Ecology of kazakhstan: problems and ways of their solutions

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Abstract. This article discusses the environmental problems in Kazakhstan, including the problem of the Aral Sea and the reasons which led to such consequences. Also the solutions were proposed, which require close cooperation between the countries. The issue of the international specialized exhibition EXPO 2017 to be held in Astana, devoted to energy future is raised. The article describes the history of such international exhibitions held in Kazakhstan. The main points of the Strategy “Kazakhstan – 2050” the program of N.A. Nazarbayev, the President of the Republic of Kazakhstan, relating to the topic of this article. The importance of environmental education in the modern world was marked.

1. Introduction

President of Kazakhstan in his address to the nation “Strategy “Kazakhstan-2050 “new political course of held state” as a separate paragraph identified as one of the most important tasks for the coming decade improvement nation living standards. Under the conditions of limited, non-renewable natural resources of the Earth, unprecedented in human history, the growth of consumption, will heat differently directed both negative and positive processes. Our country has a number of advantages here. God gave us a lot of natural resources. Other countries and people will need our resources. It is fundamentally important for us to rethink our attitude towards our natural resources. We must learn how to properly manage them, to accumulate profits from their sale in the treasury, and most importantly to transform as efficiently as possible the natural resources of our country in sustained economic growth.

A powerful impetus to the country’s transition to a “green” way of development should provide the forthcoming exhibition EXPO-2017 in Astana. In the capital the world’s best science and technology will be presented. Many Kazakhstanis will be able to see with their own eyes “the energy of the future”, to which we aspire [1]. In Kazakhstan, the state policy is aimed at reducing level of environmental pollution, ensuring environmental protection and ecological safety in accordance with international
standards, the stabilization of the quality of the environment, laying the foundation for the transition to sustainable development of society. Currently, a series of measures aimed at preventing real and potential threats to further environmental degradation are carried out. Particularly: the requirements for the establishment of emission limits for granting permits are tightened; the role of industrial environmental control is strengthened; responsibility of nature resource users for its management is increased.

In 2009, Kazakhstan ratified the Kyoto Protocol to the UN Framework Convention on Climate Change. Kazakhstan should take the path of “green growth”, to achieve economic growth while maintaining environmental integrity.

Today we can talk about achieving the main goal - reducing the level of environmental pollution and the development of a set of measures to stabilize it. To implement the tasks on improving the legislative framework in the field of environmental protection, the Environmental Code of the Republic of Kazakhstan is adopted with the maximum of its approach to international standards, signed by the Head of State on January 9, 2007. It is known that Kazakhstan inherited a difficult legacy after the collapse of the Soviet Union: the problem of the Aral Sea; vast territory, contaminated after numerous nuclear tests; huge amounts of waste accumulated from previous industrial activities. However, many questions were kept in secret, and some did not get attention. But many of them can rightfully be called global. Today, all of these issues require urgent solutions.

2. Methods
The methodological basis of the research was the works of Kazakhstan's, Russia's and foreign researchers in the field of ecology, concepts, principles and approaches to environmental quality assessment, as the methodology is a system of methods used to study the problem, the main approaches are dialectical, interdisciplinary, and comparative.

3. Results
At the heart of the global environmental problems are the processes and global phenomena that affect the foundations of the existence of human civilization and the solution requires the participation of the entire international community. It is also necessary to acknowledge the special international status of certain natural resources - resources of the oceans (outside territorial waters), air, Antarctica, outer space, which poses the problem of coordinating the efforts of their rational use. The state, the nation and the country should take more responsibility for solving environmental problems through international cooperation.

The specificity of this moment is that it is necessary to introduce and improve environmental education at the same time in all its phases and levels. The critical state of the environment cannot wait until generation grow up, from early childhood become the object of a targeted “greening” and leaves no time for long-term experiments. Only environmental education, supported by the entire infrastructure of society, will form the modern man - a citizen of the twenty-first century, capable of comprehensive action in a tense social and ecological reality.

