrigation channels supplying water to neighbouring states in Kyrgyzstan are maintained and operated only at the expense of the budget of the Republic.

Meanwhile, there are some positive aspects in establishing mutually beneficial relations in the use of transboundary river flow.

Thus, in 2000, a bilateral Agreement was signed between the government of Kyrgyzstan and Kazakhstan on the use of water facilities for interstate use in the basins of the Chu and Talas rivers. A permanent Commission was established to determine the volume of water allocation and annual financial subsidies for equity participation of the Republic of Kazakhstan.

It should be noted that all water-regulating and water-transporting facilities,

built more than half a century ago, are in a dangerous technical condition and pose a real threat of destruction or failure, and this threatens disaster not so much to Kyrgyzstan as to the downstream states located in the lower reaches of the rivers (Uzbekistan and Kazakhstan).

In such a situation, only together, with the shared participation of all states, can reliable operation of interstate hydraulic facilities be ensured, and, consequently, water supply guaranteed.

Third problem. The main cause of water disputes between Kyrgyzstan and the states of the plain zone (*Uzbekistan and Kazakhstan*) are sectoral interests between hydropower and irrigation.

The intra-annual schedule of water use needs differs for mountain and plain areas of the region. The mountainous regions of Kyrgyzstan and Tajikistan have significant hydropower resources (*while having limited resources of other energy carriers*). Kyrgyzstan is interested in significant electricity generation during the cold period of the year, which requires significant discharges of water from the Toktogul reservoir, and a significant part of the water resources is used in winter. Lowland republics, which have huge irrigated areas, use water resources for irrigation with an increase in water needs in the warm, growing season. For the Toktogul HPP to work in the energy regime, it is necessary to accumulate water in the summer and winter consumption, and the lowland republics - in the winter accumulation of water resources and their summer consumption for irrigation. These contradictions are the “stumbling block” between the Central Asian countries.

With the cessation of subsidized supplies

and the emerging energy crisis in the Republic, the question arose about the need to more effectively use the own hydropower capacity of the cascade of Nizhne-Naryn HPPs. It was calculated that if 50% of the annual volume of water resources accumulated in the Toktogul reservoir is triggered by the winter energy regime, then winter production can be increased by 2.2 billion kW / h. This option can not be used by the Republic, as the country fulfills *its obligations to supply water during the growing season* to the downstream states in accordance with existing Agreements. Energy consumption of the winter period is provided by the enhanced operation of the CHP. And only in some years, with a shortage of energy at the CHP, the Republic increased the volume of winter discharges from the Toktogul reservoir to obtain additional electricity.

The consequences of significant winter discharges from the reservoir caused a negative reaction of neighbouring countries. In this respect Kyrgyzstan offered Kazakhstan and Uzbekistan to compensate for the lack of electricity in winter (*in monetary terms or in the form of energy carriers*). Upon acceptance and compliance with the terms of the agreement, the Toktogul reservoir will operate in the irrigation regime required by these states.

The total damage associated with the irrigation regime of operation of the cascade of Nizhne-Naryn HPPs includes:

- 1) under-production of winter electricity in the amount of 2.2 billion kW/h;
- 2) environmental damage (air pollution) due to CHP operation;
- 3) damage from flooding of farmland during the construction and operation of the Toktogul reservoir.

As a result, the annual total damage

is approximately USD 154.9 million. . (*estimates of 2002*)

At numerous official meetings, representatives of Central Asian states at all levels declare that this problem can be solved only through coordinated joint actions of all states. But, unfortunately, all these agreements mostly remain on paper in the form of minutes and resolutions, because so far everyone is doing nothing but pursue own interests.

In the area of water resources, the biggest issue requiring consensus is the development of agreed rules and procedures for the division of water resources among states. This problem requires taking into account not only the interests of all countries, but also the maintenance of ecological balance in river basins.

The problem cannot be solved immediately for the region as a whole. It should be solved for each international river basin, while understanding the need to manage the basin as a whole-Integrated water resources management (IWRM), and taking into account the interests of both mountain and plain areas.

The Central Asian states adopt regional Laws “On water”, but the situation does not change at the interstate level.

Thus, Kyrgyzstan adopted the Law “On interstate use of water bodies, water resources and water facilities of the Kyrgyz Republic”, which formulated the principles and provisions of state policy in the field of water resources. In this Law, the paramount is the ***recognition of water as a type of natural resources that has its economic value and is a commodity, as well as the need to establish a fee for water use in interstate water relations.***

The decree of the President outlines the

principles and provisions of the state policy in the field of water resources use of rivers formed on the territory of the Republic and flowing beyond its borders, the main of which are:

- Agreements on the use of river water resources should aim at achieving mutual benefit in a fair and reasonable manner.
- The Kyrgyz Republic assumes that each state has the right within its territory to use the water resources of the river in order to obtain maximum benefits.
- The issues of water supply, regulation of river flow and payment of water use or distribution of benefits from the use of water resources are the subject of interstate negotiations.
- The Kyrgyz Republic, which regulates the flow and supply of water to the state located downstream of the river, has the right to reimbursement for the construction, reconstruction and operation of reservoirs and other hydraulic facilities of interstate importance.

