International Journal of Research
Available at https://edupediapublications.org/journals
p-ISSN: 2348-6848
e-ISSN: 2348-795X
Volume 03 Issue 18
December2016

Building huge hydro-electric facilities in transboundary rivers in Central Asia and its impact to the environment

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Марказий Осиёда трансчегаравий дарёларда гидроэнергетик иншоотларнинг қурилиши ва уларнинг атроф-муҳитга салбий таъсири

Строительство гидроэнергетических сооружений в трансграничных реках в Центральной Азии и их негативное воздействие на окружающую среду.

Growing process of humanity's necessity of drinking water and lack of water is involving the whole regions. The water need of mankind is increasing day by day. Increasing number of world population and intensification of the world industry are the main reasons for this case. Although in the international documents of human rights[1] and other international agreements it has been noted that the right for drinking water is considered as one of the most primary natural rights of the human-being, this right of human has not been providing sufficiently yet. Initially the water was used as a beverage and for national economy (agriculture, industry, domestic services), but along with the flourishing of science began the process of using trans boundary waters for hydro energetic goals and the building of big hydroelectric facilities caused several actual international law issues. The 60s of the XX century was the high point of building of such kind of hydro electric dams. By turn this began to create the coordination of criterions and orders of the usage of trans boundary waters and new orders for providing ecological security.

[1]Universal Declaration of Human Rights (Article 25); International Convenant on Economic, Social and Cultural Rights (Articles 11-12) / Human Rights: Collection of international documents. Helsinki Foundation for Human Rights. –Varsaw, 2002. –Pp-85-111.

According to available data, today there are more than 263 transboundary water streams, 70 of which are in Europe, 53 in Asia, 39 in North and Central America, 38 in South America, and 60 in Africa. 155 of them flow through the territory of two countries, more than 100 of them flow thorough the territory of 3 or more than countries[2].

As well as Central Asia is considered as an important region in geopolitical viewpoint, it is also one of the most ancient centers of human civilization. Transboundary Rivers such as Amu Darya and Syrdarya which flow through the region has a big significance in the evolution and flourishing of Central Asia. Nowadays water resources of these rivers still play a crucial role in social and economic life of countries of the regions. It's well known that international legal aspects of the issues of transboundary rivers and using Hydro Electric Dams there are at the centre of attention of local and international scholars. On august 17, 2007 President I.Karimov in his speech at the summit of the heads of states of SCO stated his considerations on this issue: "This issue concerns more than 50 million people who lives in 6 countries of the region. Therefore in the process of decision-making on such matters concerning the use of the stream of the rivers, particularly on building Hydro Electric Facilities, must not be adopted without taking these interests into account. Realization of any project on these transboundary waters must not have negative impact on the ecological water balance of the region. International legal bases which are being implemented in the area of the use of water and ecological sphere must be basis for the effective usage of water resources of the region in cooperation.[3]

In the middle of the last century the process of building big Hydro Electric Powers on the transboundary rivers began, and it made rivers more important in strategic viewpoint.

Nowadays we can see that big rivers of the region are being used for other purposes: because of building water obstacles bio-system of the region is worsening, thinking about only their own economic interests, some states considering water as a commodity, and water resources are being used ineffectively.

The building of Hydro Electric facilities[4] in the upper part of the rivers is increasing: Tajikistan planned to build huge Hydro Electric Powers such as Rogun, Sangtuda, Rushan, Dashtijuma, Upper-Amu-Darya; Bishkek is also planning to construct its own Kambarata-1 and Kambarata-2 Hydro Electric Powers. These facilities, which were projected by Soviet government in the 80s of the twentieth century in order to help to create cotton plantations, are being readjusted for hydro-energetic ambitions. Such facilities are being built mainly for economic interests, in order to get energy independence. Probable serious consequences, such as ecologic and economic, and geopolitical instability are worsening relations between the states of the region. Negative consequences of construction of such kind of facilities threaten the security and national interests of Central Asian states, especially countries which are situated in the lower part of the rivers. Taking into account the