4. Discussion
The problem of the Aral Sea. There are approximately 50 - 60 million hectares of land suitable for irrigation in Kazakhstan and Central Asia. At the same time, the quantity of water sufficient for irrigation is only enough for 8 - 10 million hectares. In such circumstances, it is necessary to choose the right path of development of irrigated agriculture and to prevent the irreversible process of destruction of the ecosystem.

Let's stop on the issue, which has direct relevance to the fate of the Aral Sea. Analysis of the dynamics of the Aral Sea shrinking and desertification surrounding areas leads to depressing forecast the complete disappearance of the sea. New desert Karakum will merge with existing Karakum and Kyzyl-Kum and would rival the Sahara, which, incidentally, only 150-200 thousand years ago was covered with lush vegetation. Water abstraction, mainly for irrigation of the two largest rivers flowing into the Aral Sea, has led to the fact that their annual runoff was 60 km³ in 1980, decreased to 4 km³ now. Syrdarya
currently does not reach the sea, ending its way in fields, and Amudarya reaches the Aral Sea in winter only as a thin stream. As a result, the water area declined by more than 1/3, the shoreline has receded in some places up to 90 m, and the volume of water in the sea decreased by 60%. As a consequence, the average salinity of the water has increased by 2.5 times, and every living thing in it dies. Drained bottom of the sea becomes a source of dust and salts spread over very long distances. At the moment, about 50-60 million tons of salt and dust rises into the air each year and spreads for miles on cotton and rice plantations. The Aral Sea has become the largest supplier of dust in the former USSR. Degradation of the ecological system leads to a tightening of the already extreme continental climate of Aral Sea region[2].

For Kazakhstan urgent problem for today is desertification. Among the countries of Central Asia Kazakhstan is ranked first for the area covered by the process of desertification. At present, the area of degraded lands in Kazakhstan is about 180 million hectares or more than 66% of its territory. 10-15% of arable lands in the south of Kyzyl-Orda region every year turn into deserts due to non-functional irrigation system. For the same reason, according to the UNDP, 20-25% of pastures in the south of the Aral Sea have been ruined [3].

According to Kazakh scientists, there is one solution to the problem of shallowing of the Aral Sea; it is - reduce the amount of water allocated for irrigation. The problem arose as a result of intensive development of deserts and expansion of irrigated land without taking into account environmental needs of the environment and conservation needs of the Aral Sea. For example, in 60-90 years irrigated area in the basin of the Aral Sea has increased from 5.6 million to 7.4 million hectares. In 40 years (1960-2000), the Aral Sea has received less nearly 3 950 km of river waters as a result of sea level dropped, the volume was reduced by three quarters, and the surface area of water - more than half. Sea area was divided into several independent reservoirs; sea moved away from the shores of places for 100-150 km and continues divided into parts[4]. Today it has become clear that to save the Aral Sea in complete form is impossible. The northern part of the Aral Sea, which is called the Small Aral Sea, separated from the main part in 1990 and it is now six meters above the water level of the Big Sea. Desiccation of the Aral Sea and the exposure of more than 30 thousand km² of bottom, has created a global problem of air pollution by finely dispersed particles, salts, and as a result, the spread salt on the thousands of kilometers [5].

Ways to solve the problems of the Aral Sea. In order to solve the problems riparian countries began to join forces. It is known that in 1992, the Interstate Commission for Water Coordination (ICWC) and its executive bodies - the pool-aqueous organization “Syrdarya” and “Amudarya”, Scientific and Research Center of ICWC and its Secretariat were created. There is a United Nations Environment Programme (UNDP). According to experts, the socio-economic consequence of shallowing of the Aral Sea is one of the worst disasters in the world of the twentieth century. Due to the continuing escalation of environmental and socio-economic situation, in the adjacent to the Aral Sea region, Kazakhstan is urgent measures to protect the local population from the effects of the Aral Sea disaster. A number of legislative acts to normalize the sanitary-epidemiological, socio-economic situation, the radical improvement of healing and preventive work among the inhabitants of the Aral Sea region were adopted. The state program for saving the Aral Sea and restoring the ecological balance in the region was created.

