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2. The King James Bible: Free Religious Books; Genesis. <http://king-james-bible.classic-literature.co.uk>
3. The Quran. E.H. Palmer (Sacred Books of the East, Volume 6 and 9). <http://www.sacred-texts.com/isl/palm/index.htm>
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PREFACE

According to the explanatory dictionaries, concepts of "morals" and "ethics" are virtually identical. At the same time, the term "ethics" means also a branch of philosophy interpreting social behavior of a person, his relations with others persons, group, community, nation as whole, and the universe. In other words, ethics is a set of demands made by society to a person and otherwise. These demands are formed based on ethical and moral ideals, principles, and norms that regulate social behavior of a person under different conditions and situations.

At first glance, it may seem farfetched and artificial to put together these concepts with such a unique miracle of nature as water. However, on the other hand, water legislations of any country that have to regulate relations in the field of water resources management and their use by people and society are, as a rule, based on the following requirements of social ethics: fair rights at common water use, equitable water-sharing among water users, establishing of true priorities in the process of water use etc. It is quite natural that in those cases when water deficit grows the some provisions of the water laws become stricter or new provisions are adopted together with improving the mechanism of their realization (record-keeping and control, water charge, economic and administrative sanctions, etc.). Successful operation of such a mechanism mainly depends on the conscious attitude of water users, the population, and this aspect refers to the field of morality.

In this respect, a lawmaking part of the Islam theory – the Shariah, laws and norms of which consider the requirements of right and morality that society and the State make demand of a person, within a single field, is of doubtless interest. The abovementioned aspect has an important practical value, especially when water inter-personal attitudes, for example, among water users or between a single water user (a peasant or a farmer) and a public agency – water supplier are under consideration.

Because of radical economic and institutional reforms in the rural sector of Uzbekistan, first of all, in irrigated farming, hundreds of thousands of dekhkans and private farms, having the rights of legal entities, participate in economic activity equally with the large state or cooperative farms ("shirkats"). The water law in force concerning water use in Uzbekistan (adopted in 1993) and by-laws are insufficient to settle new legal situations arising at the level of water users. In many cases, moral principles of society could be the regulators of such relations along with legal norms and rules, if the members of community would be properly prepared for these attitudes. It is necessary to note the occurrence of as if a new terminology in foreign publications: social ethics as the integral part of water resources management, moral

aspects of water use and protection etc. that denotes the presence of ethical requirements at all levels of water relations from practical water use to water resources management and making the important public decisions with respect to water resources.

It is important to emphasize that at the time of entering into the 21st century, the countries of our planet were at different starting positions with respect to water availability: there were countries that have already faced with severe deficit of freshwater resources but, at the same time, some countries only started to experience a water shortage, and there were the countries that in the nearest decades would not be subjected to such risks. However, sooner or later, all countries in the world will face the difficulties related to the deficit of fresh water (of course, unless any wonders of engineering will occur in the form of discovery of powerful, nontraditional and cheap sources of energy that will be available to all along with solar energy). Doubtlessly, water users' associations, presented by their professionals, will withstand the arising difficulties with the help of breakthrough technologies and world experience. Nevertheless, they will be obliged to adjust and improve their water relations, and, at times, to refuse from established concepts and customary approaches in the field of water use. In other words, considerable changes should occur in feeling for law and moral principles of people - water users, especially the water elite (engineers, scientists, designers, and managers at different levels). Thus, associating of relations in the field of water use by means of not only legal but also ethical requirements of society with regard to its members is lawful and necessary.

The author made an attempt to set forth his thoughts and some practical considerations in the mentioned field based on the sequential analysis of the current status and use of fresh water resources in the world as a whole and individual countries, of religious notions concerning water use, of generalized scientific foundations of water use and a role of water in developing of civilizations, as well as of matters of water problems' globalization.

The attempt was made to show that the presence of requirements of social ethics in the field of water resources use and protection demands adequate approaches not only in the process of considering practical water use but also issues of water resources management at different levels. In view of the aforesaid, the author has presented a number of practical considerations related to upbringing of citizens - water users and, first of all, the young generation, in the spirit of new century's requirements: *"water is a great asset that is given us by God, and one ought preserve it."*

It is necessary to recognize that a genre of this book is not uniform. One of the reasons is a newness of its subjects, lack of special developmental works and published papers for our orientation.

Therefore, in the process of writing of this book the author had to move without any reference points and use a trial-and-error method. In addition, in a chapter concerning attitudes of the world religions to water, water use, and nature as a whole, some extra information on religions themselves (in order to save a reader from the necessity to search such an information in other sources) was given naturally resulting in some extending the text.

Presenting this work for judging of readers, the author hopes to receive their responses in the form of comments and suggestions that are needed to send to the address of publishers.

A. Kadirov

1. INTRODUCTION, OR THE XXI CENTURY IS THE CENTURY OF WATER RESOURCES PROTECTION AND SAVING

The 20th century, gone down in history, has handed down to the new century, along with outstanding discoveries, inventions and engineering advances, a set of challenges and troubles. Problems related to fresh water resources and their protection from depletion and pollution are perhaps at the first place amongst other challenges. Undoubtedly, it is necessary to call also issues of food supply for the global population, more than 200 countries in the world, and of adequate dwelling that, in turn, depend on settling of fresh water problems to a great extent. It is clear that the acuteness of problems called is not equal over continents and countries. It is obvious that it is the most critical in densely populated countries located in the southern hemisphere rather than in the northern one. At the same time, countries of African and Asian continents are at top of the list ranking countries according to the acuteness of these problems. However, the author does not consider this phenomenon here.

An ill-informed person may perceive problems related to fresh water resources as far-fetched ones. In fact, water resources on our planet are abundant and presented by different forms (liquid form, as well as in the form of ice, water vapor or soil moisture etc.), and by quality (fresh, brackish etc.). They have been sufficiently studied with respect to their quantitative proportion according to the following components: fresh waters (river flows, glaciers, and lakes), brackish waters (oceans, seas, brackish lakes, and groundwater), water vapor in the atmosphere etc. They are estimated in cu m or cu km¹. If these amounts are presented by figures then we deal with a huge magnitude that is difficult for imagining in our mind. Let us take advantage of the comparison of relative volumes that allow, as if visually, differentiating them from each other.

Let us fancy all waters over the globe in the form of a football, and in this case a volume of all fresh waters (river flows, ice fields of Antarctica and the Arctic Ocean, fresh groundwater and lakes) can be presented as a small lemon (2.5 percent of the total volume). A mean annual discharge of all rivers over the globe amounts to about 40,000 cu km that equals a drop of water in comparison with the same "lemon". At the same time, this "drop" is very irregularly distributed over continents and countries.

Moreover, it is irregularly distributed within separate countries due to the irregularity of river flow within the boundaries of river basin since

¹ V.F. Derpholtz. Universe of Water. Leningrad, «Nedra», 1968.

the latter consist of, as a rule, zones of runoff formation, transit, and use, often including a delta zone.

For meeting its needs, the population uses mainly river water, fresh groundwater, and waters of fresh lakes for the time being. Other sources of fresh water over the globe are inaccessible for practical use. Deficit of fresh water available and potential for use was since ancient times, but became especially evident since the mid-20th century.

For more specific presenting of the problem of fresh water availability we use data of the Canadian scientist Aly Shady² who was the President of the International Commission for Irrigation and Drainage (ICID) during the period of 1996 to 1999. Based on processing and analyzing data presented by different countries, he together with his colleagues have used the experimental criteria for evaluating water availability of various countries (by means of water consumption per capita):

- When water consumption per capita exceeds 1,700 m³/person per year, there is not actually water deficit;
- Under water consumption per capita exceeding 1,000 m³/person per year, but less than 1,700 m³/person per year, water deficit affects the population to a variable extent, but its impacts can be mitigated;
- Under water consumption less than 1,000 m³/person per year there is a water deficit with adverse consequences that it is difficult to forecast.

It is necessary to emphasize that these criteria are empirically determined. They do not consider peculiarities and the level of development for distinct countries of the world, and produced results based on these criteria are guess values. Nevertheless, they provide a general idea about a way in which the process of globalization related to fresh water deficit is developing.

Based on these criteria, Aly Shady and his colleagues have estimated the trend of water availability in countries of the world according to the time periods: 1959, 1990, 2025, and 2050. According to their estimate, in the beginning of 1950s, a severe deficit of fresh water (less than 1,000 m³/person per year) took place in 15 countries of the world: **Bahrain, Barbados, Burundi, Costa Verde, Cyprus, Djibouti, Israel, Jordan, Kuwait, Malta, Oman, Qatar, Singapore, Tunis, and Yemen.** Most of listed countries are located in the African continent.

By 1990, the number of such countries has increased up to thirty, and among them are the following countries: Algeria, Egypt, Haiti, Kenya, Libya, Madagascar, Malawi, Morocco, Poland, Rwanda, Saudi Arabia, Somalia, Southern Africa, South Korea, and the United Arab Emirates. Apparently, a water shortage covers more and more new

² Aly M. Shady Water and Sustainable Development, Canadian International Development Agency, 1996.

countries in Africa and, at the same time, it occurs in other regions of the globe that are located far from the African continent: Poland and South Korea.

The forecast for the specific time periods (by 2025 and 2050) is of interest. The number of countries with a severe water deficit will increase up to 51 countries by 2025, encompassing another 21 countries: **Burkina Faso, China, Cameroon, Dominican Republic, Ethiopia, Ghana, India, Iran, Luanda, Lesotho, Mauritius, Nigeria, Pakistan, Peru, Sudan, Syria, Tanzania, That, Uganda, and Zimbabwe. In other words, over the quarter of century, almost all the African continent will experience a deficit of fresh water***.

A water deficit encompasses already the Asian continent including such densely populated countries as China, India, Pakistan, and others and reaches South America (Peru). The next "landmark" is 2050. Another 17 countries increase ranks of countries experiencing a water deficit: **Belgium, Benin, Cote D'Ivoire, El Salvador, Iraq, Jamaica, Mali, Mauritania, Mozambique, Niger, Northern Korea, Senegal, Sri Lanka, Thailand, Turkey, and United Kingdom. Thus, the problem of fresh water deficit becomes the global one encompassing more and more countries. This situation is aggravated by pollution of water resources due to anthropogenic activity.**

Mr. Shady did not present data on CIS countries, including Central Asian countries, because there were not official and published statistics on the population, available and used water resources in these countries since the 1990s.

We use data presented in the Diagnostic Report, Section A: "Rational and Efficient Water Resources Use in Central Asia" prepared by specialists of the SIC ICWC Prof. Dukhovny and Dr. Sokolov for the UN Special Economic Program for Central Asia (2001).

Table 1 shows that over the 40-year period, the actual total water withdrawal in the Aral Sea basin was steadily increasing closely approaching the level of complete depletion of available water resources taking into consideration the current level of regulating of major rivers (Syr Darya and Amu Darya) by large reservoirs in their upstream reaches (Toktogul and Nurek reservoirs). At the same time, the rate of water withdrawal per capita, vice versa, has considerably decreased both over the region as a whole and in Uzbekistan, reflecting the process of general development, including the population growth, large-scale developing of irrigated farming, industry, municipal facilities etc. In addition, specific water consumption in Uzbekistan over the period under consideration was, on average, by 15 percent less than averaged

* Data of the forecast are confirmed by recent actual data on water availability in Africa presented in the document titled by "The Conference on Water Supply Crisis in Urban Areas of the African Continent (Nairobi)": «The problem is aggravated by the fact that 14 African countries have already faced water famine; another 11 countries can adjoin them in the coming 25-year period» (see the Source Bulletin, February, 2001, # 15).

indicators over the basin as a whole that indirectly confirms a high level of irrigated farming's standards.

Table 1 shows disturbing data for 2000: the total water withdrawal has dropped to the critical level (48 cu km), but, at the same time, the specific water withdrawal (per capita) approached the first critical mark or level (the criterion of Aly Shady) below which the adverse consequences of water deficit will be obvious everywhere and not only in some territories or economic sectors as before. There were different causes for drastic decline in total water withdrawal (therefore, also in specific water withdrawal) in 2002, but two of them are major ones:

- the first cause is a natural one related to the low flows in rivers due to the drought period; and
- the second reason is a man-caused one that has aggravated the consequences of natural disaster.

The fact is that in the past, the Toktogul Reservoir on the Naryn River in Kyrgyzstan was designed and constructed as a regulatory reservoir mainly for irrigation purposes, which has to accumulate a part of winter river flow, as well as an surplus part of summer high waters with the object of water supply during the growing season (in summer) to meet the needs of irrigation in the Syr Darya River basin. In dry years, the reservoir could cover a shortage of natural flows by means of extra water releases in order to mitigate possible adverse consequences. With respect to hydropower generation at the Toktogul hydroelectric plant, the co-ordination of its operational schedule with a pattern of water delivery for irrigation was envisaged. Unfortunately, last 7-8 years, the Toktogul hydroelectric plant has operated according to the particular power-generation regime to the prejudice of irrigation. In the winter periods in 1999 and 2000, with purpose of power generation, about 2.3 cu km of water were released from the reservoir increasing the winter flow of the Syr Darya River up to the rates that are not typical for natural conditions. Excessive waters were disposed through the Chardara Reservoir into the Arnasay and Aydarkul desert sinks, elevating drastically their water levels. As a result, the irrigated lands in the Hungry Steppe adjacent to these man-made lakes were flooded, and a saline groundwater table has reached the land surface. At present, loss of irrigated lands due to waterlogging and salinization makes up 120,000 hectares in Uzbekistan and 30,000 hectares in Kazakhstan. A caused damage is not restricted by these losses (see the paper written by F. Eingorn "Whom does the Togtogul Reservoir serve to?" in the newspaper "People Word" dated November 6, 2000). The new Water Law recently adopted by the Parliament of Kyrgyzstan (2001) gives concern because it provide the legal base for one-side activity of water organizations of Kyrgyzstan without any co-ordination with other riparian countries.