[2]Ismailov B.I., Adilkhodjaeva S.M.International legal cooperation in the sphere of transboundary water consumption: Tutorial– Tashkent.: TSIL, Minjust Republic of Uzbekisan. – P-15

[3] Karimov I.A. "Liberalization of our society, recession of reforms, bettering our spirituality and improving living conditions of our nation are primary criteria's and purposes of our actions" Vol.-15, "Uzbekistan", Tashkent, 2007. – p.291

[4] According to The International Commission on Large Dams – (ICOLD) measures, such kind of reservoirs , which gathers 3 million cubic metres and height is more than 15 metres are considered as a big Dams. According to these criterions, there are 45 000 big Dams. There are nearly 1200 dams in the Central Asian region, and 110 of them are considered big dams. This organization was established in 1928 , its headquarter is situated in Paris. Uzbekistan was adopted to membership of this organization in May, 2011. Look: http://www.icold-cigb.net/GB/World_register/general_synthesis.asp

supremacy of human interests, providing the security of human and human resources are considered central issue of policy and security of every state.

As a result of anthropogenic incidents in the big Hydro Electric Facilities mainly civilians' life remains under threat and it may cause the death of many innocent civilians. Dam failures in Henan province of China, in August 7, 1975, Vajont Dam of Italy in October 9, 1963, Pakistan in 2005, Vietnam in 2007, Russia's Sayano–Shushen power station in 2009 prove our considerations. Building Hydro Electric Facilities with high-level dams in mountain districts of Central Asian states is an obvious threat in the viewpoint of human security, because the region is considered as an active seismic zone. According to geologic research results, which were carried out in the last century, a large part of Central Asian region is situated on 9-10 grade (in Richter scale 7,6 grade) magnitude zone of MSK-64 scale. Seismic surveys which were carried out in the 50-60s of last century due to the construction of Nurek (Tajikistan) and Tokhtagul Hydro Electric Dams, also confirm before-mentioned results.

Uzbek seismologists emphasize that the location of constructions Hydro Electric Dam of Rogun is situated in Hissar-Kakshal and Ilaksi Vakhsh tectonic active zone of South Tian Shan-Pamir-Alay mountain ridge, and this area is on the crack between the Tian Shan and Pamir Mountains. At the symposium of European Seismology Commission, which was held in Davos in 2009, scholars of Central Asian Institution on Land Researches stated that Toktagul Hydro Electric Dam which is situated in the Central and Northern Tian Shan, and Kambarata-2 near it, are situated in the active tectonic zone with 7,7 grade magnitude[5]. These huge Hydro Electric Facilities are being built not only in seismic active zone, but also not far from densely-populated areas. For example, Rogun Hydro Electric Dam is being built 110 kilometers away from the capital city of Dushanbe, 70 kilometers away from Nurek Hydro Electric Dam, the highest Dam in the world. If there will be a serious failure in Rogun and flood occurs, beginning point of surrounding places around the facility will be 245-280 meters under the water, the last point around the Nurek 6-7 meters water stream will destroy series of hydroelectric power plants, which were built as a cascade, and causes unprecedented destruction, emphasized scholars. As a result, 700 population areas of Tajikistan, Afghanistan, Uzbekistan and Turkmenistan, overall the lives of 5 million people, who live in this 1,5 million hectare territory may be in danger. There are so many big cities in this territory such as Nurek, Sarbon, Kurgantyube, Termiz, Mukri, Kerki, Turkmanbashi, Urganch, Nukus. It means that any disaster at these facilities damages equally to all bordering states of the region.

The anthropogenic failure in Kambarata-1 and lower one Toktagul Hydro electric Dam also will cause a great deal of human death. If it occurs, the most populous part of the Central Asia-Fergana Valley and 476 populated areas of 600 thousand hectare territory will be under water[6].

One of the negative consequences of building huge Hydro Electric Powers in Central Asian region is emergence of shortage of water.