Currently, the project “Syrdarya river bed Control and preservation of the northern part of the Aral Sea” funding comes from a World Bank loan (64.5 million US dollars) from the budget of Kazakhstan in the amount of 21.29 million US dollars. Project area covers the territory of the Syrdarya river basin from the reservoir Shardashinskii to the Aral Sea. Currently, a second phase of regulation of the Syrdarya river bed control and preservation of the northern part of the Aral Sea (RESSAM-2) with an initial budget of 23 billion tenge is implemented.

Let us remind, project of restoration the Kazakhstan part of the Aral Sea is divided into two stages. The first stage called RRSSAM-1 included regulation of the Syrdarya river bed control and preservation of the northern part of the Aral Sea, cost 85, 8 million and was completed in 2008.

However, the international community provides assistance in solving the Aral Sea crisis. Thus, in accordance with the Memorandum of Understanding on the drinking water supply system in the Aral
and Kazalinsk areas of Kyzyl-Orda region Government free technical assistance for four million dollars has been provided by the US. The funds were used for the reconstruction and restoration of the Aral-Sary Bulak group plumbing. The pump-power units of 32 water wells were replaced, as well as supplying laboratory equipment was provided. France provided a grant of about 1 million USD for the delivery of three small desalination units and one station for cleaning of drinking water in Kyzylorda region. Desalination systems of French company “SFEK” are mounted in the Economy. Abai “Orkendeu” on flowing wells and in the hospital Kazalinsky area. Water treatment plant of the company «Degramon» is set on a coastal water intake of Kyzylorda and serves the village Tasbuget Syr. An important event was the overlap of the isthmus of the Aral Sea Dam, which is built with the participation of Russian companies and professionals. Dam length of about 13 kilometers will raise the water level by four meters, and the water will flood the exposing seabed. During the first stage it is expected to save 11 cubic kilometers of water due to the fact that recent years are characterized by a high level of winter influx of moisture. In the second step with the further strengthening and the rise of the dam it is hoped to restore the Small Aral Sea in the former shores. The project costs about 120-130 million US dollars. After the Small Aral 13 km dam, the construction of waterworks Aklak and Aitek, the reconstruction of the cerebral structures in the bayou Karaozek and node structures of channels Aitek, Sorkol and Eltay are prepared. The reconstruction of Kyzylorda and Kazalinsk hydroelectric flood control dams is planned.

To the most important expected results of the project as a whole, should also be included the creation of new jobs and improving the socio-economic status of the Aral Sea region, improving the operating mode of Shardashinsk HPP, the maximum possible reduction of water discharge in Arnasai reduction. An important problem for the Aral Sea region is to provide the population with good quality drinking water. In this context the Program “Ak Bulak”, adopted on 9 November 2010, should be mentioned. The program is implemented from 2011 to 2020. The program aims to provide the population with drinking water in the required quantity and guaranteed quality [6]. During the period of realization of the program on Priaralye about 3 billion tenge were allocated from the state budget for reconstruction, repair of water supply networks and facilities. Commissioning of about 800 km. of water mains and intra-distribution networks allowed providing 29 settlements with centralized water supply in the region.

Material and technical base of medical institutions is strengthened. Built and put into operation a diagnostic center for 600 visits per shift in Kyzylorda, central regional hospital with 175 beds with a polyclinic for 200 visits per shift in the village Terenozek, polyclinic for 150 visits for World War II veterans and labor veterans in Novokazalinsk and other rural health facilities. Thus, the State program in solving problems of ensuring good quality drinking water, in one way or another, find practical solutions. Under the conditions of location of part of the territory in the lower reaches of the Syrdarya river, rational use of water resources of the river is a very important issue for Kazakhstan. It is extremely important to establish joint usage of them with neighboring countries on the principles of international water law and on the basis of mutual respect and trust, constructive cooperation.