Table 1

Indicators	Units	Years						
		1960	1970	1980	1990	1995	1999	2000
The Aral Sea Basin								
Population	Mln. people	14.1	20.0	26.8	33.6	-	-	41.5
Total water withdrawal	km ³ per year	60.61	94.56	120.69	116.27	105.8	104.9	105.0
Water withdrawal per capita	m ³ /per/year	4,270	4,730	4,500	3,461	-	-	2,530
The Republic of Uzbekistan								
Population ³	Mln. people	8.39	11.8	15.79	20.32	22.56	24.23	24.49
Total water withdrawal	km ³ per year	30.78	48.06	64.91	63.61	54.22	62.83	48.07*
Water withdrawal per capita	m ³ /per/year	3670	4072	4110	3130	2403	2593	1960

Under existing conditions, it would be interesting to conceive, at least approximately, what problems can arise in Uzbekistan at the time horizon of 2010 and 2025. Last years, population forecasts in Uzbekistan are adjusted, because the forecast made ten years ago did not prove to be correct: an actual population growth was visibly less than forecasted one. Therefore, we use new prediction data⁵ published in the journal "Society & Ecology":

Population in Uzbekistan, million people	1991	1998	2010	2025
	20.7	23.8	27.9	34.7
	(actual)	(actual)		
	(forecast)	(forecast)		

We can presume that the total water withdrawal from all sources may be equal to any volumes, which were practically used in the past

³ S. Gulomov, R. Ubaydullaeva, E. Akhmedov. Independent Uzbekistan. «Mekhnat», Tashkent. 2001.

⁴ There are not data on the population in the Aral Sea basin for 1995 and 1999 in the Special Report, as well as on the total water withdrawal for Uzbekistan in 2000. Therefore, for 2000, operational data of the Ministry of Agriculture and Water Resources of Uzbekistan generalized for all water sources over the country were used. In the process of more accurate definition of data of other water users («Uzbekgidrogeology», municipal economy etc.), some deviations are possible, but they are not essential.

⁵ R. Ubaydullaeva, N. Umarov The New Demographic Setting in Uzbekistan. Journal "Society and Economy" No3-4, 2000. Pages 249-255.

years. At the same time, the maximum water withdrawal actually made up 64.19 km³ (1980), and the minimum one - 48.07 km³ (2000).

If we take the range between the maximum and minimum values: 65 cu km and 45 cu km respectively, and divide it in steps of 5 cu km, we can calculate expected water withdrawals per capita in m³/person per year for the outlook until 2025:

Table 2

Indicator	Units	Expected specific water withdrawal, m ³ /person per year	
		2010	2025
Population	Mln. persons	27.9	34.7
Possible water withdrawals:	cu km		
65		2330	1873
60		2150	1730
55		1970	1585
50		1790	1440
45	1612	1296	

A series of possible water withdrawals given in Table 2 can be conditionally subdivided into three scenarios:

- Optimistic scenario 60-65 cu km
- Realistic scenario 51-59 cu km
- Pessimistic scenario 50 cu km and less

Under the specific water withdrawals within an assigned range that highlighted by bold type the water deficit or shortage occurs over the whole republic, and at their rates of 1,400 m³/person per year and less, control of water shortage become prolonged and complicated. It means that all necessary efforts should be undertaken in order to maintain the total actual water withdrawal at the level higher than 55 to 56 cu km. In this case, problems of interstate water sharing on transboundary rivers (first of all, on the Syr Darya and Amu Darya) and the conditions under which Uzbekistan would freely use its portion of available water resources in the proper time become especially important.

Unfortunately, difficulties of practical water distribution and use can arise at the provincial level within the republic as well. Up to now, averaged data were under consideration. However, such an indicator as water withdrawal per capita considerably differs over provinces of the republic. For instance, at present, water consumption per capita in provinces Samarqand and Navoi makes up 1400-1500 m³/person per year. In lower reaches of the Amu Darya this indicator is higher than the averaged one, but there, first, river water salinity exceeds the permissible rates (1 g/l) therefore much more irrigation water is

needed for water applications; and secondly, all the irrigated area is affected by salinization, requiring annual leaching operations and extra water resources*. In addition, the major areas of rice-growing are located just here (Karakalpakstan and Khorezm Province) that require much more irrigation water in comparison with cultivation of cotton or other crops.

Due to mentioned reasons, problems related to water supply occur in these regions by this time: for example, there are limitations and irregularity in water supply for household water use in Samarqand Province during the summer period. In lower reaches of the Amu Darya, water shortage in 2000 and 2001 (by the way, man-caused rather than natural water deficit) resulted in considerable economic damage.

As was shown, a water deficit within one country or over the whole continent occurs as if "selectively" searching for vulnerable areas, which were historically being formed due to different causes. Pollution and deterioration of water quality occur simultaneously with increasing water shortage due to anthropogenic activity. This picture will be incomplete and as if shaded by given figures if we would not mention that this oppressive process takes place in parallel with the ongoing rise in fresh water demand. Forming water demand is illustrated by data from Uzbekistan. At present, the population of Uzbekistan approaches to 25 million, and in 2025 it will be 35 million, in other words, it will be necessary to provide additional ten million people with food, clothes, dwelling, and jobs. According to the rates of the FAO, it is necessary to provide 3000 kcal/day for each inhabitant of the country. To characterize the situation in Uzbekistan, some quantitative indicators are adopted from "A Water-Related Vision for the Aral Sea Basin for the Year 2025" prepared for the Second World Water Forum held in Hague in March 2000. According to this document, in 1990-2000, average availability of food calories per inhabitant per day was about 2,600 kcal. Therefore, by 2025, it is necessary to increase the rate of food consumption for 25 million people from 2,600 to 3,000 kcal, and to provide 3,000 kcal for each inhabitant from new 10 million people. There is an assumption in this document that since in the republic household and industrial water consumption makes up an insignificant amount of the total water consumption and includes some reserve due to current overuse in these economic sectors that should be used in the future only water consumption in the agricultural sector has to be considered. Different combinations of wheat, rice, and other foodstuffs can provide food consumption at the rate of 3,000 kcal per capita. In abovementioned document, the following combination is taken as the base: 90 percent of

* Water shortage in the Amu Darya River basin aggravated the problem of water releases (according to the agreement between Uzbekistan and Turkmenistan with respect to water quotas) to downstream regions, decreasing water availability in Karakalpakstan and Khoresm Province. As a result, in 2001 part of cropland was not being sown in Karakalpakstan.

wheat and 10 percent of rice; in this case, the necessary amount of wheat for one person per year amounts to 0.315 metric ton and of rice – 0.033 metric ton respectively. An amount of water necessary for producing these crops was estimated for three scenarios:

1. The future without changes.

If the efficiency of water resources use under producing foodstuffs remains at the current level without changes then water requirements for production of above crops (wheat and rice) will amount to 844 cu m per capita or 8.44 cu km per year for additional 10 million people.

2. The high rates of developing land and water resources.

If the efficiency of water resources use will be considerably improved due to introducing of advanced technologies, at that cotton production will increase in line with the population growth and food requirements will be met by wheat (80%) and rice (20%), then according to estimates of the SIC ICWC water requirements for producing 0.28 metric ton of wheat and 0.067 metric ton of rice will make up 484 cu m per capita or 4.84 cu km per year for additional 10 million people.

3. The average rates of developing land and water resources.

If the efficiency of water resources use will be improved at the average rates then under producing 0.315 metric ton of wheat and 0.033 metric ton of rice, water requirements will amount to 596 cu m per capita or 5.96 cu km per year for additional 10 million people.

Estimates have shown that increase in a daily food allowance from 2,600 to 3000 kcal for 25 million people equals to supplying a daily food allowance for extra 3.3 million people at the rate of 3,000 kcal. In other words, in 2025 it will be necessary to provide the full daily food allowance for 13.3 million instead of 10 million people. Therefore, the estimated water volumes need to be multiplied by a factor of 1.33, and in this case, the additional water volumes will be 11.22, 6.43, and 7.92 respectively to above scenarios. In any case, extra water volumes under different scenarios should be found and added to available water resources.

Since, available water resources are completely used and there are not other water sources, in the future, additional water demands can be met only by means of water-saving and rational water use in all economic sectors and above all in irrigated farming. All countries without exception where, from year to year, available water resources and water consumption per capita will be dropping up to the critical level of 1,700 m³/person/year will face the similar problem. Therefore, water saving in all economic sectors and in households (in a word, everywhere where water consumption and use take place) and the preservation of water quality on the path from sources to consumers will be topical for many countries in the nearest future, and by the end of this century practically for all countries of the world. One can say with confidence that the 21st century is the century of water saving.

In conclusion, one can note the following:

1. The problem of fresh water availability and preservation has the world nature and refer to all developed territory of the earth.
2. The fresh water deficit occurs at the regional and local level, as a rule, in the scale of specific river basins or territories with water supply from other sources of fresh water. Unfortunately, the fresh water deficit once started on any part of a river basin or even a whole continent step by step can cover all the area of the basin/continent.
3. Under conditions of complete depletion of national water resources of any country, water saving and efficient use of available water resources are a single possible way for further development of this country. This process once started requires joining of efforts of the State, society, and each member of society – an actual water consumer with the purpose of overcoming adverse consequences of water resources shortage that is building up every year. One can assert a priori that under these conditions, a human factor, as a major element in the system of complicated interrelations and implementing expensive measures, plays a crucial role.

2. LIFE ON THE EARTH ORIGINATED AND EXISTS THANKS TO THE WATER

As known, the first concepts of people, our distant ancestors, concerning the water and its properties were formed on the base of religion considerations and instructions. However, according to authors presenting the materialistic ideology, vice versa, the first concepts of people regarding the environment have facilitated originating various kinds of religions...

Beginnings of the world religions – Buddhism, Zoroastrianism (fire-worship), Judaism, Christianity, and Islam – had the tremendous importance for human society, since religions were not limited by some statements and rules of certain religious dogmas mandatory for their believers, but established a holistic doctrine based on its own philosophy, legislation, and ethics. All this promoted forming a peculiar type of the intellection and behavior of their believers.

All life of a human being from his birth to his death is related to the water: he is both a water consumer and user. He uses water for creating his environment, recreation, and other purposes. One can say the water plays a critical role in his life, along with his daily bread. This circumstance has affected his behavior with respect to the environment and to other people in his neighborhood. The initial deficit of fresh water or difficulties related to water supply in some places have caused arising of special water relations among people within society or a religious

community, which should be regulated by some generally recognized rules and norms. It is obvious that religions could not be outside of developing the appropriate statements sanctified by God.

Nevertheless, such an approach as “the water, and water relations in the light of ethic and moral requirements,” being untraditional and peculiar, was not presented in the literature open to general use. Therefore, discussing the role of water in human life from the point of view of the religion, we have sometimes used indirect information and facts, for example, attitudes of religions towards irrigated farming or nature as a whole.

2.1. RELIGIOUS NOTIONS CONCERNING A ROLE OF WATER FOR HUMAN LIFE

As a matter of fact, the world religions are a living memory of the humanity that integrates not only their doctrines but also the data bank containing the experience of practical application of these doctrines. We, people of the 21st century, consider the historical experience of distant generations in haughty manner due to dazzling by the outstanding progress of science and engineering in all economic sectors including water resources management and land reclamation. Such principles of the communist ideology as “Religion is opium for people”, “We cannot wait for favors from Nature. To take them from it – that is our task” and others have also played a certain adverse role. However, on the threshold of the new millennium, professionals and scientists who were concerned increasing a water deficit in many countries, deteriorating of water resources quality everywhere, unsatisfactory management and use of available water resources (for example, according to the criterion of water productivity for producing a unit of agricultural output) have paid attention to the historical experience of our ancestors in this field of activity.

In the published paper “Construction of an Irrigation Network and Formation of a State in Ancient Japan”, Nobumasa Hatcho⁶ presents interesting information. Paddy rice cultivation has started in Japan about 2,500 years ago. At the beginning, the practice of rice farming was quite primitive; artificial irrigation was not practically applied, and only soil moisture resulting from rainfall and inundating river floodplains was used. Therefore, rice yields were low. Chinese and Korean experience of paddy cultivation has positively affected paddy cultivation in Japan. Along with the paddy cultivation methods, inhabitants of Japan have also adopted the principles of the state structure that were existed in those countries, which were under strong influence of Buddhism. Thus, Buddhism went to Japan from China and Korea, and played an important and peculiar role in the life of this nation. It is known that Buddhism, as the religion, was founded in northeastern India based on the teachings

⁶ ICID Journal, 2000. Vol. 49, No 4

of Siddhartha Gautama, who is known as the Buddha, or Enlightened One, and lived in the period of 623 to 544 BC⁷.

Undoubtedly, inhabitants of Japan have always adjusted the adopted technologies and experience to their local conditions. It is interesting to consider another important historical fact. Inhabiting the islands of permanent earthquakes, volcanic activity, typhoons and other natural disasters and under conditions of limited land and forest resources, since ancient times, inhabitants of Japan have always lived in harmony with nature. They understood that it is impossible to conquer nature, and that society can exist only as part of nature, adapting to its conditions. Buddhism has played an important role in forming such a harmony.

Under conditions of the Japanese reality, the balance between human activity and the preservation of nature was achieved. Inhabitants of Japan know that the disturbance of this multifactor equilibrium is fraught with serious consequences. Just according to this cause, the Government of Japan has refused to import cheaper rice from abroad (from China and other Southeastern countries), preferring to grant large subsidies to the national agricultural sector.

Japan today is the developed industrial-and-agrarian country, in which the principle: "We are a part of nature" is actively sunk in consciousness of people, especially of the young generation. For example, studies of surrounding nature, hikes across the country and other arrangements are provided for in their curricula at all levels of education (primary school, secondary school, and higher education).

