



Water disputes in Central Asia: Hydro energy or Irrigation?

Course: Finance (Basics)

Instructor: Ing. Luděk Benada

Student: Rafoat Normatova

Fall 2012

Table of contents

<i>Introduction</i>	3
<i>Part 1. Back to history. Reasons for “water” disputes between the countries</i>	4
<i>Part 2. International relations between the countries</i>	
<i>a) Tajikistan-Uzbekistan-Kyrgyzstan</i>	6
<i>b) Russia’s interests</i>	7
<i>c) Conclusion</i>	8
<i>Part 3. Perspectives of development of hydro energy: how to find the compromise?</i>	
<i>a) Perspectives for development of hydro energy</i>	8
<i>b) Ways to solve the problem</i>	11
<i>Conclusion</i>	13
<i>Bibliography</i>	14

Introduction

Allocation of natural resources is not even all over the world. Water resources are not exception. Only 10 countries in the world possess more than 60% of water resources. Brazil is number one in this list. China is on the 4th place; however, due to the fact that country is overpopulated and over 90% of rivers are polluted, country is already experiencing water deficit. Russia takes the 2nd place in the list, and then goes Canada, China, Indonesia, USA, Bangladesh, India, Venezuela and Myanmar. Last 2 decades have shown that world's natural resources are depleting and there is a deep need in renewable sources of energy. Hydro energy is considered to be such resource: it is totally renewable, it does not emit any toxins, it is considered to be the cheapest type of renewable energy according to the cost of refinement (from USD 0.01 to 0.05 cents!). Countries which are either economically developed or rich with natural resources such as oil, gas, minerals, are not thoughtful about this type of energy, whereas poor countries consider hydro energy as the only alternative to become economically sustainable and get out the vicious circle of poverty. Current paper is based on the overview of one of such examples – Central Asian countries. After the collapse of Soviet Union, previously regional issues became international and required a solution. The foremost among them was the water-energy problem in the river basins of 5 “stan” countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. Following issues are considered in current paper: What are the reasons of water disputes between the countries and how it is reflected on international relations between the countries? Perspectives of development of hydro energy: how to find the compromise?

I. Back to history. Reasons for “water” disputes between the countries

Central Asia, as a region, is very rich with natural resources, such as oil, gas, water and coal. However, resources are not equally distributed around the territory: while Kazakhstan, Uzbekistan and Turkmenistan mainly possess oil, natural gas and arable land, Tajikistan and Kyrgyzstan possess most of the region’s water resources. Water disputes take their origin from the early 90s, after the collapse of Soviet Union and attainment of status of independent states by 15 former soviet republics.



Figure 1. (Source: Kristina Schneider. *Water Resources and International Conflict: Game Theory*)

Main rivers of the region, Amu-Darya and Sir-Darya, flow through the territory of 5 “stan” countries, and fall into the Aral Sea forming the basin of the lake (see figure 1). 87% of the water resources originate from Pamir Mountains (Tajikistan and Afghanistan) and Tien- Shan mountains (Kyrgyzstan), whereas 83% of water resources are used in prairies and deserts of South Kazakhstan, Turkmenistan and Uzbekistan. Reason for this is the politics of Soviet period, when Central Asian region was used as a main resource of cotton production. For this purpose, Soviet government started construction of water reservoirs. Among largest of them are Naryn with max volume of water of 19,5 mln cubic meters and Nurek (one of the largest hydro power stations of USSR with power capacity of 2,700 megawatt) with max volume of water of 10,5 mln cubic meters. Water reservoirs mainly served for the purpose of irrigation and only few of them provided turbines for the production of energy. Despite this fact, in the end of 80s around 35% of energy was produced on hydro power stations. Construction of power stations and water reservoirs had side effects on Kyrgyzstan and Tajikistan: countries were allowed to use minimum amount of water, they could not increase the cultivation area and were becoming more and more dependent on food and energy resources from neighboring states. In 80s however, politics of soviet government were widely criticized due

to waste of water resources and unprofitable cotton projects. Moreover, waste of water resources had ecological aftereffect: Aral Sea, previously 4th largest lake in the world was gradually vanishing. Water reservoirs and hydro plants which were constructed without considering administrative borders were complicating the situation even more. Solution of these problems was now considered on international level and new governments of independent states started negotiations. Previously presented status quo between the states was neglected and lower states refused to provide low-cost energy to upper states as it was during the Soviet era. Upper states, in their turn, started to consider alternative types of energy. It was difficult to find the consensus due to lack of political specialists and political will of the newly independent states. More than 150 regulations on water resources usage were adopted, however, majority of them are not followed.