II. Kazakhstan ecological disaster zone

N. Nazarbayev in his speech to the people of Kazakhstan “Strategy 2050” noted that - “our initiatives to strengthen the nuclear nonproliferation regime - it is an absolute contribution to world stability, order and security. First in the world, by closing the Semipalatinsk nuclear test site and renouncing nuclear weapons, we have received strong international guarantee of our security by leading nuclear powers - the US, Russia, Britain, France and China. We played a key role in the establishment of a zone free from nuclear weapons in Central Asia and actively support the creation of similar zones in other regions of the world.

We support the efforts of the international community to combat the threat of nuclear terrorism. Now we firmly speak about the necessity to take further decisive action to eliminate the nuclear threat. We believe that the Treaty on the Non-Proliferation of Nuclear Weapons was and remains the cornerstone of the nonproliferation regime. Important catalyst for strengthening the non-proliferation regime should be the early entry into force of the Comprehensive Nuclear Test Ban Treaty [7]. Nuclear weapons tests conducted over 40 years at the Semipalatinsk nuclear test site, have caused irreparable
damage to human health and the environment, and an increase in overall morbidity and mortality. The whole territory of the Semipalatinsk test site and the surrounding areas of Pavlodar, East Kazakhstan and Karaganda regions recognized as ecological disaster zone. Long-term consequences of nuclear tests, which are passed from generation to generation, increasingly have detrimental effect.

The elimination of these effects requires the implementation of a special state program and a set of measures for the treatment, recovery, rehabilitation, and social protection of the population and socio-economic development of the territory.

It is known that the Semipalatinsk nuclear test site was established by the decision of the USSR Council of Ministers on 21 August 1947. In July 1948 military units, mostly builders began arriving to the test site. Since that moment in secrecy there began a large-scale construction of a residential town, initially called Moscow-400. Laboratory, industrial and experimental centers were erected, test sites were constructed. The nuclear test site is situated on the territory of Semipalatinsk, Pavlodar and Karaganda regions. Thousands of indigenous Kazakh families, living on the lands that were given over to the nuclear test site, were relocated to other areas. For the first nuclear test military engineers prepared “experimental field” the size of 300 km². In the epicenter of the field at the top of the 30-meter metal tower a nuclear explosive with a capacity of 20 kilotons was installed. Concrete-steel fortifications, armored turrets and permanent fire position are built all around.

Semipalatinsk Nuclear Test Site (SNTS) is located in the north-eastern part of Kazakhstan, in the steppe and semi-desert zones with a total area of 18,500 km².

The first nuclear explosion at SNTS was made on August 29, 1949. On August 12, 1953 first thermonuclear device has been tested at the site, and on November 22, 1955 - the hydrogen bomb. During functioning of the test site (1949-1989 years) in total 468 nuclear explosions were performed at its site, including: air 125 (26 surface, 91 air, and 8 altitude); 343 nuclear test explosions underground (215 of them in the galleries and 128 wells). Tests were conducted with different power devices, at different depths and in various rocks.

L. P. Beria personally responded to the Kremlin for the success of the experiment. They prepared two lists. One list was aimed to award the scientists and investigators with the Order, if their bomb was released and the other - about the shooting, if they failed[8].

Over 40 years of atomic weapons tests at the Semipalatinsk test site 470 bombings were carried out; in the period from 1949 to 1963 118 ground and air explosions with the power up to 100 kilotons were made.

In 1963, members of the nuclear marathon the USSR, the USA and Great Britain signed a treaty banning nuclear tests in the atmosphere, on land and under water. Since that time, the test can only be done under the ground, but in spite of prohibitions, military and physics invented “explosions in national economic purposes”, creating artificial lakes, gas storage. Semipalatinsk test site is located in a densely populated area. Territories adjoining to Semipalatinsk site villages hundreds of times were contaminated with fission products, and the people were affected by ionizing radiation. It is impossible to objectively assess the damage to human health. In the first 14 years open air and ground explosions of uranium, plutonium and hydrogen bombs were conducted on the landfill. Among the population living near the landfill during this period, cases of cancer, cardiovascular disease, leukemia, central nervous system disorders became more common. Mortality increased. Doctors were forbidden to put the correct diagnosis of diseases related to exposure to radiation. For example, in 1957, medical scientists from Alma-Ata held the first sample surveys of the population living near the landfill site. Specific complex pathological symptoms associated with exposure to ionizing radiation on the body, was identified.