In connection with the current situation in the water and energy sector of Central Asia, Institute of Water Problems and Hydropower developed a draft Concept of the national policy of the Kyrgyz Republic in the use of water resources of transboundary rivers.

The concept takes into account the need to ensure the state interests of the Kyrgyz Republic in the new market relations with full cooperation with all Central Asian countries. It is intended to become a legal basis for solving state problems of national development and regulation of interstate relations in the field of water resources use.

The main provisions of the proposed Concept are:

- adoption of the economic mechanism in water use, i.e. recognition of water resources to be the goods which has the price corresponding to market relations;
- adoption of mutually beneficial conditions in water policy for all Central Asian states;
- joint monitoring of transboundary rivers in order to improve the efficiency of control over the formation and use of water resources, as well as prevention and mitigation of damage from dangerous hydrological phenomena and their consequences at the interstate level;
- creation of a system of state supervision over the safety of hydraulic structures;
- ensuring a favorable environmental situation in river basins.

Only after the recognition and adoption of the basic provisions of this Concept by the governments of all CA countries can the transition to Integrated Water Resources Management (IWRM) be possible, since it is the principle of basin management of water resources of transboundary rivers that will allow them to be used effectively and rationally.

Of course, each country seeks to protect its national interests and use water on its territory, maximizing the benefits for the development of its economy. It is essential to realize the importance and necessity of cooperation in the use of transboundary rivers, giving priority to collective interests. And it is this principle that should form the basis of a new approach to the allocation of transboundary water resources.

WATER-ECOLOGICAL PROBLEMS IN THE ZONE OF WATER RESOURCES FORMATION AND WAYS OF THEIR SOLUTION

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Abstract. Environmental problems have no geographical or political boundaries - the scale of the consequences is not commensurate with the administrative boundaries of sovereign states. And in this regard, from the point of view of regional interests, two key aspects are essential in the framework of the topic under discussion: mountains as a source of formation of water resources and the related issue of the glaciers state and the second - tailings as a source of environmental safety.

Keywords: *Water Resources, Ecology, Central Asia, Melting Glaciers, Radioactive Waste*

СУ РЕСУРСТАРЫН ҚАЛЫПТАСТЫРУ АЙМАҒЫНДАҒЫ СУ- ЭКОЛОГИЯЛЫҚ ПРОБЛЕМАЛАРЫ ЖӘНЕ ОЛАРДЫ ШЕШУ ЖОЛДАРЫ

Амантур Сапарбаев

Аңдатпа. Экологиялық проблемалардың географиялық немесе саяси шекаралары жоқ - зардаптардың ауқымы ешқандай өлшеммен есептелмейді. Осыған байланысты,

аймақтық мүдделер тұрғысынан талқыланатын тақырып аясында екі негізгі аспект өте маңызды: таулар су ресурстарының қалыптасу көзі ретінде мұздықтардың жай-күйі және екінші – қалдықтар қоймалары экологиялық қауіпсіздіктің қайнар көзі ретінде.

Түйінді сөздер: су ресурстары, экология, Орталық Азия, мұздықтардың еруі, радиоактивті қалдықтар

ВОДНО-ЭКОЛОГИЧЕСКИЕ ПРОБЛЕМЫ В ЗОНЕ ФОРМИРОВАНИЯ ВОДНЫХ РЕСУРСОВ И ПУТИ ИХ РЕШЕНИЯ

Амантур Сапарбаев

Аннотация. Экологические проблемы не имеют географических или политических границ - масштабы последствий не соизмеримы с административными границами суверенных государств. И в этой связи, с точки зрения региональных интересов, два ключевых аспекта имеют существенное значение в рамках обсуждаемой тематики: горы как источник формирования водных ресурсов и связанные с этим вопросы состояние ледников и второе - хвостохранилища, как источник экологической безопасности.

Ключевые слова: водные ресурсы, экология, Центральная Азия, таяние ледников, радиоактивные отходы

According to the world community, mountains with their perennial glaciers are among the most sensitive indicators of climate change. It is no secret that the cost of housing and communal services in the highlands increases, large capital investments in the infrastructure of industrial enterprises are required and there are difficulties in the operation of equipment in the highlands. But the increased environmental risks of the highlands to the country's economy are of particular concern. Consequently, farming in high-land areas is subject to significant risks due to the instability of the weather and the manifestation of various natural emergencies.

Along with this, there are negative factors that affect the life of a person: variability of weather and sharp seasonal

and daily temperature fluctuations, increased ultraviolet radiation, dry air, low atmospheric pressure and oxygen content.

At the same time, the intense melting of glaciers in the upstream countries, which are natural storages, the zone of formation of fresh water in Central Asia, is of particular concern in the region against the background of global warming.

According to the estimates of Professor Mark Durgerov, a world-renowned glaciologist, and Liu Sha Hai and Xie Zi Zhou, scientists of the Academy of Sciences of China (Lanzhou), the glaciation area of the Tien Shan mountain system decreased by 16.9% between 1961 and 2006 - from 15,416 km² to 12,815 km². The volume of glaciers during the same period decreased by 219 km³, that is, the area and the volume of

glaciation of the mountain system decreased respectively.

In confirmation of the above data, employees of the Tien Shan High-Land Scientific Center at the Institute of Water Problems and Hydropower of the National Academy of Sciences of the Kyrgyz Republic have been observing the Kara-Batkak reference glacier and the Issyk-Kul lake basin (the Northern slope of the Teskey-Ala-Too ridge) from 1956 to the present time.