Once more an example is learned from the experience of another country. H. Fahlbusch⁸ in the paper of «Water in Human Life. Technical Innovations in Hydraulic Engineering in the Last 5000 Years» has collected the interesting actual information concerning water infrastructure built in the ancient time all over the world. The citation adopted from the abstract is especially interesting for us: "The early water resources management activities were based on the observations of nature. They were adapted to the environment, opposite to many projects of today. However, in Bali (Indonesia) a traditional irrigation society exists, i.e. the "Subak"- irrigation society, which was presented at the ICID meeting in 1998. The rules of this society are established on the philosophy of the tree harmonies "*Tri Hita Karana*", i.e. the harmony between the human being and God, between the human beings and the environment, and between the human beings themselves. The more than 1000-year-old tradition of the "*Subak*"-irrigation obviously reflects the behavior of people in antiquity. Looking to the environmental problems of today we should learn from ancient engineers and follow the rules of "*Tri Hita Karana*."

⁷ The Soviet Encyclopedia of Uzbekistan. Tashkent, 1972, Vol. 2, Page 455

⁸ ICID Journal, 2000. Vol.49, № 4

Valuable ideas concerning the harmony of a human being and nature, the preservation of nature were set forth in Zoroastrianism or, according to the local dialect, in Zarathushtism, religion that arose from the teachings of the devotional poet Zoroaster, known as Zarathushtra to ancient Iranians, who is regarded as the faith's founding prophet. There are also other names of this faith in the world literature: by name of the "Wise Lord" Ahura Mazda – Mazdaism, by the name of the holy book called the Avesta – Avestism, and in the latter period of Zarathushtism, by the name of the male divinity Mithra – Mithraism. Initially, the teachings of Zarathushtra have arisen about 700 BC.⁹ Zoroastrianism gradually emerged as the official religion during the Achaemenid dynasty, which ruled from about 550 BC to 330 BC, under its founder Cyrus the Great (558 – 529 BC) and covered vast territories of Central Asia and Asia Minor (Iran), and Cyrus the Great declared himself as the patron of all religions. In the time of Achaemenes, settled peasants called themselves as Aryans, and their own country – Arian (presumably the name Iran originated from this word); Persian Aryans – nomadic tribes of steppes were called Sakis (Massagety), and the settled population of the southern part of Central Asia and Eastern Iran was called Turs (the name Turan originated from this word). Undoubtedly, the new religion, as an ideological tool, has played an important role in life of the Achaemenid Empire, as well as of other Great Powers arisen within boundaries of the disintegrated empire. The scripture "Avesta" that reflects inner world and culture, way of life, and the level of development of ancient people that populated vast territories in Central Asia and Asia Minor is now esteemed as one of the most ancient written monuments of the mankind. Therefore, the 2700-year date of the prayer book "Avesta" was widely celebrated all over the world, first of all, in Uzbekistan and Iran. The fact is that the author of "Avesta" Zarathushtra was Tur, native of Khorezm, however his sermons among Sakis (nomadic tribes) were not assimilated by them, therefore, he moved to Iran and there proceeded with disseminating his teachings.

The main idea of Zarathushtism¹⁰ is an ethical and moral opposition between righteousness [*Asha* ("order")] and evil and the lie [*Drug* ("confusion")]. Zoroaster personifies this dualism in a pair of spirits called Ahura Mazda that is a perfect, rational, and all-knowing entity and Angra Mainyu that creates sin, disease, death, and similar evils. Ahura Mazda created fertile land, at the same time, Angra Mainyu – deserts etc. An implacable cosmic struggle between Ahura Mazda and Angra Mainyu is in progress, and people participate in this struggle. "Avesta" calls upon people to support good deeds of Ahura Mainyu, and to

⁹ Iso Jabborov, *Antik madaniyat va mayavaniyat khazinasini* (in Uzbek language), «Uzbekiston», Tashkent, 1999, (pp.57-58)

¹⁰ Jabborov and Dresvayanskay «Holy Spirit, Saint Apostles, and Gods of Central Asia». «Uzbekiston», Tashkent, 1993. pp.38-40.

struggle against deeds of Angra Mainyu, and a happy life will be as a reward to them.

There is a special chapter in the sacred book "Avesta" (Vendidad) that is called "The Earth", in which it is said:¹¹ «O Maker of the material world, thou Holy one! Which is the second place where the Earth feels most happy? Ahura Mazda answered: "It is the place whereon one of the faithful erects a house with a priest within, with cattle, with a wife, with children, and good herds within; and wherein afterwards the cattle continue to thrive, virtue to thrive, fodder to thrive, the wife to thrive, the fire to thrive, and every blessing of life to thrive."

"He who would till the earth, O Spitama Zarathushtra! with the left arm and the right, with the right arm and the left, unto him thus says the Earth: "O thou man! who dost till me with the left arm and the right, with the right arm and the left here shall I ever go on bearing, bringing forth all manner of food, bringing corn first to thee."

"He who does not till the earth, O Spitama Zarathushtra! with the left arm and the right, with the right arm and the left, unto him thus says the Earth: "O thou man! who dost till me with the left arm and the right, with the right arm and the left, ever shalt thou stand at the door of the stranger, amongst those who beg for bread; the refuse and the crumbs of the bread are brought unto thee, brought by those who have profusion of wealth ...»

The practice of Zarathushtism's worship consisted of making a sacrifice to their gods, ritual ablutions, and maintaining a holy fire. Along with worship to the fire (they worship to the following kinds of fire: heavenly fire of gods and kings (lightning); heat of living organisms; mountainous fire (volcano); earth fire, artificial fire etc.) there was worship to the water. All kinds of waters are divided into 14 categories: dew, juice, rainwater, well water, sweat, a saliva, fat, milk and so forth. Libations (sacrifices) to the water consisted of three components: milk and two kinds of juices made from leaves of different plants. A number "three" is the holy one for Proto-Iranians. Three integrated parts of a libation symbolize the kingdom of plants and animals "nursed" by water.

The idealization of water, its deification or presentation as a certain holy gift undoubtedly has formed in people of that time a specific attitude to the water itself and water use. The respectful and anxious attitude to the water of inhabitants of our region was predetermined by both climatic and natural conditions and economic activity of the local population.

The cult and worship to water went towards us from time immemorial, from times of the Scripture "Avesta" in the form of numerous "holy waters" that can be met everywhere over all regions of Central Asia. Holy water sources are associated with names of famous and respectful pirs (religious teachers) or ishans (*a word of Iranian-*

¹¹ E. Berezikov «Canonized Persons of Turkestan». Tashkent. «Kamalak», 1992

speaking people "ishan" means "they"; it used by Muslims in Central Asia as a respectful address to their ecclesiastics) and are located, as a rule, near mosques, public places etc.

Judaism, as the religion, has started to form in the beginning of the Second Millennium BC¹². The nomadic Jewish tribes invaded Palestine in the XIII Century BC and established the Jewish Kingdom. Judaism had started to form as a religion based on some religious notions, traditions, and customs of the nomadic tribes and on some popular beliefs of the population of Palestine. The Hebrew God Judas Yahweh became unique (monotheistic) God of their religion. A belief in the Creator of the universe – transcendent God, the absolute recognition of the covenant between Yahweh and the Jewish people, the recognition of Moses as the prophet, the Old Testament (Torah) as a holy book sent to Moses, belief in afterlife, resurrection, existence of Eden and Hell, reward of God for a good behavior and punishment for evil and apostasy, and others are the basic doctrines of Judaism.

Another world religion, Christianity, is the most widely distributed one among the world religions. Early Christianity first emerged among Jews who lived in the eastern part of the Rome Empire in the 1st century. Later it, in the form of Jewish-Christian sects, has separated from Orthodox Judaism and become the self-dependent religion and, with time, the state religion of the Rome Empire.

During the period of feudal developing of the Rome Empire, a split of Christian Church into two faiths – Catholicism (Western Christianity) and Orthodoxy (XI-XIII centuries) due to the peculiarity of this development in eastern and western parts of the empire. Third main tendency (faith) in Christianity emerged in the period of Reformation (the 16th century) because of struggle against the orthodox Catholicism. However, reviewing of general and distinctive situations arising in the Christian practice (faiths) is out of our consideration.

In line with our approach, it is very important to consider the attitude of Judaism to the water, its role and significance for both people and the universe that were described in a holy book – the Old Testament (Torah). Consequently, this attitude should be typical also for Christianity as a whole and for its followers representing different faiths.

As known, water resources were very scanty in Arabian Peninsula, especially in its southern part where Jewish tribes wandered around in those distant times, (the same situation takes place at present), and therefore, undoubtedly the water had to play an important role in their life.

The Old Testament, or sometimes called the Laws of Moses, consists of five books. The first book is titled «Genesis»¹³ (the term

¹² Islam. Reference Book (in Uzbek language). UzSE Bosh Redactiasi. T., 1987, pp. 109-111, 177.

¹³ Genesis from John (in Uzbek language) The Institute of Bible Translation, 1983

“Ibtido” is used in some translations in Uzbek language). The book consists of 50 chapters, and each chapter includes from 20 to 40 and more verses (oyats in Uzbek language). The first two chapters of this book (Verses 31 and 25 correspondingly) were devoted the world creation. As known, according to the Bible, God has create the world over 6 days, “And on the seventh day God ended his work which he had made ... and Good blessed the seventh day, and sanctified it: because that in it he had rested from all his work which God created and made” (now people all over the world, excluding Muslim countries, have a rest on this day).

Reading and comprehending the verses devoted to the creation of the world, it is necessary to keep in mind that people that lived on the Earth 3-4 thousand years ago did not have even rough notions concerning present knowledge (astronomical knowledge, cosmogonical theories, hydrological cycle etc.). Therefore, the Bible narrates about the creation of the world in line with notions and perceptions of people of those times.

«In the beginning God created the heaven and the earth, and the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters. » First of all, God divided the light from the darkness, the waters from the waters i.e. he created the waters of seas and the waters of the firmament (in the form of precipitations). On the fifth day (Chapter 1, Verses 20, 21, and 22) and on the sixth day (Verses 24 to 30) God created all living things that move upon the earth: animals, fish, waterfowls and birds, as well as man.

«20. And God said, Let the waters bring forth abundantly the moving creature that hath life, and fowl that may fly above the earth in the open firmament of heaven».

In such a way, within the water and with a help of water, God created fish, waterfowls, animals and other living creatures, as well as birds.

«24. And God said: Let the earth bring forth the living creature after his kind, cattle, creeping thing, and beast of the earth after his kind: and it was so.»

Hereinafter, there is an explanation that when God created the earth and the heavens, the earth was barren without grass and trees since he «had not caused it to rain upon the earth» (precipitations), in addition, there was not still a man to till the ground.

«P:6. But there went up a mist from the earth, and watered the whole face of the ground».

After creation of Adam, and Eve from his rib, God put them into the garden of Eden; and for irrigation of the garden he created «a river went out of Eden to water the garden; and from thence it was parted, and became into four heads» etc. However, the duration of stay of Adam and Eva in the Garden of Eden was short, and after the Fall, God sent them

to the ground, but granted them and their successors the right of land possession and use, and made them owners of all living things upon the earth and of the sea (1:28). In addition, he gave them, and all living things, food.

From this brief retelling of the Bible's verses about creating the universe, it is obviously that an origin of the Earth, plants, animals, and finally a man was related to the water at all stages; in addition, existence and development of all living things including a human being were presented as water-dependent (from precipitation, water of rivers and lakes). There is an impression that if to delete the water as component of the creating then the creation of the universe was hardly possible.

However, the fact is that God created the waters (the precipitation, rivers etc.) for all, and all have equal rights for water is the most important and valuable for us living in the 21st century and quite distant from events described in holy books of Judaism and later Christianity.

Among briefly considered world religions and their doctrines concerning the waters and water use, Islam fills a special place. Developing moral and legal norms (Shariah) that regulate private and public ("umma" in Uzbek language) life and their introducing into consciousness of believers are playing an essential role in the Islam doctrine. Therefore, this matter is presented in the separate chapter of this monograph.

2.2. ISLAM ABOUT THE WATERS AND AN ATTITUDE TO THE WATER

Before direct reviewing of sources – holy books of Muslims (the Quran and Hadiths), let us present some opinions of famous scientists about Islam as the religion and doctrine.

One of outstanding orientalists in the 20th century, E. von Grunebaum said: "Even an atheist considers that if this is not a miracle then, at least, the extraordinary fact that on the basis of such a small foundation as the population and civilization of pagan Central and Northern Arabia, such a majestic and splendidly-built structure could arise. This structure has gained the vitality and force for transforming from a religion clan having the merely national nature into the cultural community that was both religious and international one, and at the same time, has kept the entitlement for existence and the status of State."¹⁴

Historians and orientalists always took an interest in causes of the dissemination of Islam as a major religion over vast territories of the Arabic territorial expansion under ruling of Caliphs and ousting of local religions. For example, prior to the conquest of Mavoraunakhr (in Arabic

¹⁴ Sanjar Jabbarov. The Shariat, Family и Customary Laws in Uzbekistan: History and Contemporaneity, Tashkent, «FAN», 1996 (a quotation from this source)

language: a territory beyond a river – bearing in mind the Amu Darya) there were Judaism, Christianity, Zoroastrianism, Buddhism, and Shamanism. The famous Russian orientalist V. Bartold wrote: “A Christian has to forget himself for the sake of God and his neighbor in order to meet the requirements of his belief; according to his religion, a Muslim should not forget neither God nor his neighbor among his activities, and also he has to pray at the proper time and give up part of his property to the poor.”¹⁵

Sanjar Jabbarov, in his book mentioned above, quotes the following statement of the famous Muslim scientist, the Rector of the Al-Azhar University, Sheikh Maḥmud Shaltut: “Islam is not only a religion, like some people mistakenly think... On the contrary, Islam is universal according to its nature, it not only establishes relations between a man and the Creator, but also prescribes the rules that regulate relations among people and activity of the public importance for the purpose of providing welfare of all society.” Commenting on this quote, Sanjar Jabbarov highlights the following aspect: “High moral merits, especially the provisions concerning relations among people and forming the base of all moral behavior in the new religion, especially in its legislative norms, which have the religious nature and are the most important components of its ethic system.”