Nowadays, water potential of the region is used only at 10% level, while the potential is very high, especially for Tajikistan and Kyrgyzstan.⁽⁵⁾ Below table shows the distribution of water potential in the region by countries.

Country	gigawatts/hour
Tajikistan	143,600
Kyrgyzstan	72,900
Kazakhstan	61,900
Uzbekistan	27,400
Total	305,800

Figure 2. (Source: Problemi ispolzovaniya vodnih resursov Centralno-Asiatskogo regiona by A. Morozov)

In 1993, in Almaty, Kazakhstan, 5 states met to conclude an agreement on unified management and protection of the water resources in the region, according to which it was agreed to use the old soviet system of water resources distribution up to the moment when new rules will be introduced. However, 20 years later these rules still are not imposed.

In 1998 Kyrgyzstan, Kazakhstan and Turkmenistan concluded an agreement on unified usage of water resources in Basin of Sir- Darya. According to this agreement, Kyrgyzstan agreed to relieve water during the summer, whereas lower states agreed to provide Kyrgyzstan with energy during the winter period. This agreement was ineffective as well.

In the year 1993, 5 Central Asian States met to create an International Fund for saving the Aral Sea (IFAS) for coordination and improvement of situation on the Aral Sea. This agreement is coordinated by executive board on the basis of Aral Sea Basin Programs (ASBP). ASBP are realizing projects starting from 1993, most recent of them is ASBP-3 (2011-2015) with a total budget of USD3 billion. Projects are currently funded by international donors and states which make states in the region to compete for favor of donors.

Some may argue that countries need new institutions for the control of water resources usage. However, it is not true. Interstate cooperation can only operate in conditions of trust, transparency, readiness for compromise and, mainly, political stability between the states. Unfortunately, none of these factors are present today on the regional arena.

II. International relations between the countries

a) Kyrgyzstan - Uzbekistan - Tajikistan

Uzbekistan is considered to be the most populous country in the region. Growing population and increasing ambitions of Uzbek government for the agricultural production need to be “feed” by water resources from upper stream countries (see Figure 3).

Country	Water Flow Quota (million of km ³)
Kyrgyzstan	5.1
Uzbekistan	58.6
Tajikistan	12.0
Kazakhstan	10.9

Figure 3. (Source: Water Disputes in Central Asia: The Syr Darya River Basin by G. Shalpykova,2002)

Currently population of Uzbekistan is 25 mln people and it is predicted to increase up to 35 mln in 2025. Production of cotton in the country remains №1 priority, even though water resources are used extremely ineffectively. It is stated that around 80% of water is lost as a result of old irrigation techniques and water leakage. Today Uzbekistan is already losing its position and is №5 producer of cotton in the world. Out of region’s 8 mln hectares of arable land, 4,2 mln hectares are in Uzbekistan and are already depleted. Despite these findings, government of the country continues to make accent on cotton production because export of cotton brings around 60% of country’s GDP. Hereby, Uzbekistan is fighting on two fronts:

Tajikistan which due to gas and energy conflicts with Uzbekistan is actively considering the hydro energy as alternative source. Country has concentrated its efforts on construction of Rogun HPP on Vaksh River, main tributary of Amu-Darya; and Kyrgyzstan which is planning to construct 2 Kambarata HPPs (HPP-1 and HPP-2) on Naryn river (tributary of Sir-Darya). Disputes with Kyrgyzstan started much earlier when Uzbekistan stopped natural gas flow in Kyrgyzstan due to uncovered debts. In reply, Kyrgyzstan made a decision to overflow the water from Toktogul water reservoir which lead to lack of water on cotton fields. Uzbekistan, in its turn deployed subdivision of airborne troops not far from Toktogul HPP. Kyrgyzstan replied in mass media that in case of dam explosion Fergana and Zerafshan Valleys located in Uzbekistan will “wipe off the face of the earth”.⁽²⁾

b) Russia's politics

Russia in this situation is staying between two fires: Kyrgyzstan and Russia signed an agreement on unified construction and operation of Kambarata HPPs with participation of Russian “Inter RAO”.⁽²⁾ In addition, Putin during his visit to Bishkek in September, 2012 proposed Kazakhstan and Uzbekistan to “also have partake of the management of the companies that are to be formed within the ambit of the Russian-Kyrgyz joint projects on the construction of the Kambarata HPP”.⁽³⁾ However, after the agreement was concluded in 2008, Moscow was actively seeking for change of conditions, thus requiring 75% of shares, instead of initial 50%.⁽⁵⁾