In their observations, the scientists note that the cumulative mass balance - the total negative mass balance was 29 thousand mm. This negative mass value has been observed since 1972, stating that the input part is much smaller than the output part. According to scientists, this is due to global climate change and an increase in average air temperature.

In turn, the Tien Shan weather station, located on a plateau at an altitude of about 3,610 m in the AK-shiyrak mountain massif near the Kumtor field, which has been operating continuously since 1930 for the period from 1930 to 2011, provides data on an increase in the average air temperature by 1.5 °C.

According to the Third National Address of the Kyrgyz Republic under the UN Framework Convention on Climate Change, the average temperature increase throughout the Republic amounted to 0.8 °C, namely: in mountainous areas, the average temperature has increased much more where most of the glaciers are concentrated.

Consequently, the current process of melting glaciers and a positive trend in temperature led to an increase in the water content of glacial rivers component. Thus, according to observations of the hydrological post of the Agency for Hydrometeorology

under the Ministry of Emergency Situations of the Kyrgyz Republic located in Naryn, the average water flow on the Naryn river in 1970 - 1980 years was 85 m³ per second, while today it is 105 m³ per second, which results in 20 m³ per second more flow. At the same time, the frequency of precipitation during the observation period remains unchanged.

In addition, with the help of mathematical modeling of flow and mathematical modeling of the evolution of the Sary-Tor glacier, where the Naryn river originates, the Tien Shan center predicted that at the current rate of climate change, the water content of the Naryn river in 2040 will be lower compared to 2011. According to the forecasts of this Center, in case this pace continues, the area of glaciers will reduce against the background of unchanged precipitation. For example, the Kara-Batkak glacier retreated 450 meters from 1967 to 2018, the annual retreat is 8-10 meters. The same trend is observed on other reference glaciers, as all available data are transmitted to the world glacier monitoring service of the University of Zurich.

In the foreseeable future, the consequences of the current process of melting glaciers, in the opinion of some scientists and experts, can lead to a reduction in water resources, which in the future will become one of the most potential threats not only for the Central Asian countries, but also for the whole world. It is necessary now to focus regional attention on the zone of formation of water resources. Of course, the issue of improving the areas of formation of water resources is of long-term nature.

At the same time, there are clearly problems that require the adoption of joint urgent measures on the part of national states. First of all, we are talking about the management of numerous uranium tailings

dumps in a number of republics of our region, which we inherited from the Soviet period.

As a result of the long-term activities of enterprises for the extraction and processing of uranium ores, rare earth elements, a huge amount of radioactive waste has accumulated, placed on the earth's surface in dumps and tailings.

Perhaps, from the point of view of priority, they pose a primary threat to the entire region, since a number of large uranium tailings dumps are located in close proximity to rivers of water sources, in areas with close groundwater occurrence. In addition, most of the waste storage facilities are located in areas of high seismic and landslide activity, places of floods and mudslides.

To date, according to experts the greatest potential danger in terms of cross border movement

of radioactive materials is represented by the tailings in Mailu-Suu, due to the fact that most of the tailings are located along the bank of the Mailu-Suu river, which is one of the tributaries of the Syr Darya river, as evidenced by the reports of international organizations. It is well known that the Syr Darya flows through the densely populated Fergana valley and then - to Kazakhstan.

In addition, the Mayluu-Suu area belongs to the zone of high seismic intensity; according to the seismic zoning map of the Kyrgyz Republic, the likely magnitude of earthquakes in this area is within $M > 7.0$. Earthquakes of this magnitude can contribute to the descent of large landslides or destroy tailings, which can seriously

affect the humanitarian and environmental security of the region.

Currently, in order to reduce the risk of radiation-hazardous environmental disasters and improve the environmental situation in the areas of radioactive waste, the Kyrgyz party, represented by the Ministry of Emergency Situations of the Kyrgyz Republic, together with international organizations, is implementing a number of international projects, including those with the CIS member states.

However, for further joint solutions at the regional level, it is necessary to jointly develop:

- interstate programs and projects in the field of monitoring, prevention, and elimination of potential contamination by radioactive waste;
- harmonized approaches, indicators, methods and procedures for forecasting, monitoring, accounting and control of uranium tailings and mining dumps, ensuring comparability of data on an interstate scale;
- harmonized decision on creation of a single interstate information system for radioactive waste management in Central Asia;
- methodology for strengthening national capacity in terms of safety assessment and analytical capabilities in assessing risks associated with uranium tailings;
- mechanism to attract funds from development partners, investments for the implementation of joint programs of rehabilitation, storage, burials, environmental protection and maintenance of tailing dumps.

PROBLEMS OF WATER RESOURCES MANAGEMENT IN CENTRAL ASIA

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Abstract. The problems of management and use of water resources in Central Asia, the causes and consequences of their occurrence have long been known in the region and the world community. Unreasonable and irrational use of water has led to the destruction of the Aral Sea, as well as the salinization and waterlogging of more than five million hectares of land, thus giving rise to other socio-economic and environmental problems. On the other hand, current trends in climate change and their impact on water resources, growing water needs associated with population growth and economic development, economic and financial difficulties impeding the implementation of projects, regional threats and other challenges further exacerbate the existing situation in Central Asia.