In this context, our intention to specify moral and ethic aspects and norms set forth in the Shariah laws and other sources of Islam in the field of water use, water resources management and protection was stimulated, on the one hand, by search of the ways to intensify the human factor in the process of tackling the complicated tasks in the water sector, and, on the other hand, by our wish to attract attention of lawyers, philosophers and other professionals to this problem.

2.2.1. SURAHS AND AYAHS OF THE HOLY QURAN CONCERNING WATER AS THE GIFT OF GOD FOR ALL

It is considered that surahs (chapters) of the Quran (114 surahs) were conveyed to Prophet Muḥammad by the archangel Gabriel or directly by Allah during 23 years – since 610 until 632 (the year of Muhammad’s death). Each surah consists of three or more ayahs (verses). The longest surah is known as “Al-Baqarah: The Cow” and consists of 286 ayahs. There are 10,640 ayahs in the Quran (however, some ayahs are marked by two or even three serial numbers). According to chronology, all surahs are distributed between two periods: the Meccan Period (90 surahs) and the Medinan Period (24 surahs). The Medina Period has started in 622, just in that year Muhammad together

¹⁵ V.V.Bartold. The Muslim World. Academician V.Bartold, Scientific Proceedings, Volume IV. p.218

with his followers emigrated to Medina, where he established the caliphate. His emigration became known as the Hegira (Arabic hijrah) and marks the beginning of the Islamic calendar. When Muhammad was alive, he did not agree to write down surahs and ayahs and to compile them in a single book. He himself and his companions have recited surahs and ayahs, and he required the same from others. There were special reciters of the Quran – *Karies*. Shortly after the Prophet's death, the first caliph Abu Bakr (Islamic political leader) who was alarmed by the fact that the number of reciters of the Quran was decreasing due to numerous wars gave instructions to Abu Zaid, the secretary and assistant of Muhammad, to collect and write down the texts of surahs and ayahs. In such a way, the first variant of the Quran (the term Quran means "recitation") that is known as "the Pages of Abu Bakr" has appeared (surahs and ayahs were written down on camels' skins, papyrus or simply on flat stones). Then compiling the texts was continued. According to instructions of the second caliph Hazrat Umar, the group of experts under the direction of Abu Zaid has rewritten the texts of surahs and ayahs in the form of separate pages, and in a such form was put on the headstone in the sepulcher of the Prophet by the wife of Muhammad personally (she was the daughter of Uthman). Muslims generally believe that the authorized version of the Quran in the form of a book derives its text and the number and order of the chapters from the work of a commission appointed by the third caliph, Uthman ibn Affan, during the second half of his reign, roughly 20 years after Muhammad's death. 4 (or 7) copies of the Quran were made and sent to different ends of the Caliphate in order to prevent disputes and alternative versions in the process of reciting surahs and ayahs. At the same time, the Caliph gave instructions to annihilate or incinerate all other written texts of surahs and ayahs including "the Pages of Abu Bakr". During the last 14 centuries, a substance of surahs and ayahs were not corrected and edited anymore, and came to our time without changes. Surahs in the Quran are placed based on their volume – the longest surahs were arranged in the beginning of the book and further in descending order according to the number of ayahs rather than according to their chronology and a place of origin.

There is a remarkable fact. In surahs and ayahs devoted to a biography of known and unknown prophets, Muhammad is the last among them, it is emphasized that all prophets are messengers of Allah and each of them is a link of the single chain. He granted the holy books (to Moses – the Old Testament, to Jesus Christ – the New Testament, and to Muhammad – the Quran) containing words of God. Each of them was selected by Allah as His messenger from amongst any nation (tribe, clan) in order to bring his own people the word of God and to direct them towards the way of the truth.

The Quran became not only the holy book for believers but also the major book of an incipient state – caliphate. Questions concerning the

property naturally arise in any human society. A thought that the heavens and the earth and all between them or on them are the property of Allah and He created them is emphasized in the Quran (more exact in 132 ayahs of 52 surahs out of 114, and in some surahs it is repeated in three, four, and more ayahs). An issue of the ownership of land is solved in this context. Ayah 7:128 (7 is a serial number of the surah, and 128 is a serial number of the ayah in this surah) said about the following: "7:128 And Moses said unto his people: Seek help in Allah and endure. Lo! the earth is Allah's. He giveth it for an inheritance to whom He will..." Non-arable and unused land is called as "dead earth" in the Quran. A man does not receive the ownership of land for no particular reason, he should make it arable and for this purpose, he irrigates his land and equips with necessary facilities. Only after these actions, land can be his ownership. Islamic legal experts (faqih) later studied such interrelated chains of legal situations, and laws and norms of the Shariah (the Islamic lawmaking) were formulated on this base. In such a way, the special science of the law - *usul al fiqh (Islamic jurisprudence)* has emerged.

The matters concerning the waters and water use are described in the Quran from other positions. The provision that all living things were created on the Earth thanks to water was mentioned already in the Bible (the Old Testament) and further developed in the Quran. "Water for all and for general welfare" – this basic idea is set forth in a number of ayahs.

21:30 "Have not those who disbelieve known that the heavens and the earth were of one piece, then We parted them, and we made every living thing of water? Will they not then believe?"

56:68, 69, 70 "Have ye observed the water which ye drink ? Is it ye who shed it from the raincloud, or are We the Shedder? If We willed We verily could make it bitter. Why then, give ye not thanks?"

Since the transition of the earth from the category "dead" into the category "arable" is caused by irrigation and other measures (for example, soil protection), the matters related to the earth and waters, as a rule, are considered as interrelated.

2:164 "Lo! In the creation of the heavens and the earth, and the difference of night and day, and the ships which run upon the sea with that which is of use to men, and the water which Allah sendeth down from the sky, thereby reviving the earth after its death, and dispersing all kinds of beasts therein, and (in) the ordinance of the winds, and the clouds obedient between heaven and earth: are signs (of Allah's Sovereignty) for people who have sense."

In other words, a man possessing reason should understand and rates highly all things that were created and are being done by Allah including reclaiming "dead earth" by the precipitation in the form of rain,

snow etc. All these things are made for the welfare of a human being, for all people without their differentiation.

14:32 "Allah is He Who created the heavens and the earth, and causeth water to descend from the sky, thereby producing fruits as food for you, and maketh the ships to be of service unto you, that they may run upon the sea at His command, and hath made of service unto you the rivers, (33) And maketh the sun and the moon, constant in their courses, to be of service unto you, and hath made of service unto you the night and the day. (34) And He giveth you of all ye ask of Him, and if ye would count the bounty of Allah ye cannot reckon it. Lo! man is verily a wrong-doer, an ingrate."

A meaning of this ayah, especially a reproach or even the accusation addressed to a man, becomes understandable in our enlightened century, when a man having enough knowledge and experience, demonstrates his behavior with respect to nature, especially to water resources, as unwise and wasteful, and sometimes "inhuman."

The next ayah (6:142) is peculiar and contains direct directions: "He it is Who produceth gardens trellised and untrellised, and the date-palm, and crops of divers flavour, and the olive and the pomegranate, like and unlike. Eat ye of the fruit thereof when it fruiteth, and pay the due thereof upon the harvest day, and be not prodigal. Lo! Allah loveth not the prodigals."

We have quoted some ayahs that concern only such subjects as land, water, and land use. It is traditionally reckoned that the civil status of a person – the family, marriage, divorce, inheritance and other interpersonal attitudes, and moral and ethic norms and behavioral rules of Muslims in their day-to-day life, in private life, and with respect to *umma* (*Muslim community*) and the State is mainly considered together with religious dogmas, rites etc.

As it was set forth in some ayahs (for example, 3:187), the Quran is, first of all, the appeal to go along the righteous way stated by Allah, clarifications how to reach this way and how to go along this way, the warning to people who select a wrong way about expected "the doom of Fire" at the Judgment Day... At the same time and along with this, a certain base was fixed using some "bricks" presented with laws, judgments, moral and ethic norms, behavioral rules, which afterwards become transformed to the written Shariah laws. When Islam has formed as the self-dependent religion, the "building" of belief as a whole was built on this foundation. Two out of numerous "bricks" that are the base for belief represent the attitude of Islam to fundamental issues of any developing society – to water and land.

- The Earth is the property of Allah, He gives it to the worthy out of His slaves for use;

- The water is the sacred gift of Allah to all living things and, first of all, to a man; water is for the common good, and people have to use water wisely and justly.

These fundamental ideas set forth in many surahs and ayahs of the Quran later were fixed in Hadiths and the Shariah laws.

2.2.2. HADITHS CONCERNING THE ATTITUDE TO WATER

(Hadith means in Arabic language: manner or tradition; sometimes is used as «sunnah»)

In the process of expansion and strengthening of the Caliphate, the amount of questions related to various aspects of life of citizens and the state system was growing like an avalanche. If earlier, fellow-fighters and assistants had addressed to Muhammad with such questions then after his death, caliphs, who had ruled the state, could not so confidently solve the arisen problems any more. Then the necessity has arisen to address to experience of life and activity of the Prophet - what he did, what he spoke or approvingly kept silent, or did not kept silent etc. in similar cases, situations etc. Inasmuch as, during his life, many people communicated with him and worked under his leadership, the great number of hadiths has appeared. It is known that our ancestor the Imam Al-Bukhari the Great (810 - 870) has collected during his life in such Moslem centers as Mecca, Medina, Baghdad, Damascus etc. about 600,000 hadiths (the oral traditions of the Prophet Muhammad), he knew by heart about 300,000 hadiths, and he compiled 7,275 of them in *Al-Sahih* (The Genuine) and has presented them in 4 volumes¹⁶.

Hadiths traditionally consist of 2 parts: the first part is demonstrative one, where it is underlined who is a storyteller or transmitter a hadith, from whom he has learned this story - directly from the Prophet or from his following, relatives or companions, who heard, saw, and knew what Muhammad did or spoke once upon a time. In some hadiths, there are two and more transmitting links between the Prophet and a storyteller of hadiths.

The second part is the basic text of hadith where words, actions, explanations are described, for example, according to surahs and ayahs of the Koran compiled by the Prophet himself.

In "Sahih Bukhari" hadiths that are dedicated water resources and water use are not so many. Such hadiths are compiled in Volume II under the name «The Book of Wisdom on Water» (the edition of 1997, pp. 79-85) and Volume III under the name «Drinking Water» (the edition of 1994, pp. 538-552). Other hadiths concerning water are scattered over all volumes of this collection.

The name of the second chapter of «The Book of Wisdom on Water» is characteristic: «The second chapter (again) on water. Who considered rationally handing over the water as gift or inheritance

¹⁶ Abu Abdullah Muhammad ibn-Isma'il al-Bukhari. Hadith, Tashkent, Volume I, II, III, and IV, 1993-1994.

regardless of the fact that it was allocated or not? » The text of this hadith is translated as follows:

“(While Allah's Apostle, Peace Be Upon Him, came in Medina, here there was not another source of water except the Ruma Well), and He said, “For anyone who will purchase the Ruma Well and use its water jointly with other Muslims a wonderful place in the Garden of Eden will be prepared. Then Uthman, may Allah forgives him, bought it (the well)”. It is obvious that Uthman has bought the well and given it to Muslims of Medina for use. However, the significance of this hadith consists in the fact that afterwards it became the legal base for developing a diversity of Shariah’s laws.

Chapter 7 was titled as “Damming of River Waters.” A hadith narrated by Urwa bin Az-Zubair: “Az-Zubair told me that he quarreled with an Ansari man who had participated in (the battle of) Badr in front of Allah's Apostle about a water stream which both of them used for irrigation. Allah's Apostle said to Az-Zubair, "O Zubair! Irrigate (your garden) first, and then let the water flow to your neighbor." The Ansari became angry and said, "O Allah's Apostle! Is it because he is your cousin?" On that the complexion of Allah's Apostle changed (because of anger) and said (to Az-Zubair), "I irrigate (your garden) and then withhold the water till it reaches the walls (surrounding the palms)." So, Allah's Apostle gave Az-Zubair his full right. Before that Allah's Apostle had given a generous judgment beneficial for Az-Zubair and the Ansari, but when the Ansan irritated Allah's Apostle he gave Az-Zubair his full right according to the evident law. Az-Zubair said, "By Allah! I think the following Verse was revealed concerning that case: "But no by your Lord They can have No faith Until they make you judge In all disputes between them." (4.65). Apparently, Ansari himself asked the Prophet to be the judge for this dispute, and when he uttered his opinion regarding the dispute Ansari has shown his displeasure to Allah’s Apostle. Afterwards this hadith also became the legal base for some Shariah’s laws. For example, a queue of water applications in the fields located along an irrigation canal from its head to its end – first, the fields closer to water along the head section of the canal are irrigated and then sequentially other fields. At the same time, when dozens of water users take water from a single water source, water availability in the source may be insufficient to meet water demands of all water users at once, and in this case, it is necessary to put the water rotation method into practice. This hadith was the fundamental one under introducing the water rotation method known to our ancestors from time immemorial.

Most of hadiths contain the matters concerning a way of life, the family, marriage, interpersonal relations etc. They provided the ethical and legal base for forming the norms for settling legislative issues as well as moral and behavioral rules defining people’s behavior in society and the family. From this point of view, the collection of hadiths

concerning moral and ethics of people is of special interest¹⁷. This collection contains 688 hadiths, and they were selected from collections compiled by well-known authors such as the Imam Al-Bukhari, Muslim, Abu-Dawud, at-Tirmidhi, An-Nasa'I, Ibn Majah, Ahmad ibn Hanbal, Tabornya, and others. These hadiths do not concern directly water resources and water relations, though they clearly represent the components of moral and ethic requirements to Muslim imposed by society, and describe the general ethic environment of the faithful. Ultimately, this environment was also used under considering water relations. It is necessary to note that in the process of representing hadiths their demonstrative part was missed; in addition, the texts of hadiths are presented in modern Uzbek language. Here are some citations from the collection that were selected according to the specific principle (the author has translated them into Russian language).