In addition, it can be concluded that in case of armed conflict between the countries, Russia will be involved as a member of CSTO (Collective Security Treaty Organization) as opposed to Uzbekistan which recently exited the organization.⁽⁸⁾

Conclusion

To sum up, international relations in the region remain to be problematic. Uzbekistan with its growing ambitions on cotton production is using water resources ineffectively. As a result USD 1,7 billion or 3% of region's GDP is lost annually (UNDP report). "Water resources could become a problem in the future that could escalate tensions not only in our region, but on every continent," – stated president of Uzbekistan, Islam Karimov.⁽⁷⁾ Russia is standing in between and acting as a suppressor in the region. Trying to involve Kazakhstan and Uzbekistan into construction of Kambarata HPPs, Russia's politics are aimed on gaining leading position in the project, eliminating its competitors in face of USA and China.⁽⁵⁾

III. Perspectives of development of hydro energy: how to find the compromise?

a) Perspectives for development of hydro energy

Following the world standards, cost of construction of hydro station is valued as USD 1,500-2,000 per 1 kilowatt of power. Cost of producing of 1 kilowatt/hour is valued as USD0.02. In comparison, energy used for consumption in Tajikistan costs USD1,86 per kilowatt/hour. Instead of importing the energy and selling it with triple price, isn't it logical to produce own energy? Achim Reuber, member of German consulting group Fichtner which is currently monitoring reconstruction of Nurek HPP, reported that due to increasing demand of energy in winter period and decreasing amount of water inflow into the Nurek dam, it is impossible to provide all the citizens with energy. Construction of new dams can be possible only with attraction of new investors. Moreover, if new dams will be constructed, state would experience oversupply of energy, which should be exported abroad. This is a good perspective for the economic development of the country, because cheap energy produces on HPPs will be easily sold. ⁽¹⁰⁾ Below table shows the new projects, initiated in Tajikistan, their possible investors and year of launching. Country needs USD9,5 billion to realize the projects which supposedly will bring 5,344 megawatts of power. ⁽⁵⁾

New large hydropower projects in Tajikistan and Kyrgyzstan

Project	Capacity, MW	Output, GW	Estimated cost, million USD	Investor	Launch
Tajikistan					
<i>Sangtudin-1</i>	670	2700	670	Russia	2009
<i>Sangtudin-2</i>	220	1000	220	Iran	?
<i>Rogun</i>	3600	13000	2200		?
<i>Nurabad-1</i>	350		650	PRC	?
Kyrgyzstan					
<i>Kambarata-1</i>	1900		2000	Russia	?
<i>Kambarata-2</i>	400		400	Russia	Partially completed
<i>Kekemeren-1</i>	360				?
<i>Kekemeren-1</i>	912				?

Sources: Electricity in Central Asia. Market and Investment Opportunity Report; World Energy Council, July 2007.

Figure 4(source: Energy industry in Central Asia – challenges and prospects, 2012 by I. Tomberg)

It should also be noted that Tajikistan stands on the 8th place in the world for water supply per square km. Considering the fact that country does not possess any gas and oil resources, hydro energy is the only alternative that can be used to become self-sufficient at least in energy issues. Political disputes with neighboring countries as well as lack of financing are slowing down this process. Rogun HPP USD 2,2 billion project, for example, gave rise to