The big dams on upper part of transboundary rivers which gather a huge amount of water for Hydro Electric Powers, obviously will cause lack of water in countries which are situated in the

[5] Ziyavudinov F. Seismic risk, which linked with the building of giant Hydro Electric Facilities in Central Asia. Materials of international conference "Transboundary ecologic problems of Central Asia: application of mechanisms of international law for their solution" November 16-17, 2010. – Tashkent, 2010. –P.37.

[6] Jigarev S, Building Hydro Electric on the transboundary waters in Central Asia:problems and risks. Materials of international conference "Transboundary ecologic problems of Central Asia: application of mechanisms of international law for their solution" November 16-17, 2010. – Tashkent, 2010. –P.32.

lower part of transboundary rivers. This case, at first, worsens the situation near the Aral Sea area, secondly, it may cause deficit of water for agriculture and human consumption. "We have to take into account that the Aral Sea area is supplied with water with Amu-Darya and Syr-Darya's water resources. The decreasing of water amount in the rivers absolutely may change the difficult situation to worse"[7].

The building of Hydro Electric Powers of Kambarata in the upper part of Toktagul reservoir may gather 25,1 cubic kilometers water resources in the water storage basin, which is situated in the upper part of the Naryn river. This number matches with annual water amount of the river.

Construction of artificial water reservoirs such as Rogun, Sangtuda-1, Sangtuda-2 in Vakhsh river, in Tajikistan will increase the amount of water more than twice, from 10,5 cubic kilometers to 25 cubic kilometres. Rushan, Dashtijuma, Upper-Amu-Darya, which are being planned constructions in the Piandj river, will cause the detention of 39 cubic kilometers water resources in the artificial reservoirs.

When Rogun and Dashtijuma reservoirs launch to work in energetic routine the amount of deficit in the lower reaches countries may rise from 7129 million cubic-metres to 12467 million cubic-metres, sometimes this indicator may grow up till 16210 million cubic-metres. 80 % shortage of water happens during the vegetation period.

All of these factors are causing to rise the temperature in the Aral Sea region and to continue sultry summer days more than usual. According to scientists, in 2035-2050 the temperature of the region may arise 1,5-3°C. As a consequence, the current water resources decrease due to steaming of the Aral Sea for 10-15 %, transpiration of environmental plants for 10-20 %. The steaming process of major rivers of the Aral Sea also increasing day by day. According to research assumptions, in 2050 the amount of water in the Amu-Darya will lose 10-15 % of its water resources, Syr-Darya's water will decrease 2,5 times at that time[8]. The retention of a huge amount of water in artificial reservoirs during the vegetation period will intensify this process and will cause absolutely drying out of the Aral Sea.

Human's right to drinking water is considered as a natural and fundamental rights and this right is mentioned in the influential international documents and protected by them.

According to Germany's "Lahmeyer International" engineering and consulting company's conclusion, it takes 20 years period in order to gather the exact 13 cubic-kilometers water amount for launching full-work of Rogun[9]. In this occasion, naturally in the states which are situated in the lower part of the water, will come into water shortage. As a result, 18 million people who live in the lower stream countries will suffer from it and will emerge the problem of satisfaction the necessity for drinking water.

Within 5 years in the future, it is expecting that due to exsiccation of forests and trees will be $46 million, due to decreasing of cotton products $206,2 million, due to decrease of cotton and wheat fields $5,1 billion, overall $17,8 billion damages. The only fishing sector will have $14,3 million. Obviously it will have a negative influence on the economy of the Republic of Uzbekistan.

The building of only Rogun Hydro Electric Power inflicts double-sided damages to

[7] The President of the Republic of Uzbekistan I.Karimov's speech at the UN New Millenium Summit, "Adolat", September 24, 2010;

[8] Alihanov B. "Ecologic problems and challenges in the contex of global cooperation for providing ecologic durability and stability in the region". Materials of international conference "Transboundary ecologic problems of Central Asia: application of mechanisms of international law for their solution" November 16-17, 2010. – Tashkent, 2010. –P.13

[9] Eshchanov B., Mona Grinwish and others. Rogun Dam – Path to Energy Independence or Security Threat. See: www.mdpi.com/journal/sustainability.