5. At rendering material aid (*naphaq* and *sadaq*) start with yourselves. If something remained, give members of your family. If something remained else, give your relatives. Then, the remained part, you may give other people.

15. Beware of "*harom*" (behavior and deeds not permitted by Allah), and you will be more faithful among people. Be satisfied with things that Allah gives you, and you will be richer. Assist your neighbor for conscience' sake. Wish others what you like, and you will be healthy. Do not laugh much; laughter beyond all measure weakens your soul.

105. Apply punishments established by Allah equally for both relatives and strangers. Compassion should be with you under all your actions for the sake of Allah (this hadith is addressed to those who by virtue of their duties have the right to punish people for their blasphemous deeds such as judges, the Imams, etc.).

205. If any person earns riches by fair means and spends a part of riches for satisfying needs of other slaves of God in meal and clothes, all these deeds will be registered in his records submitted at the Judgment Day.

305. The best of you are those who for the sake of the present day do not forget about the other world, for the sake of the other world do not refuse from worldly activity, and do not do anything to be burdensome to others.

405. There are two kinds of Shariah judges: some of them deserve the punishment of hell, and others deserve to be awarded by the good of paradise. The judges who bring in a wrong verdict knowing the truth, or, bring in a verdict at their own discretion being illiterate are those infernal ones.

505. Gained knowledge without their use for training other people are equivalent to riches buried under the ground surface.

¹⁷ "Ahlokh - odobga oyd hadis namunalari" Tashkent. «Fan», 1990, pp.170 (in Uzbek language).

500. Good upbringing and morals are the best inheritance that a father can leave to his children.

It is possible to find hadiths as an example for all occasions of our life in this collection (with rare exception). Pearls of folk wisdom, reflecting ideas and expectations of many generations of our ancestors and sanctified by provisions of the Islam, are shining in them. For short, I would like to point the citation from the book of S. Dzhabbarov who used information presented by N.S. Lykoshin¹⁸.

«The author, making reference to Hadith and Hidayah, gives the summary of moral rights and duties of Uzbek who observes them in his daily life on the basis of Shariah's norms. According to his description, the settled population of Turkistan, in particular, Uzbeks aspired to develop the following personal peculiarities: self-restraint, leniency with respect to other people, as well as humility, charity, respect of another person or his position. It is necessary to wish others the same that suits you, to show obligingness especially with respect to the poor, to forgive insults, to be generous, to avoid, and to be ashamed bad deeds, to be truthful and fair, always to keep the promises, to consider other people better than himself. In general, it is necessary to avoid lie and injustice, do not speak bad things in somebody's absence (i.e. do not be a tale-bearer), do not offend or grieve another person, do not use violence. Parents aspired to impart these highly humanistic principles stated in norms of the Shariah and in customary laws, to their children at an early age in each Uzbek family» (Page 108).

Speaking about roots of ethic upbringing of Moslem, it is pertinently to recollect that words-concepts could be often met in ayahs of the Koran and Hadith, which, at first sight, have especially religious substance, but practically not only are a part of informal conversation of the local population but also they influence on acts and behavior of people, irrespective of whether they believers or not. These words mostly are of the Arabic origin, but were included in vocabularies of all Turkic-speaking peoples in Central Asia.

“Savob” means deeds, actions and words that deserve rewards or praises of Allah;

“Gunoh” means deeds, actions and the words that are forbidden or not favored by Allah and holy books of Moslems;

“Halol” does mean not only meal or foodstuffs permitted by holy books for the use by Moslems, but also deeds, actions, acts, words, etc. that do not contain moments or elements reprehensible for Moslems.

“Haram” means food products forbidden for meal, first of all, meat of some animals (pork, dog, donkey, and some other animals), and also alcoholic drinks strongly influencing mind of a person, as well as deeds,

¹⁸ Likoshin N.S. A Half of Life in Turkistan. Feature story of the way of life of the native population.

actions and words forbidden for a Moslem in his ordinary life and in public activity.

There are also other words and concepts, such as "hirrom" (a dishonest act or deed), "insoph" (it means fairness, pliability, etc.), "yahshilik" (good), "emonlik" (evil), "isrof" and other words, which play also an essential role in ethic upbringing of people that profess the Islam. In private life ethical and moral features of a Moslem are formed within these definitions, and a truly believing or simply decent person tries to make only charitable deeds and actions (savob) and to be always fair, hardworking, honest etc. (i.e. "halol").

Here, it is pertinently to recollect one popular definition "uzbekchilik" which is perceived by some people, often by representatives of other nationalities, as a reprehensible feature, almost as bootlicking, subservience, etc. Actually, "uzbekchilik", if it is shown without immoderation and appropriately, is behavior of a person who has been brought up in the spirit of high moral principles concerning to other people whom they would not be, with respect and without prejudice.

It is known that our ancestors who had lived in the Central Asian region from time immemorial, especially after repealing use of slave labor in public works, could carry out large-scale and labor-intensive irrigation works (excavating of canals of tens and hundreds of kilometers long, their annual cleaning and repair, construction and repair of various structures using local materials etc.) jointly and by common efforts and means (by arranging hashar works). Undoubtedly, such works can be organized only if their participants well understand the generality of interests, are disciplined, precisely and fast carry out instructions of managers of works (aryk-aksakals, mirabs, and tuganchis), etc. Specific human qualities such as decency, diligence, self-discipline, call of duty, comradeship etc. had to be inherent in ordinary peasants and their servants as they were major participants of "hashar works."

Therefore, upbringing of people since the early childhood in the spirit of norms of the Shariah and Adat served or promoted not only to settling common and interpersonal relations but also organization of people for performance of socially significant works (irrigation works, emergency works, defensive works and military actions, collection of taxes etc.).

A story about a role and a place of hadiths in upbringing of Moslems, in particular of the youth, will be incomplete if we shall not recollect that just ethical and moral people brought up in the Islamic spirit could think up such sayings and proverbs and to follow them in their daily life: «To pollute water is a great sin, and Allah will punish», «Those who spits into a water well will ache with vitiligo (the incurable skin illness)», «If water will turn round seven times along its way, it becomes pure», «Allah does not like prodigal people (in meal, drink etc.)", "Be afraid of the spontaneity of fire and water", "Those who

brought water in a jug live in poverty, and those who broken a jug live in honor", "Deep water slowly flows", "Even if your father is a high-ranking water manager, it is better to have the land plot at the beginning of irrigation canal", "A drop (if it drips for a long time) makes a hole through a stone", "Do not give your daughter to the one who lives in the tail of irrigation canal", "Those who has polluted water, would experience the big need for it» etc.

Undoubtedly, a cult of water, which arisen in times of the sacred "Avesta" and exists in certain forms until now, has played a specific role in occurrence of such sayings and proverbs.

2.2.3. LAWS AND NORMS OF THE SHARIAH IN THE FIELD OF WATER USE

For short, I shall cite some definitions of the Shariah formulated by A.H. Saidov in the preface to the work of the outstanding jurist Burkhanuddin Al-Marginani "Al-Hidayah" written in the XII century and issued in four volumes.

"The Shariah is philosophy of the Islamic jurisprudence with typical syncretism i.e. the integrity of many spheres of spiritual, secular, and practical activities of a Moslem – unity of religious and secular authority. It includes as the jurisprudence (*fiqh*), ethic and behavioral rules, and provisions of the Muslim cult (regulation concerning prayers, fasting (*sawrn*), festivals, and other duties of Islam». At the same time, A.H. Saidov refers to John Hamilton and Diras Khadaraskul who have written: «Shariah is an basic law of Moslems, something like the constitution for inhabitants the USA and even much more."

In addition, «The Shariah consists of two parts: theology, or principles of belief (*aqida*), and jurisprudence (*fiqh*). *Fiqh*, or the Muslim jurisprudence, in its turn, is subdivided into two parts: the first part instructs a Moslem with respect to his behavior and relations with other people (*muamalat*); the second part prescribes the obligations with respect to Allah (*ibodat*). These two parts of the Shariah make up a subject of an Islamic legal science in the form as it has been specified and studied by various *mazhabs* (in Arabic language - "ways of observance") or Muslim legal schools».

It is known that two mainstreams exist in Islam – *the Sunnis and Shia*. Each of them has the legal schools, or *mazhabs*. The Sunni Islam, for example, included the followers of four *mazhabs* (the Malikis, Hanafis, Shafi'is, and Hanbalis). Each of them bears the name of its founder and has its own legal methodology and concept for settling of concrete legal issues. For this reason, they have divergences in methods of interpretation of the Quran, sunnahs, and in a variable extent, in acknowledgment of *ijma* (the unanimous opinion of a Muslim

community) and *qiyas* (conclusion by analogy). Thus, statutes, regulations and norms of the Shariah are based on the Quran, *sunnahs*, *ijmas*, and *qiyas*.

Despite of some divergences, all *mazhabs* in Islam are considered as equal or equally legitimate and are not opposed each other. It is considered that each *mazhab* directs its followers along its own way but exclusively towards the truth specified by Allah. Nevertheless, Sunni Moslems make up more than 80 percent of all Moslems all over the world. Among Sunni Muslims, more than half are adherents the Hanafis *mazhab*. The founder of this *mazhab*, Abu Hanifah an-Nu'man (699-765) was honored with the title of Imam the Great for his outstanding merits for Islam (*inter vivos*). I make one more quotation from mentioned Saidov's preface to the book "Al-Hidayah":

«Shariah suggests five criteria for evaluating actions of a capable person – a Moslem:

1. Acts or deeds of special importance (*farz*) not requiring for any approval and encouragement, for example, prayer or almsgiving (*zakat*);
2. Acts recommended and positively evaluated (*mustahab*). Though such acts are not obligatory, they are approved and encouraged, for example, voluntary charity (*sadaqa*) or pilgrimage to Mecca (*hajj*);
3. Acts, which are not subject to encouragement but also are not punished (*mubah*), for example, transactions or signing commercial contracts;
4. The acts, which are not subject to punishment, but also not approved, for example, use of swearwords in an informal conversation or disrespect for older persons; and
5. Fulfillment of forbidden acts (*haram*). A defaulter is inflicted to severe punishment. Such offences include the following: the use of pork for meal or alcoholic drinks, adultery, murder etc.»

General information and some definitions were given above in order to provide for a reader primary idea about the Shariah as the important aspect of the Islamic doctrine. Many works written by outstanding Islamic ancient scholars are devoted to the Shariah that includes theology and jurisprudence (*fiqh*) and was completely formed already in X-XI centuries. It is enough to tell that the above mentioned work written by Burkhanuddin Al-Marginani, the native of Margelan City, "Al-Hidayah. Comments on the Moslem Jurisprudence», consists of four volumes. Prior to this work, he has written the collection of works consisting of 53 books and containing regulations, laws, norms of the Shariah concerning all sides of the life of a Moslem and *umma* (a Muslim community). «Al-Hidayah» has been written as the comment on the contents of mentioned 53 books with the purpose of simplification of their use. Moslem jurists (first of all, of Sunni branch) have recognized

this work; and today, students of universities in Islamic countries are studying it as the basic subject. It was translated into many languages of Europe and Asia. By the way, it was translated into Russian from the English variant at the end of 1870s by instructions of the chief of police administration of the Turkistan Territory and was issued by the circulation of 400 copies.

After the short introduction, it will be possible to discuss, but again in brief, «the Code of Regulations of the Muslim Legislation (the Shariah) concerning Water and Land Use. » The brief history of occurrence of this work is the following.

In the period since 1907 until 1910, for the first time in the history of the Turkistan Territory, leading experts of that time (lawyers, historians, regional specialists etc.) has firstly developed three variants and then, on the basis of their synthesis, the draft of so-called 1910 Water Law of Turkistan. During this period, by the decision of the former Administration for Irrigation Works in Turkistan (IRTUR), an expert on Turkistan and the Muslim jurisprudence (the Shariah), a certain Davletshin, has prepared the mentioned Code of Regulations. Prior to its publication in the journal "Irrigation Bulletin," a manuscript of this work has lain for long time first in the record-keeping office of the IRTUR and then of the Administration for Irrigation Works

One circumstance deserves to be marked. In the draft 1910 Water Law of Turkistan (after its approval at the meeting presided by the Governor-General of this territory in 1911, the bill has been submitted for approving to the State Duma of Russia, where till 1915 passed through numerous examinations and hearings in state bodies, commissions, and subcommittees of the Duma, however, has not been authorized), an essential part was given to the institutional framework of a new body - Water Administration of Turkistan Territory (under the Central Administrative Board for Land Management and Agriculture of the Land Reclamation Department of the Government of Russia). The bill has stated the centralized governance of water resources within this territory with four hierarchical levels: Central Administration - Regional and District Water Organizations, and Water Districts with the Public Water Council (formed on the elective basis).

Prof. S. Pokrovsky has written in his paper «Developing the Water Jurisprudence in Central Asia (continuation)" that "Establishment of elective self-government institutions responsible for water use within separate water districts was the most interesting aspect in the water law. Introduction of Public Water Councils formed on the elective basis was motivated by the following considerations: water self-management still existed among separate groups of the local population. The community of interests in irrigation naturally resulted in creating water districts representing the territories with the population united not only by interests but also by common labor services so necessary at the maintenance of irrigation systems. It was impossible to implement any

reforms breaking the existing water self-management system, and therefore, the draft water law has left it in the form of the Public Water Council elected from all water users of the district. »

In other words, existing self-management presented by aryk-aksakals (managers of irrigation canal), mirabs (irrigation specialists) and tuganchis (managers of regulators) should operate under the aegis of the council of water districts. Since a chairman of the Council was appointed from among elected members by the military governor based on the proposal of the district administrator, and managers of irrigation canals (aryk-aksakals) were also appointed according to the same principle, the colonial administration had all opportunities to carry out its water policy on «the lawful basis» at all levels of the hierarchy of water management.