new wave of misunderstanding between the Uzbekistan and Tajikistan. Rogun dam was supposed to be the highest man-made dam in the world (335 meters long!) and was planned to be launched in 2021 (see figure 4). President Karimov commented that Tajikistan should build its hydro power basis in a different way which will not put in risk lives of people. In his understanding, construction of Rogun can lead to serious consequences and leave millions of people without fresh water. Due to this, World Bank took the initiative to support 2 studies to evaluate the viability of the project: Techno-Economic Assessment Study (TEAS) and Environmental and Social Impact Assessment (ESIA). These studies are currently conducted by international consultant firms which will evaluate “project’s technical soundness and safety, economic viability and compliance with all relevant environmental and social safeguards”.⁽¹¹⁾ After a huge agiotage around the voluntary/compulsory acquisition of shares in 2010, emission was temporarily stopped. Sales of shares dropped rapidly after a boom in 2010 when sales profit reached TJS819 million (around USD171,708,912.5). Interestingly enough, construction of Rogun was started in 1976 and was announced as a “construction of the century”. Then construction was stopped and reanimated again in 2004. Third birth of Rogun happened in 2010, when government made a decision to emit shares. Today, construction of Rogun is frozen again due to the monitoring works and people there are losing their jobs. If World Bank expertise will conclude that construction is dangerous, Tajikistan will have to find new investors. Russia already showed their interest in 2004, however, stating that majority ownership will stay for Moscow. Such deal is not beneficial for Tajikistan, which already has experience with Sangtuda HPP-1, mainly owned by Russian government as represented by OJSC “Inter RAO” (70% of capital). Due to the huge loan of USD 58 million of Tajik holding company “Barki Tojik” as a result of late payments of energy consumers, operation of HPP may be stopped; this may lead to dramatic outcomes as Sangtuda is the 2nd largest HPP in the country (provides 15% of energy in the country). Government of the country promised to repay the debt in the nearest future from governmental budget.⁽¹²⁾

Another country with rich hydro potential is Kyrgyzstan. Only 10% out of possible 140,000 giga watts are currently used. Kambarata-1 HPP with estimated investment of USD 2,5 billion will be built in cooperation with Russian “Inter RAO” with 50/50 share of capital. Kambarata-2 HPP is partially launched again with cooperation of Russia. Position of neighboring Uzbekistan regarding this project is negative. Even though it is not consolidated by real facts and statistics, water disputes may slow down the construction of HPP. Apart

from building big HPPs, Kyrgyzstan can also build local micro stations which will provide electricity in rural areas, where people stay without electricity during winter period.

In Turkmenistan hydro resources are not presented and it is more profitable for them to use gas and oil. Best alternative for them would be to use the solar energy. ⁽⁹⁾

As for Kazakhstan, only 12% of electric power is provided by hydro power stations. Country's potential is valued to be 42,700 Gig Watts/hour per year, from which usage of 29,200 gigawatts is technically possible and 17,200 can be used practically. Out of this amount only 45% is realized for today. Two HPP projects are planned to be launched: Kerbulak HPP and Moynak HPP. ⁽⁹⁾ Construction of Moynak HPP was started in 1985 and was stopped in 1992 due to lack of finance. Project would exclude the energy shortages in Southern Kazakhstan. Kazakh government is negotiating with EBRD, Islamic Development Bank and other international institutions to borrow USD 200 million to finish the construction of plant.⁽¹³⁾ China's Beijing showed interest for investment of USD 200 million for construction. President Nazarbayev's policy is intended to attract foreign investors, which is difficult because investors mainly are interested in oil and gas industries. ⁽¹³⁾

Uzbekistan is currently using only 6,5% of its hydro potential. If country will use its full potential, it could provide up to 15% of energy using the HPPs. ⁽¹³⁾ Good alternative would be construction of micro HPPs, which would serve local needs. Water question is very important for Uzbekistan because more than 80% of water resources are used for irrigation (see Figure 5).