It was noted that the effects of radiation causes premature aging process, increasing the number of oncological diseases and cases of suicide. According to statistics, in Semipalatinsk region in 1980 per 100,000 population were 158 cases of oncological diseases, and in 1990 this figure increased by one third. Mortality from lung cancer has tripled, from esophageal cancer increased by 8 times, and from all types of the cancer it was 39 percent higher than in the control group.

The scientists found that 1.5 million people living in the territories of Semipalatinsk, Karaganda and Pavlodar region adjacent to the nuclear test site, were irradiated at doses of more than 1 rem, and own
chromosomal abnormalities got by irradiation, they passed to future generations. Today, thousands of survivors living in the land adjacent to the test site are left without state support. In spite of the fact that Kazakhstan adopted a law “On rehabilitation of people affected by nuclear tests”, unfortunately, it does not work in full force.

According to the Institute of High Energies of the Academy of Sciences of Kazakhstan, the total capacity of nuclear weapons tested in the atmosphere and the ground STS (in populated areas), 2.5 thousand times more powerful than the bomb dropped on Hiroshima by the Americans in 1945. Outside the test site came radioactive clouds 55 air and ground explosions and gas fraction 169 underground tests. These 224 explosions caused radioactive contamination throughout the eastern part of the territory of Kazakhstan. Forty years of testing nuclear weapons posed an extreme moral and stress state of the population of the region and caused irreparable damage to human health. Only after the country achieved independence – on August 29, 1991 by the Decree of the President of the Republic of Kazakhstan Semipalatinsk Nuclear Test Site (STS) was officially closed[9].

Exactly 42 years after the first nuclear explosion in the USSR nuclear tests were terminated forever. Followed by an international moratorium on nuclear testing: the remaining polygons stopped functioning - Novaya Zemlya (Russia), Nevada (USA), Mururoa Atoll (France), and Lop Nor (China).

Today agricultural, mining and exploration activities are carried on the territory of the STS. The test site is not fenced and marked on the ground, there are no signs warning of the danger.

Population has free access to the territory of the former nuclear test site, including the particularly dangerous from a radiological point of view area - the epicenter of nuclear explosions on the test sites. Ministries and agencies responsible for the territory of the former STS, have no data on the usable land of polygon. Public authorities conducting radio-ecological studies in STS has never given information on the location of unusable areas contaminated site to executive authorities and the public. Serious real threat to the ecological security of Kazakhstan is radioactive contamination which sources are divided into four main groups:

- waste of non-performing enterprises of uranium mining and processing industry (uranium mine dumps, flowing wells, tailings dam, dismantled equipment of technological lines);
- areas contaminated as a result of nuclear weapons tests;
- waste of oil industry and oil equipment
- waste produced as a result of the operation of nuclear reactors and radioisotope production (waste sources of ionizing radiation).

In Kazakhstan, there are six major uranium-bearing geological provinces, many small uranium deposits and occurrences that cause elevated levels of natural radioactivity, waste accumulated on uranium mining companies and the nuclear explosions.

On 30% of the territory of Kazakhstan a potential increasing allocation of natural radioactive gas - radon, which poses a real threat to human health, exist. The use for drinking and household needs water contaminated with radionuclide is dangerous.

Today economical solution to protect public health, affected by nuclear tests is updated.