Putting into practice of this centralized four-level institutional framework of the water administration has been initiated without waiting of adopting the law by the State Duma, and after creating the Turkistan Autonomous Soviet Socialistic Republic (TA SSR) in 1918, it has been adopted by the Soviet authorities with some negligible changes. Water districts with the Public Water Councils, unfortunately, were ill-fitted for the administrative division and administrative structures of new authorities. Nevertheless, the four-level institutional framework of centralized water resources management has shown its viability, having stepped over into the 21st century, especially under implementing the large-scale water projects funded by the state budget. However, it turned out, that its capabilities are insufficient at the farm level, where real water use takes place. It is especially true under conditions when Central Asian states have rejected old (collective) forms of land ownership in irrigated agriculture, and when market mechanisms more and more take root into agricultural production.

Let us return to consideration of "the Code of Regulations of the Muslim Legislation (the Shariah) concerning Water and Land Use" prepared by Davletshin. Prior to the publication, the editorial staff has sent the Davletshin's manuscript to A.E. Shmidt, the Professor of the Institute of Oriental Studies in Tashkent, for his comments. Two clauses of his comments are given below:

«1. The manuscript represents Russian translation of corresponding sections of the Shariah from the Arabic language made in the process of compilation of several sources specified by the author of translation.

5. On the merits, in my opinion, the publication of these regulations is extremely desirable, since it enables all interested persons get acquainted with regulations of the Shariah just on those issues which are so important here, in Turkistan, and because the Shariah, undoubtedly, greatly affected the norms of customary law, which have been established during centuries. »

We need to add only that 75 years after the publication of "the Code", the statements of Prof. A.E. Shmidt have the modern context

under conditions when collective farms and state-farms are replaced by new forms of land ownership with different forms of agricultural production – private farms, dekhkan (family) farms, cooperative farms (shirkats) etc. Here, it is not a question of direct application of regulations of the Shariah in today's practice; but their studying, undoubtedly, can be useful from the point of view of supplementing and improving of existing laws of the country in the field of land and water use and protection of waters, first of all, at the level of numerous farms.

In the process of preparing "the Code", Davletshin has used the collections of works of some well-known Islamic jurists such as al-Quduri (has died in 1036), Fath al-Qadir, Ibn Abidin (the XIX century), Sharh Ilyas, Fatavi Qazi Khan and Holasat Al-Fatavi who lived in different centuries and in the different Muslim countries. Therefore, formulations of Shariah's regulations concerning concrete legal issues in different sources could not be identical word for word. Thus, the translator had to compile a uniform formulation using different sources, and only after the compilation, to translate it in Russian. For unclear reasons, in the process of preparing "the Code", the translator did not use works of local authors, first of all, to "Al-Hidayah" written by Burkhanuddin Al-Marginani ... Davletshin has subdivided 205 regulations of "the Code " into 5 sections, and one section « About water use» into 6 subsections.

The classification of sections and subsections of "the Code" (according to Davletshin), presented in the form of Table 3 below, informs about the sources (the title, volume, and page) that are used by the translator. Information given in Table 3 is synthesized based on works of three authors (Fath al-Qadir, Ibn Abidin, and al-Quduri) who compiled the regulations of Shariah concerning all selected themes. Al-Quduri who lived in the 10th century on the Arabian Peninsula is the most ancient author among others. The faqih Ibn Abidin lived in the 19th century. Table 3 visually shows that the legislative base of the Shariah was intensively being supplemented and developed with time.

Certainly, there is no opportunity to consider or discuss each of 205 regulations compiled in "the Code". We consider some regulations by the example of some cases very instructive.

In the section «About the Dead Earth», a definition of the term «the dead earth» is of interest:

«1. The dead earths are those lands which cannot be used due to lack of water there or their flooding, or for other reasons that impede their tilling*. See Fath al-Qadir Vol. IX, Page 2; Ibn Abidin Vol. V, Pages 306 and 307; Mukhtasar al-Quduri, Page 75; Sharh Ilyas Vol. III, Pages 258 and 259 »

The following article states equal rights (the democratic principle) for tilling the dead earth and its possession:

«9. A non-Moslem has the same rights like a Moslem concerning the possession of dead earth that he tills. See Fath al-Qadir Vol.IX, Page 5; Ibn Abidin Vol. V, Page 307; Mukhtasar al-Quduri, Page 75».

Articles concerning the protection of a water source by means of establishing the water-protection zone are of interest:

«19. If a draw-well is destined for drinking water then an area of forty cubits in circumference is allotted around it. See Fath al-Qadir, Vol. IX, Page 6; Ibn Abidin, Vol. V, Page 303; Mukhtasar al-Quduri, Page 76, and Sharh Ilyas, Vol. III, Pages 26 and 261 ».

The substance of the following article is quite modern:

«24. Old channels of the Tigris and Euphrates, into which these rivers can return with time, should not be cultivated as they will be necessary when they will turn into rivers again. See Fath al-Qadir, Vol. IX, Page 10; Ibn Abidin, Vol. V, Page 309; Sharh Ilyas, Vol. III, Page 261».

In our today's practice, the cases when people, infringing existing laws and resolutions of the Government, develop not only the lands of old river channels but also water-protection zones of acting streams, even of rivers and streams that are hazardous from point of view of causing mudflows, are not rare.

The biggest section of "the Code" is devoted to issues of water use and consists of 6 subsections.

In the subsection «2. About Waters of Large Rivers» there are some articles that purposefully protect the interests and rights of both an individual and the population as a whole:

«30. Everyone has the right to drink, to water his own cattle and to irrigate his own land withdrawing water from large rivers such as, for example, Jayhun (Amu Darya), Saihun (Syr Darya), Euphrates, and the Tigris. See Fath al-Qadir, Vol. IX, Page 12; Ibn Abidin, Vol. V, Page 31 and Sharh Ilyas, Vol. III, Page 264 ».

« 32. Everyone, both a Moslem and a non-Moslem, has the right to forbid construction of an aryk (irrigation canal) to another's land if owing to this action, a harm to the majority of population will be done. For example, there will be a flood or access to the large river will be ceased, or navigation will be stopped. See Fath al-Qadir, Vol. IX, Page 12; Ibn Abidin, Vol. V, Page 311 ».

« 33. Whoever has the right to build a water-mill on the large river if it will not harm the majority of population. See Fath al-Qadir, Vol. IX, Page 12; Sharh Ilyas, Vol. III, Page 264 ».

Table 3

Chapter and Article	Authors and the serial number of volumes of their works		
	Fath al-Qadir	Ibn Abidin	Mukhtasar al-Quduri
I. "Dead lands" (26 articles)	Volume IX (pp. 2-6, and 9-11) 25 articles	Volume V (pp. 303, 306-310, 319) 24 articles	(pp. 73, 75-76) 14 articles
II. Water use (1)	Volume IX (pp. 12-	Volume V (pp.311)	-

Chapter and Article	Authors and the serial number of volumes of their works		
	Fath al-Qadir	Ibn Abidin	Mukhtasar al-Quduri
article)	13) 1 article	1 article	
1. Sea waters (2 articles)	Volume IX (pp. 12) 2 articles	Volume V (pp.311) 1 article	-
2. Waters of large rivers (4 articles)	Volume IX (pp. 12) 4 articles	Volume V (pp.311) 3 articles	-
3. Private water use (7 articles)	Volume IX (pp. 12, 13) 6 articles	Volume V (pp. 311-313), 5 articles	-
4. Waters in water bodies (2 articles)	Volume IX (pp. 13) 2 articles	Volume V (pp. 311) 1 article)	-
5. Dredging the rivers (11 articles)	Volume IX (pp.14-16) 10 articles	Volume V (pp.313-314), 9 articles	-
6. The right to use river water (29 articles)	Volume IX (pp.17-21) 25 articles	Volume V (pp.314-317) 29 articles	-
III. Shif'at is the preferential right of a neighbor or land co-tenant for land acquiring (68 articles)	Volume VIII (pp. 298, 304-316, 317-322, 326-335, 339-345) 252 articles	Volume V (pp.152, 155-163, 168-170) 38 articles	-
IV. Muzaraat is an agreement between two persons on cultivating a plot belonging to one of them for a share of crop yield (35 articles)	Volume VIII (pp. 354, 385-398) 23 articles	Volume V (pp. 193-198) 21 articles	(pp. 77-78) 14 articles
V. Musakat is an agreement on cultivating orchards for payment in-kind (20 articles)	Volume VIII (pp.401-403) 17 articles	Volume V (pp.200, 202-205) 13 articles	(pp. 75, 78) 6 articles

One article in subsection «4. About the Waters in Ponds» is not less interesting:

«41. The water collected in ponds is a private property, and others have no the right to use it. See Fath al-Qadir, Vol. IX, Page 13; Ibn Abidin, Vol. V, Page 311 and Sharh Ilyas, Vol. III, Page 264 and 266.»

It is implied that a pond is also a private property (*hauz, sardoba*, or constructed reservoir) i.e. labor and funds of an owner were spent for creating such a pond.

Subsection «5. About Dredging and Cleaning of Rivers», in its turn, consists of 3 groups of issues:

1). About dredging and cleaning of rivers which are not in private use:

« 44. Dredging and cleaning of rivers, not being private property, should be implemented at the expense of public funds. These funds are formed at the expense of duties and a capitation tax. See Fath al-Qadir,

Vol.IX, Page 14; Sharh Ilyas, Vol. III, Page 265, and Ibn Abidin, Vol. V, page 313 ».

In all other cases (a river in private use, but placed at public disposal; a river in a private property), river training, dredging and cleaning of rivers are implemented at the expense of stakeholders or owners of these rivers.

Practically, all articles included in the subsection «6. About the Right of River Water Use» contain the interesting provisions:

«59. In case of disputes concerning water volumes which co-owners of the rivers can use, the volumes are estimated proportionally a size of their plots. See Fath al-Qadir, Vol.1X, Page 18, and Ibn Abidin Vol. V. Page 315».

«62. If someone out of owners cannot use the river differently as damming back it and co-owners come to an agreement then a queue of irrigation should be started from a tail part of a river and proceed upstream; when the queue reaches a head stretch, damming of the river is authorized. See Ibn Abidin, Vol. V, Page 315.»

«73. Co-owners of the river have no the right to use its water for irrigation of those plots which are not to be irrigated by means of water withdrawal from the given river. See Fath al-Qadir, Vol. IX, Page 19; Ibn Abidin, Vol. V, Page 315.»

Articles of the section "Shif'at" regulate the legal situations arising at purchasing and sale of land (irrigated land, a courtyard with a house etc.).

«84. A reason of occurring the Shif'at is the neighborhood or joint ownership by a certain plot. See Ibn Abidin, Vol. V, Page 152; Fath al-Qadir, Vol. VIII, Page 304; Fatavi Qazi Khan, Vol. IV, Page 448 ».

As was mentioned in Article 85, the Shif'at covers only a real estate. At sale and purchase of the real estate, the Shif'at is given, first of all, to a co-owner of this real estate, and then to neighbors. Prioritizing of neighbors with respect to this right is also regulated as follows: a neighbor from the right, a neighbor from the left, a neighbor behind, and other nearest neighbors. On demand of those who have the Shif'at, even transactions on sale and purchase can be cancelled by the court of *Qadi* (judge) after fulfilling some formalities specified in other articles of this subsection.

The article concerning the *Muzaraat* with principles of making a contract between two persons concerning cultivation of the plot belonging to one of them with payment in kind is rather modern. According to modern definitions, it means leasing a land plot on the basis of the contract specifying the rights and duties of the parties (landlord and tenant). Some articles describe in detail the situations when the contract is valid or is not valid; when the contract (*Muzaraat*) is permitted, what provisions can be included into the contract and vice versa. The provision of the following article seems to be very important:

«174. The contract (*Muzaraat*) that envisages a payment at the rate 1/3 or 1/4 of yield is invalid. See Fath al-Qadir, Vol. VIII, Page 396; Mukhtasar al-Quduri, Page 77.»

Water professionals of older age who trained in universities of the former Soviet Union, remember the negative attitude to so-called "peonage" (i.e. work on the land plot rented for one year with payment of 1/4 of a yield as a bright example of ruthless exploitation of peasants by the class of exploiters - landlords and *kulaks* (rich peasants)) at lectures on political economy. However, in reality, the situation is a little different. First, according to Shariah laws, contracts with payment at the rate of 1/4 and even 1/3 of yield was forbidden. Second, "peonage" has arisen and developed in the Turkistan Territory at the beginning of its colonization in the last quarter of the 19th century when there was «a cotton boom» (it was profitable to cultivate cotton). During short time, the large areas were sown with cotton; and by the beginning of the 20th century, cotton growing in this territory became the priority business in irrigated agriculture. Landless peasants or peasants having insufficient arable land have received more profit working on a cotton field at the rate of 1/4 of yield than under growing other crops at the higher rate according to the Shariah (economic incentives).

The last fifth subsection "*Musakat*" is close to the previous one according to its substance and targets: it considers legal and institutional aspects and conflicts arising in the process of renting and cultivating orchards and vineyards by peasant for a payment in kind. At present, such a practice is widely applied in farms having orchards and vineyards as well.

Finishing the brief presentation of regulations and norms of the Shariah concerning water resources, water use and land tenure, we would like to emphasize the following moments:

All regulations of the Shariah that are associated with water and land resources and their use are based, first of all, on provisions of the Quran and Hadith. Their purposeful substance and legal base, with concrete solutions, were being developed in order to meet requirements of the current practice of people and society.

Apparently, articles of «the Code of Regulations ...» related to water and land resources, in most cases, considered them in an integrated manner, i.e. in coordinating with each other.

The description of legal collisions (situations) in regulations of the Shariah is notable for brevity and clearness of its text. Extended interpretation of articles' substance is practically difficult.

There are no causes to assert that as the legislative contents of the Shariah was completely formed already in X-XI centuries, at a later time, developing of its legislative base has stopped. This statement is proved by the number of cited regulations of the Shariah concerning water and land resources that were presented based on works of Mukhtasar al-

Quduri (X century, 26 articles) and Ibn Abidin (XIX century, 140 articles), (Table 3).