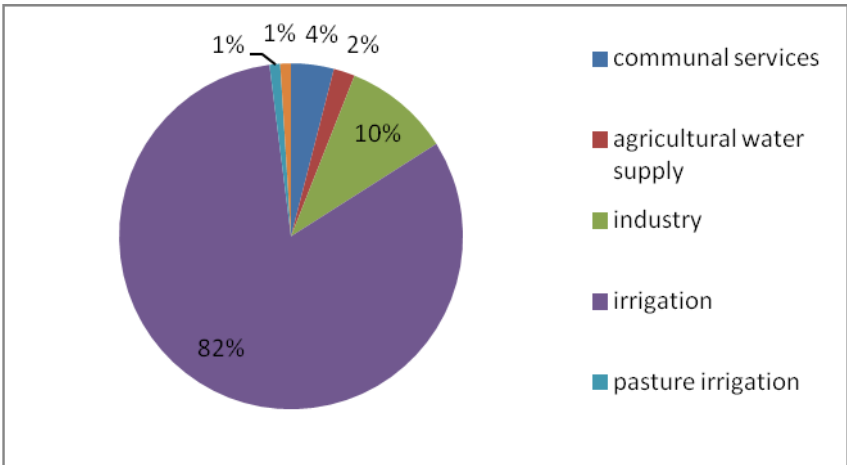


Figure 5. (Source: Problems of usage of water, land and hydro energy resources in Central Asian region by Morozov A.)

Apprehension of Uzbek government is logical, even though they are not supported by real data and facts. Still it is more profitable to use the water of neighboring Tajikistan and Uzbekistan for irrigation, but it is important to consider the interests of those countries as well. Number one priority for Uzbekistan is still irrigation and agriculture and they are not considering water as a source of energy; while poor with mineral resources Kyrgyzstan and Tajikistan with huge external debts have to find alternative ways to produce energy.

To sum up, countries in Central Asian region are striving to pursue different goals: while for upper states water serves as an only alternative for energy production, lower states are considering water as an agricultural mean of production. Upper states are building big ambitions for projects such as Rogun and Kambarata, but construction of these projects requires colossal funds. Still, there is a hope that governments will find a way out of lack of finance and attract donors because these projects are believed to be the only panacea from countries' poverty.

b) Ways to solve the problem

“One of the key problems of Central Asia is a low level of economic cooperation and the lack of ability to come to an agreement, primarily, on the level of the leaders of the region's states” – states A. Zulkharneev, Coordinator of the Security in Central Asia and Russia Project.⁽¹⁴⁾ In conditions of close neighborhood countries should cooperate not in a way of “self-sustainability” but in a barter way. Governments wrongly perceive the notions of “sovereignty” and “independence”, extending it to “isolation” rather than self-development. In existing conditions there are 3 possible ways as proposed by author to resolve the water disputes.

First way is to create an interstate mechanism that will aim at adapting the concept of unification. Interstate Commission for Water Coordination (ICWC) could have become such mechanism. Originally, this commission was intended to adapt the post-soviet system to new environments. However, due to interregional discords efficiency of the ICWC was limited up to the point when the functions of system were wasted and states stopped to interpret the commission as a serious tool for management and cooperation. Another poor example is Eurasian Economic Community (EurAsEc) created in 2000, and ineffectively operating today. Uzbekistan is not a member of the association and Russia is not showing any activity.

The second approach is to provide self-sustainability and security in the sector. Under this approach author implies that every state would solve its immediate problems on their own, however aggravating the problem in the mid- and long- term outlooks. This approach could bring additional environmental problems, because new projects launched in Tajikistan and Kyrgyzstan would reduce the amount of water coming to Aral Sea. In addition it could serve as a base for interstate conflicts between lower- and upper- stream countries.

Third way is to look for the compromise that would harmonize the interests of all states in the region. It is necessary to attract foreign donors as investors and importers of electric power. Possible partners would be Afghanistan, China, Iran, Pakistan and Russia. In my opinion, third approach would be the best to implement. Firstly, because it is two-side cooperation and both parties would gain profit of such cooperation. Secondly, countries in the region have similar history, traditions and heritage – this could be a helpful tool for establishing cooperation. And thirdly, state governments can find a compromise: either Tajikistan can agree to decrease the height of its Rogun to 285 meters - in return Uzbekistan could turn its pipelines to transfer gas to Tajikistan. It is also possible for Uzbekistan to agree with new water tariffs of Tajikistan, which would be higher than existing prices, but Tajikistan in return could provide Uzbekistan with sufficient water amounts during summer.