Uzbekistan. Having used this energy, every year Tajikistan's aluminum plants produce 22 thousand tone dangerous transfrontier waste products, Uzbekistan's southern regions' ecological life is suffering from that occasion. Particularly, the ecologic-economic damage between 2005 and 2008 was $282 millions[10]. It means that seismic condition of Central Asian region doesn't let to build such kind of too big Hydro Electric Dams.

As recommended by many ecologic organizations and influential experts, it would be wise way to launch to use more little Hydro Electric Powers, which are more secure and economic Hydro Electric Plants, in order to get exact amount of energy.[11] For the order of Russian aluminum company (RusAl), Germany's "Lahnmeyer International" engineering and consulting company and France's independent economic-technician company of "Coyne et Belllier" checked the construction and having taken into account the seismic activity of the region, they recommended to build Hydro Electric Dam with 175 meters height, which lets gather 1,2 cubic kilometers water.[12] It would be rational action, if the government of Tajikistan pays attention to the conclusions of such kind of influential international companies.

Nowadays in our country adopted more than 80 law and subordinate legislation documents in order to regulate the process of protecting and effective usage of water resources. Besides in order to organize effective usage of water resources, our government is realizing several programs, for instance, Uzbekistan has signed several bilateral and multilateral agreements on effective use of Central Asian region's water resources.

In conclusion, I would like to emphasize following ways in order to regulate the situation. As experts recommended, to build more little Hydro Electric Dams. This idea represents itself as a cheap, effective and secure project.

According to the opinion of H.Yunusov, existing and being built constructions must be used in a combinational way: if Rogun Dam will be built, its activity must be coordinated with Nurek Hydro Electric Power's activity. The fact is that both of plants must not keep the huge amount of water at the same time. When Nurek Dam gathers the water, Rogun must release the water stream, or on the contrary. This action prevents the emergence of water deficit in the countries which are situated in the lower stream. In this case the governments of Kyrgyzstan and Tajikistan must take the responsibility and guarantee it[13].

Moreover it must be set up intergovernmental and non-governmental institution which carries out technical-ecologic, social-economic evaluating process over the projecting, building, implementing and exploiting such Hydro Energy Facilities, and strengthen the mechanisms of international law. It is important to organize a conceptual approach which defines the level of damages and finances the negative transboundary consequences directly or indirectly, provides the hydro-energetic security and usage of water, and national legislation must be coordinated with this process. Launching to use the alternative range of energy help to use effectively current energy resources, establishing effective cooperation decreases the need for building new Hydro Electric Facilities. To use electric lamps, which consumes less energy, and building materials, which produce heat from

[10] Umarov N., Problems of transboundary pollution of environment in Central Asia: Monitoring and estimate. Materials of international conference "Transboundary ecologic problems of Central Asia: application of mechanisms of international law for their solution" November 16-17, 2010. – Tashkent, 2010. –P.43

[11] The President of the Republic of Uzbekistan I.Karimov's speech at the UN New Millenium Summit, "Adolat", September 24, 2010.

[12] Eshchanov B., Mona Grinwish and others. Rogun Dam – Path to Energy Independence or Security Threat. See: www.mdpi.com/journal/sustainability.

[13] H.Yunosov, "Possible negative consequences andways of preventing them", "Social view", 2012

p-ISSN: 2348-6848
e-ISSN: 2348-795X
Volume 03 Issue 18
December2016

itself, to raise civilians' opinion about economization of energy resources, to strengthen legal responsibility for wastefulness of energy and to enforce other measures will help to use inner opportunities at maximum. Proceeding from world practice, to use alternative range of energy, for example, establish complete using system of solar energy for lighting and heating will help to adjust existing hydro-energetic problems in the region.