Keywords: *Water Resources Management, Central Asia, Regional Cooperation*

ОРТАЛЫҚ АЗИЯДАҒЫ СУ РЕСУРСТАРЫН БАСҚАРУ МӘСЕЛЕЛЕРІ

Муслихиддин Холиков

Аңдатпа. Орталық Азиядағы су ресурстарын басқару мен пайдалану мәселелері, олардың пайда болу себептері мен салдары аймақта және әлемдік қауымдастықта бұрыннан белгілі. Суды мақсатсыз және ұтымсыз пайдалану Арал теңізінің тартылуына, сонымен қатар 5 миллион гектардан астам жердің тұздануы мен батпақтануына әкеліп соқты, осылайша басқа да әлеуметтік-экономикалық және экологиялық проблемалар туындады. Екінші жағынан, климаттың өзгеруінің қазіргі тенденциялары және олардың су ресурстарына әсері, халық санының

өсуі және экономиканың дамуына байланысты суды тұтыну қажеттіліктері де өсуі, экономикалық және қаржылық қиындықтар, жобаны жүзеге асыруға кедергі келтіретін аймақтық қауіптер және басқа да мәселелер Орталық Азия елдердегі жағдайды одан әрі ушықтырады.

Түйін сөздер: суресурстарын басқару, Орталық Азия, аймақтықынтымақтастық

ПРОБЛЕМЫ УПРАВЛЕНИЯ ВОДНЫМИ РЕСУРСАМИ В ЦЕНТРАЛЬНОЙ АЗИИ

Муслихиддин Холиков

Аннотация. Проблемы управления и использования водных ресурсов в Центральной Азии, причины и последствия их возникновения давно уже известны в самом регионе и мировому сообществу. Неразумное и нерациональное использование воды привело к гибели Аральского моря, а также засолению и заболачиванию более 5 миллионов гектаров земель, тем самым зарождая другие социально-экономические и экологические проблемы. С другой стороны, современные тенденции изменения климата и их влияние на водные ресурсы, растущие потребности в воде, связанные с ростом населения и развитием экономики, экономические и финансовые трудности, препятствующие реализации проектов, региональные угрозы и другие вызовы ещё более усугубляют существующую ситуацию в странах Центральной Азии.

Ключевые слова: управление водными ресурсами, Центральная Азия, региональное сотрудничество

High population growth rates in Central Asia lead to increased demand for water, including for food, energy and economic growth in general. At the same time, according to experts, due to the impact of climate change, glaciers in Central Asia, which are the main source of food for the region's rivers, are reducing very rapidly.

It should be noted that Tajikistan, 93 per cent of whose territory consists of mountains, is one of the main sources of water resources in Central Asia with 60 percent of the region's water resources originating in the glaciers of Tajikistan.

The intensive melting of glaciers as a result of climate change poses a serious threat to the process of ensuring favorable

living conditions for the population and the protection of water resources. Suffice it to note that of 14,000 glaciers in Tajikistan that are vital to the entire region, more than 1,000 small glaciers have disappeared in the past 30 years.

The process of accelerated melting of glaciers as a result of increasing air temperature led to an increase in natural disasters and degradation of the aquatic ecosystem. This phenomenon annually causes the destruction of economic facilities and causing significant financial losses to the population of the country.

Water-related disasters damage the country's economy by hundreds of thousands to tens of millions of dollars each

year. Unfortunately, in some cases it leads to death.

It is obvious that no country in the region can solve these problems by individual efforts. Moreover, the countries of the region are largely interconnected by regional infrastructures, including water, energy and transport, without which the solution of many of the above problems is absolutely impossible.

Constructive cooperation based on the principles of equality, mutual respect, mutual trust and support is the key to solving the most difficult issues on the agenda. And we need to move in this direction, using new approaches and appropriate implementation tools.

Signed agreements and established institutions have played an important role in ensuring conflict-free water resources management in the region since independence. At the same time, in the context of a rapidly changing world and the impact of new challenges, in our opinion, the existing institutional and legal framework requires revision and improvement.

Overcoming this situation requires political will and willingness to implement joint long-term measures from the countries of the region, along with huge investments in the water sector and optimization of agricultural irrigation.

The Republic of Tajikistan has repeatedly stated its readiness to cooperate with neighbouring countries on a mutually beneficial and constructive basis. This principled position is laid down in the Concept of development of foreign policy of the Republic of Tajikistan, approved by the President of the Republic of Tajikistan.

Tajikistan is a party to all regional agreements on water, energy and environmental issues and a member of the

existing intergovernmental institutions - IFAS and its commissions - ICWC and ICSD within which it actively cooperates with neighbouring countries.

Our country is gradually advancing the issue of improving water cooperation at various levels. This position was a red thread in the international year of fresh water-2003 initiated by President of our Country Emomali Rahmon, the International Decade of “Water for life” Action 2005-2015, the International Year of Water Cooperation-2013 and the International Decade of “Water for Sustainable Development” Action 2018-2028.

“Deepening water cooperation” is the first point of the Dushanbe Call to Action adopted by the high-level Symposium on the Sixth Sustainable Development Goal and targets of “Achieving universal access to water and sanitation”, adopted on August 10, 2016. The development of regional cooperation is also reflected in almost all the outcome documents of international high-level events held in Tajikistan.