Consequences of nuclear testing are tragic. Health of the population of the areas adjacent to the Semipalatinsk region, suffer irreparable harm. The average life expectancy is no longer than 40-50 years. Radiation exposure led to a sharp weakening of the immune system, increasing the number of diseases, aggravates the course and duration of the disease. Those people who suffered from radiation exposure significantly more common malignancies. Anemia, unusual lesions of the skin, disorders of blood pressure, blood and vascular pathology, premature aging, mental illness, suicide - all this sad heritage of nuclear test site. Currently, there is a tendency in deterioration in the health of the population living in the zone of influence of STS. Such areas include Karkaraly District of Karaganda region, Lebyazhensky district of Pavlodar region, some areas of the East Kazakhstan region. Unfortunately, a state program of medical rehabilitation of population affected by nuclear tests at the former STS in the 1949-1990 years practically is not implemented. Deadlines, to create the Unified State Register of medical Kazakhstan (1997 - 1999), are extended for an indefinite period. One of the reasons is the lack of proper funding. The same program provides for the establishment of the Interregional medical
rehabilitation center in Semipalatinsk, and its affiliates, on the basis of regional hospitals. However, funding should be at the expense of extra-budgetary funds (investments, grants, sponsored charitable grants). In our opinion, this is the time to find comprehensive solution to radioactive contamination of the environment and the consequences of operating the Semipalatinsk test site.

III. Kazakhstan: EXPO - 2017 Kazakhstan is considered to be the crossroads of Europe and Asia. It is the boundary of civilizations and religions. Waves of migration repeatedly overwhelmed the territory of Kazakhstan in different directions. As a result, there has developed very unique culture. This is the main wealth of Kazakhstan and the fact that Kazakhstan has become the center of the Expo -17 naturally. EXPO - a major non-profit project, carried out since 1851. In total 50 exhibitions were held, and after each there was an increase in science and technology.

Documentary sources from archives of Kazakhstan, Russia, France and some other foreign countries indicate the involvement of the Kazakh steppe in international exhibitions.

The decision of the International Exhibitions Bureau to hold EXPO -2017 in Astana, Kazakhstan aims to explore such issue as the participation of Kazakhstan in the international exhibitions in Paris. Kazakhstan’s participation in international exhibitions is a little known fact of the historical and cultural process XIX-early XX centuries.

In the XIX century there were 11 international exhibitions, 5 of which (1855, 1867, 1878, 1889, 1900) were held in Paris, the other took place in Vienna (1873), Philadelphia (1876), Melbourne (1880), Chicago (1893) Brussels (1897) [10]. Foreign researchers believe that in the XIX century five exhibitions from 9 international exhibitions were the most significant: four exhibitions in Paris and one Chicago exhibition.

In the first third of the twentieth century 12 international exhibitions were organized, 3 of which were held in France (Paris - 2 - 1925, 1937, Liege - 1 - 1905). The rest of the exhibition took place in St. Louis (1904), Milan (1906), Seattle (1909), Brussels (1910), Ghent (Belgium, 1913), San Francisco (1915), Barcelona (1929), Chicago (1933) Brussels (1935).

After the closure of the international exhibition in London (1861), Napoleon III signed a decree on the organization of the international exhibition of agricultural and industrial products in Paris in 1867. An additional decree in 1865 added art to future exhibitions. [11] At the same time, the Emperor Commission was established under the chairmanship of Joseph Napoleon, cousin of the Emperor. The exhibition was held from April 1 to November 3, 1867, where about 52 200 exhibits were presented, most of the European (15 969 French, 28 443 - in other European countries and Russia). Approximately 11-15 million visitors visited the World's Fair in 1867 [12].

International specialized exhibition “Expo” is the largest international exhibition, which demonstrates the latest scientific and technological achievements, prospects, as well as the history, traditions and culture of countries around the world. The result of world exhibitions is to expand the international, economic, political, cultural and scientific relations. World exhibitions are held once every five years, and the intervals between them is filled with special exhibitions. Expo is visited by millions of tourists, and therefore each country seeks to create a unique pavilion, capable of expressing the national identity of its culture and to show the world their level of economic and technological development.

An international exhibition EXPO 2017 in Astana is one of the key projects in Kazakhstan. The initiative of organizing such a big event in our nation's capital belongs to the Head of State. On June 10, 2011 the General Secretary of the International Exhibitions Bureau (BIE) Vicente Gonzalez Loscertales in Paris was officially presented the application of the Republic of Kazakhstan. From that moment our country officially joined the election campaign for the right to host EXPO-2017 in Astana. March 14, 2012 President meets with the expert commission of the BIE in the capital of Kazakhstan, in which emphasized that for our country holding EXPO 2017 is a national project.