A few word about examples or the lessons that were handed down by our ancestors. First of all, it is necessary to emphasize that for last 9-10 years, Uzbekistan, following the way of independence and having started to build the constitutional state, has created and goes on to create the necessary legal environment, including in the field of land and water resources use, preservation of the environment etc. Many new laws of the Republic and governmental decrees serve this purpose. Under these conditions, it is absolutely irrelevant to call upon to follow an example or even to copy the Shariah's laws for settling today's practical problems; though it is known that in some Muslim countries, for example, in Iran, laws and norms of the Shariah play a role of civil and criminal codes, or Shariah's laws co-exist with civil and criminal codes (Turkey).

On the other hand, economic and institutional reforming the nation's economy, first of all, in irrigated agriculture started by the initiative of the President I. Karimov, have generated new forms of possession and using of land resources, new forms of managing the agricultural sector. The number of dekhkan and private farms having the status of legal entities already amounts to several hundreds of thousands, let alone cooperative (*shirkat*) farms and collective farms. Under these conditions, numerous legal situations concerning relations between different economic entities and between private persons and economic and administrative entities were not legalized and even were not considered yet. It is possible to refer to the following situation as an example. Two new laws of the Republic of Uzbekistan «On Private Farm» and «On Dekhkan Farm» set forth articles concerning issue of water use. Articles underline that quotas for water use allocated for these types of farms are planned by the water authorities, however, the mechanism for realization of these articles, the real procedures of water delivery based on the allocated water quotas, was not established until now. As a result, a water user, for example, a farmer and his farm, having the status of legal entity (i.e. equal in the rights with any other economic entities) can be specified by the water authorities as a user of secondary category and in this case he can encounter various obstacles caused by primary water users (collective or co-operative farms). Such examples are not isolated instances. In addition, there are absolutely new legal situations that were not met in practice hitherto. Under these conditions, studying of Shariah's laws (their methodical aspects, i.e. from the point of view of definition of legal matters and formation of their solutions) can be useful.

2.2.4. ABOUT INTERACTION OF RULES AND PROVISIONS OF THE ODAT (CUSTOMARY LAW) AND REGULATIONS OF THE SHARIAH

A word "adat" literally means habit, custom, or tradition. Rules and provisions of the Adat in the legal sense are regulations of the customary law. It is known that rules and norms of the Adat concerning the various aspects of human activity and society itself, including water and land relations between people and society etc. have existed from time immemorial, long before coming of Arabs into the Central Asian region. Since the Adat was formed according to traditions and customs of local population, its regulations concerning specific issues of establishing social life and society in different areas of the Central Asian region could be different from each other; nevertheless, it played an important role in life of these peoples.

As it was noted, literary works of ancient authors concerning establishing the Shariah made up many volumes, besides they were written in the Arabic language. Therefore, in those countries where Arabic language was not native one, studying of such works was very difficult even for faqihs (lawyers) – non-Arabs, and particularly for ordinary people. Therefore, the most important or frequently used laws and norms of the Shariah in translation into the local language had oral circulation along with rules and norms of the Adat. In times of Imam al-A'zam Abu Hanifa, Imam the Great, who established the legal school of the Shariah, many rules and norms of the local Adat were consecrated and canonized as provisions of the Shariah. It has taken place and in Central Asia, where regulations of the Adat in various places of the region were revised to some extent and reduced to a common denominator and to identical meaning.

In 1926, Professor Pokrovskij, the expert on the water law in Central Asia, wrote: « ... peoples of Central Asia, prior to conquest of this territory by Russia, did really have the land and water legislation based on customs, and, at the same time, a scope of the customary law was limited by clannish and inter-clannish relations, as well as by their use within water-and-land communities. Nevertheless, everywhere in Central Asia, we meet almost the same water hierarchy and operation of similar customs. »

As an example, we note some regulations of the Adat in the field of water resources and water use, which were perceived by the majority of the population and were presented, at this or that form, in Shariah laws:

- Waters of rivers and lakes are property of the majority (community);
- Ban on sale of land without water;
- In case of water scarcity in a source, fair and equitable allocation of water (proportionally to a land area);

- Water allocation into aryks (irrigation ditches) is based on water quotas (at the same time, proportionally to water availability in the main canal or another water source), and using water by turns (according to the modern terminology - water rotation);
- Participation (input in the form of personal labor and building materials) of each water user at hashars (mobilization of local population for implementing socially necessary works) for construction, repairing, and cleaning of canals and regulators;
- Managing of water use is based on the principle of self-government;
- Cultivation of water-loving crops (for example, paddy) should be coordinated with a community with respect to limiting a crop area or based of consent all downstream water users of this canal;
- Under construction of an aryk through a land plot of another person, caused damages should be paid;
- Observance of the rights of all parties at arranging a passageway to water outlet or a road to a landed property surrounded with other plots etc.

Even such an incomplete list of rules and instructions set forth in the Adat, which were unquestioningly perceived by the majority of water users (peasants) and were being implemented in practice, shows that under conditions preceding the Arabic feudal-clannish relations in the field of land and water use, our ancestors have managed to develop precise enough, clear and fair norms of mutual relations, which promoted developing irrigated agriculture. If also to take into consideration activity of local water administrations represented by managers of irrigation canal and regulators and managers for water distribution in the fields elected in a democratic manner from among skilled and respected peasants at the meetings of local people (in settlements, tribes etc.), as well as general, obligatory for all, public works and other aspects, there are all arguments to assert that during the last centuries in all parts of the Turkistan Territory with irrigated agriculture the peculiar and accomplished irrigating business (in terms of management, institutional framework, financing by the water users, developed designs of irrigation canals and structures, technologies etc.), the key goal of which was a service of irrigated agriculture, has existed. At the same time, irrigated agriculture had provided output (grain, fruit-and-vegetable products etc.) for supplying not only the settled rural population but also cities and the population of neighboring nomadic states and even for export of dried fruits and other products in the distant countries through the Great Silk Way. It is appropriate to cite once more the mentioned article written by Professor Pokrovskij*: «The water administration independent in its actions from the governmental administration was established in each province of Central Asia and in each Central Asian small town. The same principles of water management that in the Fergana Valley, we notice both in the Syr Darya

region and in the Seven-rivers area in the time of conquest of this territory by Russians. In Chimkent City, by the moment of Russian occupation, managers of irrigation canals were elected by local people; in Tashkent in times of the Kokand Khanate managers of the secondary irrigation network were also elected by local people. The appointment by election, thus, is observed even in cities where representatives the khan's governments have governed. Finishing the chapter devoted to a role and a place of the Islam, its legislative and legal aspects concerning land and water resources management and water use, it is necessary to attract attention of our reader to some important points:

- In Islam, first of all in its sacred books - the Quran and Hadith, as well as in its legislative section (Shariah), all aspects of human life, interpersonal attitudes, relations between a person and society etc are under consideration. Issues of moral and ethics are considered along with legal aspects in the synergetic manner (i.e. not separating from each other);

- In the Shariah, the radical aspect of any developing society - land ownership - is considered and solved. At the same time, a starting point is the instruction of the Quran repeatedly repeated in many surahs and ayahs to the effect that land, everything on its surface and beneath its surface, are property of Allah, and He gives all this to his selected slaves for use. Thus, the Shariah supposes a private land ownership if any person or community by means of developing and irrigation transforms it from "dead" into cultivable;

- The problem concerning water resources is settled in a completely different way; occurrence and development of all living things are associated with water. Therefore, in sacred books (not only of Moslems), water is represented as the Charisma, a certain holy substance. It, as such, is granted to all people and living creatures for common use, for life and development, however, the Shariah supposes private property for water when for its withdrawal from sources (digging of wells, excavation of canals etc.) and its preservation (construction of pools, reservoirs etc.), forces and funds of its consumers are spent;

- One more important lesson is that rules and regulations of the Adat, laws and norms of the Shariah, and also the moral and ethical regulations contained in holy books of Moslems should be daily sunk in Moslems by all accessible means (in the family, at schools and madrasahs, sermons of imams during prayers in mosques) since the early childhood till the old age, such simple and not quite simple truths and values of belief as the following: How adequately to execute duty of fidelity to Allah? How to reach permitted things in deeds, actions and words and to avoid prohibitions? What is the essence of sinful deeds and acts and how to avoid them? What is righteousness (kind deeds and acts for the sake of Allah and the family) and how can it be reached? Owing to such purposeful religious-worldly and ethical-educational activity, «the internal relay of protection» against sinful deeds is formed at the

majority of Moslems with time. Reliable operation of such "relays" or internal moral "brakes" was provided at the necessary moment not only by requirements of belief but also by inevitable negative reaction of neighbors with respect to a shabby act, by threat of civil court if a shabby act got under a category punishable, and, at last, by fear of the court of Allah in the Judgment Day.

3. THE SCIENTIFIC BASIS OF STUDING THE WATER AND WATER USE

Along with religious conceptions with regard to the water and water use, long before forming of above world religions, people gained the practical skills in water measuring, water diversion from its sources, construction of intakes and other regulators, and water distribution etc. in their everyday life. Eight papers devoted to construction of water infrastructure in the ancient times were published in the ICID Journal (Volume 49, No 4, 2000). Headings of these papers convince us that five thousands of years ago, people were able to build the large hydraulic structures, irrigation canals, tunnels, and reservoirs even according to modern scales. For example, detailed information on a number of the dams built in Egypt, Jordan, and Turkey in antiquity, as well as description of so-called nilometers (gauges) mentioned without the name of their creator (these nilometers were engineered and constructed by our outstanding ancestor native of the Fergana Valley Al-Fergani 12 centuries ago) was presented in the paper written by H. Fahlbusch and titled "Water in Human Life: Technical Innovations in Hydraulic Engineering in the Last 5000 Years."

The papers of J. Knauss "The Prehistoric Water Management and Land Reclamation Systems in the Kopias – Basin, Boiotia, Middle Greece", C.R. Ortloff "Innovative Agricultural Practice in the Ancient New World (Peru and Bolivia) in the First Millennium AD", and others are also devoted to ancient irrigation systems and hydraulic engineering in different countries of the world.

It is possible to give an example from the Central Asian region. The existence of large irrigation canals and hydraulic structures in lower reaches of Amu Darya and Syr Darya in the Kushana Empire was studied based on discoveries of the Khorezm archeological and ethnographic expedition under the direction of the famous scientist S.P. Tolstoy and the expedition under the direction of Academician Yakhya Gulyamov¹⁹.

At that time, an irrigated area covered 3.5 to 3.8 million hectares. According to sizes of spoil banks, a width of ancient canals has reached 30 to 40 m. Such canals are enough large ones even according to

¹⁹ Iso Jabbarov. Antic madaniyat va manaviat hazinasi. Tashkent, «Uzbekiston». 1999, 220 pages (in Uzbek language).

modern requirements, and their makers certainly knew designing methods, at least elementary ones, for preliminary specifying a route, cross-section, and gradients of canals, as well as construction methods and management. It is otherwise difficult to understand how these canals of hundred kilometers length and 30-40 m width were constructed. Designing and construction of similar canals is not the simple task even nowadays. At the same time, there was the slave-owning system during the period of the Khorezm Civilization, and slaves built all large public structures. Abovementioned situation refers to all outstanding large-scale water infrastructure and other objects built in the ancient period.

Unfortunately, information on knowledge, practical experience, and skill of builders of these grandiose antique water and other structures had not been kept, and now they are mainly known as a result of archeological excavations. It is possible to assume that how it takes place in folk arts and handicrafts, the accumulated knowledge, skill, and professional secrets were inherited from a teacher to his learner, from a father to his son etc., and under certain conditions, for instance, under collapse of ancient civilization, all experience together with its keepers had been lost.

Direct studying and knowledge of water itself as a natural substance, which are extremely necessary in everyday human life, refer to latter periods. The law of hydrostatics discovered by Archimedes (a body immersed in fluid losses weight equal to the weight of the amount of fluid it displaces) later, with developing navigation and building of large-capacity vessels, has played an essential role under calculation of stability and self-righting of a ship in water. Of course, even brief description of developing different scientific disciplines concerning water, its properties and associated laws is not the task of this book. It is only necessary to note that the water and properties of natural waters, laws concerning hydrostatics and hydrodynamics of surface waters and groundwater, as well as applied problems of water use are studied as original subjects in the universities in all countries of the world that have such institutions (hydrochemistry, engineering hydraulics, hydrodynamics, hydrology, water gauging, oceanography, hydrography, irrigation, drainage, O&M of irrigation systems etc.).

All these scientific disciplines and branches were formed and are developing thanks to efforts of numerous scientists and professionals during many centuries, and this process gains in strength.

Numerous scientific-research and design institutions engaged in water problems, irrigation and land reclamation were established. Universities and special training centers annually train personnel for these sectors. They manage modern powerful tools and technologies including remote sensing methods for water resources monitoring and assessment, Internet etc. It is necessary to emphasize that today humanity, represented by its professionals, scientific and other

institutions, has practically become proficient in secrets of water in all its forms and displays.

Anyhow, in CIS countries, first of all, in Central Asia, and in other countries with developed irrigated farming such as USA, Israel, Japan, France, Italy and others, a long time ago specialists have learnt to design and to build perfect irrigation and drainage systems that enable efficiently to use irrigated water and to manage land resources. Nevertheless, putting of acquired knowledge into practice under different natural and economic conditions often reveals their imperfection and inadequateness for other projects and requires new scientific and design approaches.

Developing and understanding a role of the environment protection including water resources and their sources were different.

One cannot think people did not know that their day-to-day life and economic activity result in producing different wastes: physiological, domestic, construction, industrial ones etc. (according to some estimates, at present, more than one ton of different wastes per capita are produced²⁰) and since wastes are disposed over surroundings, in any case they start to "spoil" the environment.