In conclusion, I would like to once again focus your attention on the initiative of Tajikistan - the International Decade “Water for Sustainable Development” 2018-2028. The development of cooperation and partnership is also one of the main goals of this Decade. I am confident that the countries of the region, as well as the world community, will take advantages and opportunities of this Decade to contribute to the achievement of water-related Sustainable Development Goals, including through further strengthening and development of cooperation and partnership.

The main slogan of Tajikistan’s water policy is and will remain as follows:

“Direct Water in the Direction of Cooperation”!

WATER POLICY OF THE REPUBLIC OF UZBEKISTAN IN CENTRAL ASIA

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Abstract. Today, water and environmental security issues play one of the primary roles in the sustainable development of the world. On this basis, authoritative international organizations are increasingly asserting the importance of improving the situation in this area in order to ensure a decent environment for the lives of our next generations. Thus, in accordance with the Paris Climate Agreement, humanity faces the task of keeping the global temperature rise at two degrees Celsius until the end of the century in order to avoid serious consequences for life on the planet. Uzbekistan, having a common border with all Central Asian States and as a signatory to the Paris Agreement, is objectively interested in turning the region into a zone of stability, sustainable development and good-neighbourliness.

Keywords: *Water Security, Central Asia, Uzbekistan, Regional Cooperation*

ЎЗБЕКСТАН РЕСПУБЛИКАСЫНЫҢ ОРТА АЗИЯДАҒЫ СУ САЯСАТЫ

Бахтиёр Мұстафаев

Аңдатпа. Бүгінгі таңда су және экологиялық қауіпсіздікті қамтамасыз ету жалпы әлемнің тұрақты дамуындағы басты мәселелердің бірі болып табылады. Осы негізде беделді халықаралық ұйымдар келер ұрпағымыздың өмірі үшін лайықты органы қамтамасыз ету үшін осы саладағы жағдайды жақсартудың маңыздылығын жариялауда. Сонымен, климат жөніндегі Париж келісіміне сәйкес ғаламшардағы жалпы адамзат өміріне қауіп төндіретін зардаптардың алдын алу үшін ғасырдың соңына дейін жаһандық температураның көтерілуін 2 градусқа дейін ұстап тұру

міндеті тұр. Өзбекстан Париж келісіміне қол қоя отырып, Орталық Азияның барлық мемлекеттерімен ортақ шекарасы бар ел ретінде, Орта Азияны тұрақты даму және татулық аймағына айналдыруға мүдделі.

Түйін сөздер: су қауіпсіздігі, Орталық Азия, Өзбекстан, аймақтық ынтымақтастық

ВОДНАЯ ПОЛИТИКА РЕСПУБЛИКИ УЗБЕКИСТАН В ЦЕНТРАЛЬНОЙ АЗИИ

Бахтиёр Мустафаев

Аннотация. На сегодняшний день вопросы обеспечения водной и экологической безопасности играют одну из первостепенных ролей в устойчивом развитии всего мира. Исходя из этого, авторитетные международные организации все громче заявляют о важности улучшения ситуации в данной области с целью обеспечения достойной окружающей среды для жизни наших следующих поколений. Так, в соответствии с Парижским соглашением по климату, перед человечеством стоит задача удержать глобальный рост температуры на уровне 2 градусов по Цельсию до конца столетия во избежание серьезных последствий для жизни на планете. Узбекистан, имея общую границу со всеми государствами Центральной Азии и как страна, подписавшее Парижское соглашение, объективно заинтересован в превращении региона в зону стабильности, устойчивого развития и добрососедства.

Ключевые слова: водная безопасность, Центральная Азия, Узбекистан, региональное сотрудничество

We are open to deepening all-round cooperation with the countries of Central Asia on the basis of the principles of equality and consideration of each other's interests. We are ready for constructive dialogue and search for solutions to problems based on reasonable compromises.

In order to discuss water issues and find mutually beneficial solutions for the use of resources of transboundary rivers in the region, the Uzbek side is actively working with neighboring countries. In particular:

- there was signed the Agreement between the Ministry of Agriculture and Water Resources of the Republic of Uzbekistan and the Ministry of Agriculture

and Water Resources of Turkmenistan on Cooperation on Water Management Issues” (March 2017);

- there were established working groups with Kazakhstan, Turkmenistan and Tajikistan on water use;

- the Uzbek-Kazakh joint working group on environmental protection and water quality of the Syr Darya river basin is functioning with the first meeting held in September 2018.;

- an agreement was reached on the establishment of a Joint Bilateral Water Commission between Uzbekistan and Kyrgyzstan (December 2017).

As the above factors show, water

management relations between the countries of the region have significantly intensified in recent years, and there is a positive trend of solving transboundary water use issues.

However, as already noted, the huge environmental challenges we face require a more coordinated and integrated interaction of all countries of the region. In the context of industrialization, high demographic growth and urbanization, as well as increasing demand for food, the need for natural resources increases from year to year. Thus, more than 72 million people currently live in the region, and, according to UN forecasts, the population will reach 94 million by 2050.