June 12, 2012 in Paris at the 151st General Assembly of the BIE, the official presentation of Astana was made, at the very beginning of which a special video message the President of Kazakhstan addressed to the delegates. In his speech, President Nursultan Nazarbayev personally guaranteed the best effort to
The successful implementation of the project in case of victory of Astana. Theme announced Astana - “Energy of the Future” - devoted to alternative energy sources and “green” technologies.

On November 22, 2012 in a secret ballot of representatives of 161 Member States of the International Exhibitions Bureau Astana was chosen to host the International specialized exhibition EXPO 2017. Astana’s bid was supported by 103 countries. EXPO 2017 will be the first exhibition held in the CIS countries.

World Exhibition in Astana will last 3 months. It will be open to about 100 countries and about 10 international organizations. It is expected that more than 5 million people will be able to visit the exhibition. The theme of Expo 17 - “Energy of the Future” - will attract the world’s best energy saving technologies, new technology development and use of existing alternative energy sources such as solar, wind, sea, ocean and geothermal waters. Astana can be an effective platform to showcase of the best world developments and trends in the industry. The exhibition will give a powerful impetus to the system of economic diversification and technological modernization of production facilities and the scientific base of the country.

The theme for EXPO in Astana was not chosen randomly. Being rich in minerals and using traditional energy sources, Kazakhstan understands that the sustainable use of energy, alternative energy and conservation of natural resources is one of the priorities of the entire energy sector. “Energy of the Future” - this is a very capacious concept that addresses issues of alternative energy wind, solar, water, space, energy, biomass, reducing CO2 emissions.

Kazakhstan has already begun preparations for Expo-17. Thus, in the framework of the V Astana Economic Forum a specialized session was held on global-environmental initiatives of Kazakhstan, such as the “Green Bridge” and the theme of EXPO-17 is «Energy of the Future».

Nobel laureates Robert Aumann, Eric Maskin, scientists Alex Ignatiev, Director of the Research Institute of the University of Houston Alternative Energy USA, Jose Cordeiro, Chairman of the Venezuelan Section of the International Organization Millennium Project, Albert Bolotov, PhD, Professor, Director General “Ekoenergomash” Dr. Sarim al-Zubaidi, Professor of Mechanical Engineering Faculty of Engineering, Nazarbayev University, Zhumabai Bakenov, professor of the School of Engineering at Nazarbayev University were invited as speakers to the session.

According to Jose Cordeiro, today the whole world pays great attention to renewable and alternative energy sources. Kazakhstan has a unique opportunity to support this need due to its unique geographical position, having considerable potential use of wind and solar energy, as well as the large energy potential and the presence of oil and gas resources.

Relay race for conducting “Expo” was taken over by the countries such as the US, Spain, Italy, France, Japan, Korea, Belgium, Brazil, China and others.