Conclusion

The water-energy problem still remains a key issue in Central Asia. Disputes that started in early 90s are not solved until today. Soviet heritage in a way of unified system of water usage does not work in condition of states “sovereignty”, shown as “isolation” rather than the aspiration for self-sufficiency. In conditions of closeness of neighborhood the only way to solve the problem would be to cooperate and come to a common strategy. As for today, upper states are considering water resources as an alternative for energy production, while for lower-stream states water remains a mean of production of cotton, fruits and vegetables. Agreements concluded during 20 years of independence to provide water security are not efficient and countries continue to act in their own interests. Tajikistan and Kyrgyzstan are building grandiose plans for construction of Rogun and Kambarata, while Uzbekistan is increasing its ambitions to stay the top producer of cotton in the world. Russia is staying between two fires in these “water disputes” – from one side Moscow is trying to attract Kazakhstan and Uzbekistan to invest in Kyrgyz projects and from the other side they are trying to establish cooperation with Tajikistan and Kyrgyzstan by investing in their projects and obtaining shares. In this position Russia is more presented as a regulator of conflict in the region which is not the aim of the state government.

Potential for development of hydro energy is still unrealized in the region: Tajikistan which is on the 8th place in the world for water supply is still experiencing poor economic development. Kyrgyzstan is in the same conditions. Even though these countries possess the water resources, projects can only be realized with attraction of foreign investors, donors and organizations in face of Russia, China or Europe. Uzbek opposition, in its turn is pushing aside foreign companies by implying that realization of projects can lead to water shortages in the country and aggravation of Aral Sea catastrophe. Kazakhstan and Turkmenistan in this situation are more in neutral position because agriculture is not that essential for their economy.

Experts propose different ways to solve the problem. Most effective of them, in my opinion, is to establish an interstate mechanism that will aim at adapting the concept of unification (ICWC as an example) and mainly to look for the compromise that would harmonize the interests of all states in the region. Unless an agreement will be made on the level of state leaders, water disputes are going to continue in the region, slowing down the economic development and putting the neighboring countries with common heritage against each other.

Bibliography

¹ Voyni za vodnie resursi ne budet, 2012. D. Sedov

<http://www.pressa.tj/news/v-centralnoy-azii-voyny-za-vodnye-resursy-ne-budet>

² Water resources in Central Asia: problems and perspectives, 2006. A. Muhamedjanov

<http://www.centrasia.ru/newsA.php4?st=1156136880>

³ Putin tackles Central Asia's water disputes, 2012. M. K. Bhadrakumar

http://indrus.in/articles/2012/09/21/putin_tackles_central_asias_water_disputes_17833.html

⁴ Water Disputes in Central Asia: The Syr Darya River Basin, 2002. G. Shalpykova

<http://www.ca-c.org/dataeng/00.shalpykova.shtml>

⁵ Energy industry in Central Asia – challenges and prospects, 2012. I. Tomberg

http://russiancouncil.ru/inner/?id_4=324

⁶ Central Asia: water and energy NEXUS. E. Vinokurov

⁷ Uzbek leader sounds warning over Central Asia water disputes, 2012

<http://www.reuters.com/article/2012/09/07/centralasia-water-idUSL6E8K793I20120907>

⁸ Centralnaya Aziya: voda, gidroenergetika i nakalyaushayasya obstanovka, 2012. A. Shustov

<http://www.fondsk.ru/news/2012/09/12/centralnaya-azia-voda-gidroenergetika-i-nakaljauschajasja-obstanovka.html>

⁹ Problemi ispolzovaniya vodnih resursov Centralno-Asiatskogo regiona. A. Morozov

http://water-salt.narod.ru/prob_vie_ca.htm

¹⁰ Tajikistan does not have alternative to hydro energetics, 2012. G. Fashutdinov

<http://www.dw.de/>

¹¹ Assessment Studies for Proposed Rogun Regional Water Reservoir and Hydropower Project in Tajikistan, 2012

<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/0,,contentMDK:22743325~pagePK:146736~piPK:146830~theSitePK:258599,00.html>

¹² Tajikistan mozhet ostatsya bez elektrichestva Sangtudinskoy GES, 2012. F. Kasymov

<http://ru.kloop.tj/2012/08/01/tadzhikistan-mozhet-ostatsya-bez-elektrichestva-sangtudinskoy-ges-1/>

¹³ Analysis: Kazakhstan's hydroelectric potential attracts foreign investment, 2009. J. C.K. Daly

http://www.upi.com/Business_News/Energy-Resources/2009/03/27/Analysis-Kazakhstans-hydroelectric-potential-attracts-foreign-investment/UPI-86451238190422/

¹⁴ Water, water everywhere, 2012. A. Zulkharneev

http://russiancouncil.ru/en/inner/?id_4=490