At the same time, Central Asia is one of the regions most prone to environmental disasters. In particular, the World Bank estimates that if the end of the XXI century global average surface temperatures will rise by 4 degrees Celsius at the current rate, the increase in Central Asia will reach 7 degrees. At the same time, the greatest increase in air temperature is expected in the Aral Sea region.

In this regard, high risks of emergencies and natural disasters remain in Central Asia, which pose a great threat to regional security.

Thus, the countries of the region remain vulnerable to such dangerous phenomena as floods, breakouts of mountain lakes, landslides, mudslides, avalanches, or dust storms.

300 high-altitude lakes continue to be under the threat of a breakout. According to the calculations of experts, if the average annual temperature increases by 2-4 degrees, the volume of mountain glaciers in Central Asia can be reduced to 78%.

However, the efforts of the countries of the region are mainly focused on disaster

management, while in international practice, the priority is to improve systems for monitoring, forecasting and prevention of natural disasters.

The **problem of providing the world's population with water resources** is becoming increasingly urgent. According to the UN, water issues have already affected all continents, jeopardizing the sustainability of ecosystems and socio-economic development. It affects more than two billion people living in more than 40 countries. By 2030, the global water deficit on the planet could reach 40%.

The assessment of future demand for water on the basis of modeling showed that the demand for water for irrigation and environmental needs is not being met at present, and in the conditions of climate change, the shortage of water resources in Central Asia will significantly increase. For example, by the 2040s, even with an increase in the flow of the Amu Darya and Syr Darya river basins, the total deficit of water for irrigation in Uzbekistan, according to estimates, can reach 8%, with constant flow - 15%, with a decrease in flow, the water deficit can reach 33%.

In addition, speaking about water and environmental problems, it is impossible to ignore the **problem of the Aral sea**, which is a convincing proof of the mutual influence of problems of water use, environment and strategic security.

Today, a new salt desert with an area of more than 5.5 million hectares has appeared on the dried-up part of the Aral sea. Dust storms rage over it for more than 90 days a year, carrying annually more than 100 million tons of dust and poisonous salts into the atmosphere for many thousands of kilometers. The negative consequences of the drying up of the Aral sea have long gone

beyond one region and acquired a whole-planet nature.

In this regard, it is necessary to note the large-scale measures being implemented by Uzbekistan, Kazakhstan, Turkmenistan and other countries of the region to overcome the negative consequences of the drying of the Aral sea and improve the environmental and socio-economic situation in the Aral sea region.

For example, by the end of 2019, we plan to plant protective forest plantations on 500 thousand hectares of the drained bottom of the Aral sea. Up to 1.2 million hectares are expected to be afforested by 2028.

In addition, the **UN Multi-Partner Trust Fund for Human Security for the Aral Sea Region** was established, the main objectives of which are to ensure a coordinated approach to solving urgent problems in the Aral sea region related to the livelihoods of the population, including aspects of health, economic development, environmental situation, social protection and others.

The Fund is also engaged in providing integrated assistance to the development process of the Aral sea region by combining the efforts of the government of Uzbekistan, UN agencies and the donor community, mobilizing technical and financial resources for the development of the region and attracting new knowledge, innovative technologies and approaches to the region for its sustainable development.

The Fund does not duplicate the activities of IFAS, but is a structure aimed at accumulating funds in the interests of the entire region. In this regard, we call for the active participation of the countries of the region in the activities of the Fund, which will help to attract donor funds for the region more effectively.

Dear colleagues,

Taking into account the above factors, I would like to draw your attention to several points that are key to ensuring water and environmental security and sustainable development of Central Asia.

Addressing the issues of water resources use and improving the environmental situation in Central Asia is a common task of the countries of the region, and only through joint efforts we can achieve concrete results taking into account the interests of all countries of the region.

To date, there is no other alternative to addressing these issues, except to achieve regional agreement through the adoption of legal instruments that promote constructive and civilized dialogue.

Effective solution of water and environmental security issues in the region cannot be achieved without fruitful cooperation and active interaction with the countries of the region.

In this regard, we propose to consider the following issues.

The **first** is the development and adoption of a **regional Strategy on adaptation to climate change**, which provides for: *a)* regional dialogue between the countries of the region to analyse and develop proposals to mitigate the effects of climate change with active involvement of international organizations; *b)* development of environmentally friendly, low-carbonic renewable technologies in cooperation with international financial institutions; *d)* prevention of further desertification of pastures and loss of vegetation through afforestation and forest coverage; *e)* development of measures for the accelerated introduction of new agricultural technologies of growing agricultural products that improve productivity and

adaptation of crops to new agro-climatic and soil conditions.

The **second** is the signing of a regional **Agreement on cooperation in the field of emergencies and natural disasters** and the adoption on its basis of a **Regional program for the prevention and elimination of emergency situations and natural disasters**, which provides for: *a)* taking measures to unify and harmonize national legislative frameworks; *b)* creating a reliable system of regional emergency and natural disaster warning; *c)* conducting research and monitoring projects on disaster risk reduction and information exchange between emergency authorities of the region.

At the same time, we propose to create a **Coordinating Working Group on cooperation in the field of emergency situations**, consisting of the corresponding emergency structures of the Central Asian countries. WG meetings shall be held periodically in each of the countries of the region to identify key areas of interaction.