For Kazakhstan such forums are the most important spaces for open and productive dialogue on the development of alternative energy. That is why at the VII Eurasian Forum KAZENERGY «Peace in Times of Change: the formation of a sustainable energy of the future” national project EXPO-17 has a special place. During the main international event of the Eurasian energy sector Kazakhstan declares itself as a socially responsible state. For about two years, Kazakhstan diplomats have presented a bid to host EXPO-17 abroad. Within lobbying the program Germany, the United Arab Emirates, Brazil, India, South Africa, Australia and other countries visited by our politicians and diplomats learned about new initiative of Kazakhstan. An important factor of the success of the National project EXPO-17 is support of the Head of State. In summer 2011 on the 38th Session of the Council of Foreign Ministers of the Organization of the Islamic Conference, Kazakhstan President Nursultan Nazarbayev expressed hope that the Member States of the Organization will support Kazakhstan candidacy to host the World Expo 17. The President noted that today a vital issue for the entire world is large-scale investments in the energy sector. Kazakhstan offers right now to create an international database of the energy of the future, in order to demonstrate the achievements of different countries in this area at the international exhibition EXPO-17 in Astana. That is, today Kazakhstan is ready to present a number of interesting projects in terms of scientific novelty and practical significance. And the exhibition EXPO-17 will bring together world scientists for the development of clean and renewable energy sources. Thus, Expo-17 will
Conducting “Expo-17” is a big step towards becoming Kazakhstan as an international exhibition and information-presentation platform. EXPO-17 promises our state significant changes in all spheres. Small and medium businesses of the capital and surrounding regions - a sphere of public services, hospitality and domestic tourism will receive a major new impetus to the development. The exhibition will attract significant amounts of private investment in the construction of exhibition facilities and infrastructure in the capital, create tens of thousands of jobs for their service, to develop domestic tourism and increase the inflow of foreign tourists to the country, to mobilize economic and social resources of Kazakhstan. Facilities constructed within the Expo-17, in the future will let Kazakhstan and its capital be considered as a major international, exhibition and information-presentation platform. The exhibition will introduce the world a multi-ethnic culture, ancient history, art, tradition and hospitality of Kazakhs, raise awareness and tourist attractiveness of Kazakhstan in the eyes of the world community. Every day concerts, shows, national days and other recreational activities will be held in the exhibition area.

The world is now faced with a lack of energy and the threat of environmental crisis that puts the real task of preserving traditional sources of energy and the search for alternative. Expo-17 will serve as a platform for the exchange of experiences between countries, and the initiative of President Nursultan Nazarbayev “Green Bridge” will pave the way for new opportunities to save energy and preserve the environment. Expo will be held for the first time in the heart of the vast Eurasian continent. In our opinion, the World Exhibition “Energy of the Future” will give a powerful impetus to the transformation of the global energy industry. Our country will make maximum effort to it to be passed at the highest level.

Based on the above, it can be expected that the Expo 17 will be one of the key events in the recent history of Kazakhstan, and hosting this event will make a huge contribution to the image of our country, the development of economy and culture.

Modern reality naturally includes knowledge of the way of Kazakhstan from colonial margin to the capital of the Expo-2017.

5. Conclusion

Thus, analyzing the environmental problems in Kazakhstan and their solutions should be noted that for today the solution of global environmental problems by a single state is problematic, and in some cases impossible, therefore, international cooperation in this area plays an important role.

Solution of the environmental problems in the region requires close cooperation of all countries who are interested in a constructive solution of such problems. This cooperation should be carried out at the highest level, with the involvement of all possible resources: financial, political, economic, technical, etc. Currently, not only the effectiveness of economic activity, but also the well-being of human existence in general depends on the successful resolution of ecological and economic problems.

The growth of world population and, consequently, an increase in the consumption is accompanied, as a rule, by local environmental disasters, the scale of which has recently increased significantly. Effects of local environmental disasters gradually formed a global trend of changes in the environment. About global nature of the problems of usage of the natural resources is now evidenced by a number of factors:

1) signs of environmental degradation (extinction of species, decline in forest area, desertification, soil erosion, depletion of the ozone layer and etc.);
2) increase in the number of districts and areas of environmental disasters;
3) particularly dangerous types of contamination of the environment and natural ecosystems.

The reason for the overall ecological crisis is seen in the growth of human consumption of primary biological production due to the growth of the world population. By 2030, According to experts of the Institute “Ward-Watch” (the USA), the world population could reach 10 billion. In this case, to maintain the standard of living it is necessary to increase agricultural production four times and energy production six times. At current trends, ecological disaster is imminent, according to the calculations of scientists, during the life of two or three generations. Another reason to strengthen the environmental crisis is the
low efficiency of the use of natural raw materials: about 90% of the initially extracted raw materials in the process of technological processing goes to direct waste or lost in transit. In addition, there is an increase of production growth accidents, the consequences of which grow beyond its local origin.

The article analyzes the environmental problems in Kazakhstan on the example of the Aral Sea, analyzes the socio-environmental problems and EXPO-17, and solves the cognitive tasks set.

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