In this context, I would like to note that **Uzbekistan shows interest and encourages other countries in the region to join** the activities of the **Center for emergency situations and disaster risk reduction**, established on the initiative of Kazakhstan, in which Kyrgyzstan also participates.

The **third** is to sign a **regional Agreement on the conservation of the**

ecosystem of water basins, which provides, first of all, the issues of compliance with sanitary and environmental releases for water bodies.

For example, to date, in order to ensure a favorable ecological state in the region of the Aydar-Arnasay lake system, annual discharges of water from the Chardarya reservoir of at least 1.5 cubic km of water are required.

However, currently, due to the absence of a regulatory document (bilateral agreement between the Republic of Uzbekistan and the Republic of Kazakhstan) on mandatory discharges of water from the Chardarya reservoir, the replenishment of the lake system is periodic **due to the limits of the Republic of Uzbekistan**.

At the same time, it is important to ensure the water quality of transboundary water resources. In this regard, we welcome the participation of other countries of the region in the **Joint Uzbek-Kazakh Working Group on environmental protection and water quality of the Syr Darya river basin**, the second meeting of which is scheduled in September this year in Nur-Sultan.

We are ready to discuss all the above issues in the framework of the plenary sessions of the International High-Level Conference “Aral Sea as the Zone of Environmental Innovations and Technologies” under the auspices of the UN, which is scheduled in October this year in Nukus.

PROBLEMS OF WATER-ENERGY INTERACTION OF CENTRAL ASIAN COUNTRIES

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Abstract. The current system of relations between the states of the region in an atmosphere of good-neighborliness and cooperation allows the countries of Central Asia to manage and use the water resources of the region effectively and efficiently. There is a positive trend in addressing issues of transboundary water use. Almost all contentious issues on water facilities in the border areas and their operation are settled, modes and volumes of taking water from the main transboundary rivers are operationally coordinated, and the countries of the region take joint efforts to mitigate the impact of a water shortage.

Keywords: *Central Asia, Water Use, National Security, Uzbekistan*

ОРТА АЗИЯ ЕЛДЕРІНІҢ СУ-ЭНЕРГЕТИКАЛЫҚ ӨЗАРА ӘРЕКЕТТЕСУ МӘСЕЛЕЛЕРІ

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Аңдатпа. Өңірдегі мемлекеттер арасындағы татулық және ынтымақтастық атмосферасындағы қатынастар Орталық Азия елдеріне аймақтың су ресурстарын тиімді және ұтымды басқаруға және пайдалануға мүмкіндік береді, Трансшекаралық суды пайдалану мәселелерін шешудің оң тенденциясы байқалады. Шекаралас аймақтардағы шаруашылық нысандарындағы даулы мәселелердің барлығы дерлік шешіліп, негізгі трансшекаралық өзендерден су алудың режимі мен көлемі келісілуде,

сонымен қатар аймақтық елдер су азаюының салдарын төмендету үшін бірлескен күш салуда.

Түйін сөздер: *Орталық Азия, су ресурстарын пайдалану, ұлттық қауіпсіздік, Өзбекстан*

ПРОБЛЕМЫ ВОДНО-ЭНЕРГЕТИЧЕСКОГО ВЗАИМОДЕЙСТВИЯ СТРАН ЦЕНТРАЛЬНОЙ АЗИИ

Шарифджан Кучкаров

Аннотация. Нынешняя система взаимоотношений между государствами региона в атмосфере добрососедства и сотрудничества позволяет странам Центральной Азии совместно эффективно и рационально управлять и использовать водные ресурсы региона. Наблюдается положительная тенденция решения вопросов трансграничного водопользования. Урегулированы практически все спорные вопросы по водохозяйственным объектам на приграничных территориях и их эксплуатации, оперативно согласовываются режимы и объемы водозаборов из главных трансграничных рек, странами региона принимаются совместные усилия по смягчению воздействия маловодья.

Ключевые слова: *Центральная Азия, использование водных ресурсов, национальная безопасность, Узбекистан*

The Central Asian region has been identified by the policymakers of the Republic of Uzbekistan as the main priority of Uzbekistan's foreign policy.

Based on this, active work is currently underway to strengthen cooperation on joint management and use of water resources.

Within the framework of the initiative of the policymakers of the Republic over the past two years, the work on promoting water cooperation with neighbouring countries has been significantly intensified. Working groups on water use with Kazakhstan, Tajikistan, Kyrgyzstan and Turkmenistan have been established.

All these changes have a positive impact on the water, food and energy security of the Central Asian countries.

Despite the significant achievements of

the Central Asian countries, there are still a number of unresolved issues in the field of water resources. In particular:

- **Increase in water consumption, decrease in water resources, climate change.**

The year-on-year water shortage associated with climate change and melting glaciers, as well as population growth and, consequently, increased demand for food and water, are one of the main challenges for the future development of the countries of the region. Even today, Central Asian countries face problems related to water shortage, pollution and depletion of water sources.

Central Asia is threatened primarily by the melting of mountain glaciers that feed the region's main rivers. Over the last

century, the area of glaciers in the region has decreased by one third. Today's rate of loss in Central Asia is estimated at 0.2-1% per year. According to forecasts, with an increase in temperature by 2 degrees, glaciers can lose up to 50% in their volume, and with warming by 4 degrees - up to 78%, which can lead to catastrophic consequences.

The results of modeling and various estimates show that, by 2050, the water resources of the Amu Darya and Syr Darya river basins may decrease from 5 to 15% of the long-term norm.

Today it is safe to note that climate change and melting of glaciers negatively affect the water content of the Amu Darya and Syr Darya rivers.

In the context of industrialization, high demographic growth and urbanization, as well as increasing demand for food, the demand for water resources increases from year to year. The region is now home to more than 70 million people, and the UN predicts the population will reach 94 million by 2050. This raises new challenges related to population growth and increased demand for food and water.

Addressing the use of transboundary water resources in Central Asia is a common task for the countries of the region, and only through joint efforts can we achieve tangible results to preserve the water balance in the region, and the world community, as we see it, could help us to achieve these goals.

- Outdated and inefficient legal framework for the joint use of water and energy.

Since the collapse of the former Soviet Union, the Central Asian states have failed to establish a stable and effective mechanism for regional water and energy cooperation. Many existing agreements and arrangements are not implemented or partially respected.

The conviction of either deliberate non-compliance or lack of commitment to the implementation of the agreements by the parties has led to an increase in mutual distrust between the countries and damaging the credibility of regional organizations in this area. An obvious example would be the activities of IFAS.

To date, there is no other alternative to solving the issue of the allocation of transboundary water resources in the region, except to achieve regional agreement through the adoption of legal instruments that contribute to a constructive and civilized dialogue.

The still unresolved water issues of Central Asia should be addressed on the basis of the principles of friendship, mutual respect and trust, in the spirit of the centuries-old traditions of our peoples in respect of nature and the joint use of common water resources.

At the same time, the experience of linking water and energy issues in multilateral and, more recently, mainly bilateral intergovernmental agreements has revealed many difficulties, both at the stage of concluding intergovernmental agreements and at the stage of their implementation.

As a rule, intergovernmental agreements try to cover the whole range of existing interstate issues, and therefore almost all ministries and departments of the parties, not only water and energy industries, participate in their development. The consequence is low efficiency and lack of transparency in decision-making at the level of intergovernmental agreements, the presence of barter mutual supplies of energy resources, linking the implementation of the obligations of one authority depending on the performance of obligations by other authorities, etc.

Experience has shown that intergovernmental agreements are particularly ineffective in low-water or high-water years, i.e. when the greatest coordination of water and energy issues is required.

It should be noted that the countries of the Central Asian region still have the opportunities and the necessary potential not only to improve the existing interstate relations in the water sphere, but also to raise them to a higher quality level, as well as to create mutually acceptable mechanisms of water use, which can become the basis for long-term close cooperation.

Indeed, as practice shows, it is mutually beneficial cooperation, built on the basis of taking into account the interests of all countries of the basin, as well as based on the norms and principles of international water law, is long-term and mutually acceptable.

To address the existing problematic issues in the field of water resources management in Uzbekistan and in the region as a whole, it is proposed to work out the following measures:

1. The development and adoption of Regional Programs of rational use of water resources, which provides for joint management of water resources at the boundary of water basins, the creation of mutually acceptable mechanisms for management of transboundary water resources in the region, conducting joint economic analysis of water use, development of practical action for joint consideration and exchange of information in the Amu Darya and Syr Darya, the study of joint implementation of water and energy projects based on the principle of distribution of costs and benefits.

We have prepared a draft Regional Program and today distributed it to all participants before the event.

It is planned to organize expert discussions of the draft Regional Program with representatives of Central Asia on October 25, 2019 in Nukus on the eve of the above-mentioned International Conference “Aral Sea as the Zone of Environmental Innovations and Technologies”.

We propose to hold a number of discussions at the expert level in an agreed place and different format, as well as to adopt a Regional Water Resources Management Programme when agreed.

2. The establishment of Regional Scientific and Production Centre for irrigation and Water Conservation, aimed at assisting countries in the region to improve the efficiency of water use in agriculture, municipal, industrial and other spheres, the use and development of water-saving irrigation techniques and improvement and modernization of irrigation and melioration, support the development and implementation of scientific developments and modern technologies of water conservation.

3. Elaboration of signing the agreements between the countries of the region on joint management of transboundary water resources, as well as cooperation in the construction of large hydraulic structures on the upper reaches of transboundary rivers of the region.

It is necessary to find a comprehensive solution in providing consumers of the Central Asian region with electricity and water, i.e. to consider water and energy issues (water and associated electricity) in conjunction, and not just water and energy issues separately.

Taking into account the ongoing construction of large hydroelectric power stations with reservoirs of long-term regulation on transboundary rivers, which can and should carry out re-regulation of

river flow for the benefit of the entire region, and not a single country, it is advisable: joint participation of stakeholders in the construction of these facilities; to develop and conclude a multilateral agreement with the participation of upstream and downstream countries, which should legally enshrine the rights and obligations of the participants in the operation of hydroelectric facilities of long-term regulation.

We are convinced that the actions of our

countries on the joint use of water resources are based on mutual respect, trust and openness, which is due to the centuries-old ties of brotherhood of our peoples, common history, traditions and religion.

Uzbekistan is ready for close and active cooperation with all Central Asian countries on the use of water resources in the region on a constructive and mutually beneficial basis in the spirit of good-neighborliness and friendship.