As far back as in the ancient times, water pollution has drawn attention. Ancient Greek philosopher Plato (427-347 BC) had suggested to punish for water pollution: "...if somebody deteriorates water that belongs to others, spring water or rainwater, which was collected, or spoils water or diverts it for his own purposes by means of undermining or stealing then a victim should go to the law, after estimating the value of his damage. Who will be caught in spoiling water by any "poison" that person should recover losses and also clean a water body."²⁵ Views of Plato are quite modern.

The similar examples but closer to the present are also presented in the above-cited book. In 1338, under ruling of Edward III, king of England, the Parliament has adopted the law that banned disposing of garbage into the Thames River. In the beginning of the 15th century, a French king and later, in the 18th century, Peter the Great have issued the edicts concerning the rivers Seine and Neva that included the provisions for punishment of those who disposed garbage into these rivers. However, in the 20th century, just these rivers flowing through metropolitan cities – Thames and Seine – were polluted up to the unacceptable level. Since the 1960s and 1970s, under pressure of public opinion, the Governments of both countries have undertaken a set of measures for the protection of waters of mentioned rivers. As a result, many lost properties of their waters within the precincts of a town were mainly rehabilitated (fish again inhabited rivers – the first indicator of biological welfare of rivers; their waters do not exhale ill-smell etc.), and

²⁰ K. Losev. Water. Leningrad. Gidrometeoizdat. 1989. 270 p.

²⁵ the same source.

this is an encouraging example of how, in the presence of good will, people can do a lot for nature and consequently for themselves.

It is possible to give a lot of examples from distant history how people were protecting water sources against pollution by means of constructing different structures and facilities. For instance, the famous Roman baths – thermae amaze even a modern man by their sizes and design. The bath pools of Caracalla of 58x22 m and 56x24 m in size could serve 1,600 people simultaneously. Other baths of Diocletian were designed for servicing 3,200 people simultaneously. Their capacity was up to 100,000 people per day, at the same time, hot and cold water was supplied at the rate of about 200 liters per one client. Sewage had to be disposed anywhere (it is clear that into the nearest riverbed). First, sanitary sewer was built in the form of an open canal, later as a box-like canal lined by rubble. In the course of time (centuries have gone) the walls of sewers were raised up with installing an arched cover, filled by excavated material (a cultural layer of the growing town) and transformed into the huge underground galleries that collected and disposed sewage of the entire town. The sewage system of Rome formed the large-scale hydraulic infrastructure with the core element in the form of main sewage line. The sewage network has also served public lavatories. The sewage system invented by Romans was later used in other urban areas of Europe. By the way, such systems are functioning properly even today.

The most ancient sewage system was discovered during archeological excavations of the great city Mohenjo-Daro (the city was founded about 2500 BC and destroyed about 1700 BC by chariot armies). The city sewage systems consisting of the main canal and rainwater sinks, as well as public bath have kept safe and were opened under excavations. All these structures had been faced with bricks.

In the ancient times, wastewater discharged into water bodies have mainly contained wastes of the vital functioning of people and domestic animals and did not included "artificial substances."

Such discharges have "fitted" into the natural biogeochemical processes and caused only negligible and local changes in aquatic ecosystems of the hydrosphere. Nature itself, including water bodies, is able for self-purification and neutralization of impurities; for example, organic substances in streams are decomposed up to the specific level under impacts of the solar radiation, some mineral components disintegrate etc. However, all depends on the proportion between the water (diluter) and impurities (by weight or by volume). Both nature and particularly water bodies are not able to treat excessive volumes of wastes especially if they include insoluble and harmful substances up to the level not dangerous for people. An Uzbek folk proverb: "If water turns round seven times along its path it becomes clean for use" means that water is slightly polluted. Ocean waters are the most powerful "cleaner" of extraneous pollutants, but even such a huge volume of

water has its own limits as natural "treatment facilities." Scientists have calculated that annually the oceans are able to "absorb" ten million metric tons of mineral oil and oil products without any problems. At present, the pollution rates of the oceans amount to eight million metric tons per year (a little less according some estimates), and they are fast increasing. However, waters of the oceans and seas are contaminated not only by oil products but also by million metric tons of other pollutants. Those who watched the famous motion pictures of the team of Cousteau (French scientist and traveler), especially submarine scenes made at the coast of the Mediterranean Sea, definitely remember the awful pictures of vast lifeless fields of the sea where there are neither fish nor other marine creatures. This is a result of wastes disposals from megapolises located along the seacoast. These wastes and discharges contain more than thousands of different organic, mineral, and metallic pollutants and other toxicants. One more citation from the book of K. Losev: "The industrial revolution and later the scientific and technical revolution have resulted in enormous diversity of pollutants of the hydrosphere and added many artificial pollutants, to which nature is not adapted, to natural ones. It is enough to compare the following figures: the number of natural compounds of nonliving material makes up about 2,000, and a composition of living substances includes about two millions of compounds but, at present, a man already can synthesize about eight millions of compounds and their number is increasing each year." The number of different wastes or pollutants is increasing in line with the growth of using minerals and other resources by humanity on our planet.

Under conditions of increasing impacts of human activity on the physical environment, mainly on the hydrosphere, a new science – ecology studying the cause-and-effect changes in the biological environment (wildlife) under impacts of anthropogenic activity has emerged. The important branch of ecology founded by Academician V. Vernardsky is the study of the biosphere as a habitat of a human being.

According to V. Vernardsky: "Water is a separate matter in history of the Earth". Another his statement is important for us: "Any form of natural waters – glaciers, immense ocean, soil moisture, geyser or a mineral water source – make up a single whole, directly or indirectly, but internally, are deeply related each other."²¹

Only in such a context, it is necessary to consider the status of the hydrosphere affected by such important technological interventions as water applications in irrigated farming. As known, water diverted into the irrigation system and conveyed to a field is only partly used by plants for forming the root system, stems, green mass, and yield by means of transpiration through leaves and stems of plants. In

²¹ Academician V. Vernardsky. Selected Works. Vol.4, Book 2. History of Natural Waters. Moscow. 1960.

Uzbekistan, for example, 40 percent of water, on average, diverted from sources is lost within inter-farm and on-farm irrigation canals (seepage, evaporation, and operational losses). In addition, 20 to 25 percent of irrigated water is lost in a field under the furrow irrigation method (deep percolation, evaporation from a wet field, technological runoffs, excessive water applications, and unevenness of moistening). Evidently, in this case, the water use factor does not exceed 0.35 to 0.40. Half of all losses, if no more, replenish groundwater resulting in rising of the groundwater table within the entire irrigated area. The consequences of this process are also well known: secondary salinization, loss of land productivity, considerable volumes of return water disposed through drainage canals into streams or desert depressions. Sometimes, not only dilettantes but also professionals recklessly suppose that if an efficiency factor is low it is possible and necessary to improve it without consideration of the feasibility of these measures and availability of necessary resources. The amount necessary to improve the efficiency of all irrigated systems in Uzbekistan (increasing of the value of efficiency factor from 0.6 to 0.8) estimated by the Institute "Uzvodproekt" makes up about US\$ 20,000,000. All these facts were known for a long time, and therefore, the scientifically based methods were developed for designing not only the irrigation schemes but also for drainage systems (state-of-the-art systems of drainage were developed and constructed namely the subsurface drainage, drainage tube-wells, and systems of combined drainage). It is appropriate to present data mentioned by the famous Russian soil scientist Kovda: today the total area of irrigated lands has reached 300 million hectares all over the world, and the area of abandoned lands due to loss of their productivity exceeds the abovementioned area. The major cause of such a situation is salinization, waterlogging, and desertification of land due to inefficient irrigation. It is clear that any part of lands was likely abandoned due to lack of drainage or insufficient drainage. During the last half of the century, the situation has considerably changed, for example, the modern drainage systems (subsurface drainage) with parameters based on the design studies were built in the recommended areas to reclaim irrigated lands. However, the aim was not completely attained. For example, in the former Soviet Union (last decade, as known, after its disintegration some additional problems in irrigated farming including in O&M of drainage systems take place) the area affected by salinization in the Central Asian republics was being increased in spite of satisfactory operation of drainage systems (according to statistic reports). In the 1980s, in Dagestan, annually an abandoned area of irrigated land made up 50 percent out of the developed lands that were put into operation. The same situation was also in Central Asia. However, at present, looking back and trying to understand the causes of such a situation from the positions of new realities of social and political life (developing of a democratic, jural and secular state with the worthy future) it

becomes clear that apart from economic, technological, engineering, and ecological issues there are also other matters that appreciably affect the efficiency of drainage systems.

First, legal matters concerning settling interrelations of stakeholders (their rights and duties) including designers, builders, servicing organizations and clients – farmers who use services of organizations that maintain drainage systems should be considered. If under conditions of the Soviet system, the need in a special law was not so topical (for example, the law of the Republic of Uzbekistan concerning drainage of irrigated lands) nowadays, under new conditions when market relations dominate in all economic sectors, this law is needed to be adopted. It will promote settling many problems that, at present, are almost insuperable obstacle.

In the second place, a human factor to which was not paid sufficient attention in the past is among important issues for irrigated farming. In this case, a human factor can be the most important one, if not critical one, when private motives protected by the law will be based on minimum necessary practical knowledge and experience, on moral and ethic principles of a person (on honesty, acceptance and implementing of all duties and liabilities to other stakeholders and society).

In the third place, the issue of brackish drainage water disposal is remaining unsolved under construction and maintenance of the drainage systems. Two known ways namely drainage water disposal into the rivers or desert depressions adjacent to the irrigation schemes create new problems with time (for example, high water salinity in lower reaches of the Amu Darya River, or overflowing of the Aydarkul depression brackish water of which inundates agricultural lands around the lake).

Irrigated farming in lower reaches of two largest rivers in Central Asia is under conditions of so-called "creeping accident risks", and for their improving, enormous investments and coordinated efforts of riparian countries are needed. It is possible that in the outlook these circumstances would require revising the theoretic basis and practice of drainage as a whole.

Incidents of "creeping accident risks" are not isolated instances under growing water use and specific requirements to water quality. For example, water utilities of Tashkent and practically of all large cities in the region where they meet the needs not only drinking and household water supply but also all other water requirements of urban areas (irrigation, water for construction, industrial enterprises etc.) are constantly operated with overload. If you faced the situation of "creeping accident risks" or especially "creeping crisis" such as in the Aral Sea region (at present, the second stage of this crises affect Haloxilon and other bushes in the Garagum and Qyzylqum deserts that fix vast sands preventing their mobility) it is very difficult to overcome it...

Overview of the historic experience of practical use of water as the most important natural resource for vital activity of a human being, of different practical and theoretical knowledge (scientific disciplines) related to studying natural waters, modern trends in water use and protection, and of the attitude of a man to nature and, in particular, to water resources, we would like to finalize by one citation from earlier works of K. Marx²²: «...a man lives at the expense of nature. It means that nature is his body with which a man should be in the process of permanent relations in order to survive. The fact is that physical and spiritual life of a man is inseparably linked with nature means nothing else than nature is internally integrated because a man is a part of nature». It is said as «to hit the nail on the head!»

It is pity that in the former Soviet Union they have forgotten or neglected these prophetic words of the philosopher, but at the same time such his statement as "Religion is opium for the people" was everywhere and emphatically sunk into the consciousness of the population of this vast country.

If we would consider in-depth, at least, post factum, cause-and-effect relations, for example, origins and progress in the Aral Sea disaster, it could be possible to reveal that a man has behaved as "master" with respect to nature and water resources, and wanted only "to take" but has not wanted "to treat its wounds", i.e. to preserve, at least not in full measure, ecosystems destroyed in lower reaches of rivers in the Aral Sea region...

4. THE WATER AND CIVILIZATION. GLOBALIZATION – FOR AND AGAINST A MAN AND NATURE

As known, in the course of human history, the civilizations have emerged at certain stages of developing social society with a nature of productive forces and relations, culture, and moral-ethic norms for members of the community peculiar to these stages (Roman civilization, civilizations in the African continent, in Central America, India, China etc.). Ancient civilizations were developing in the period of forming the slave-owning system based on use of practically free of charge slave labor. We today are surprised by the grandiosity of many unique structures including pyramids in Egypt, the Great Wall in China, the largest baths in Rome, the Great Dam of Ma'rib²³ in Yemen, the long ancient drainage tunnel of Lake Fucin passing through the rock in Italy²⁸, the biggest irrigation canals in the period of the so-called Caltaminar Culture in Khorezm⁸. All these structures, belonging to the period of thousands of years BC, were a result of the works of millions of slaves.

²² K. Marx, F. Engels. From Earlier Works. Moscow. 1956. p.565.

²³ ICID Journal, 2000, Vol.49, No 4

⁸ Iso Jabbarov (see above).

Another peculiarity of ancient civilizations, as was mentioned by Jerome Priscolli in his presentation in Paris²⁴, citing the famous anthropologist, is the following: "One of the remarkable facts in history of developing of agriculture and the urban civilization in the ancient world is their location in the regions with quite limited water resources." Limited water resources have stimulated search of efficient technologies and introducing of restrictions as measures for water saving and protection. As we mentioned above, introducing of irrigation under paddy rice cultivation has promoted forming, first, regional states and later a centralized state of Japan in the process of applying the imported technology and experience learned from China and Korea.

Forming any state with irrigated farming, in its turn, was a powerful incentive to developing of irrigation because in all times irrigated farming has provided ensured production of foodstuffs for the population. Undoubtedly, rivers have influenced on developing the civilizations; and as a result, the river basins were, completely or in a considerable extent, developed. Even in the ancient times, it was the need in the co-operation between riparian states in use of river waters.

The experience of western feudal civilizations of the later period (Middle Ages) also confirms this statement. It is known that an origin of Dutch democracy was based on the experience of decision-makings with regard to local water sharing. The Gordian knot of complicated interlacing of political, economic and water problems should be "cut" especially in the process of integrated water resources management at the basin level.

Retuning to the ancient period it is necessary to note that development of irrigated farming forms gradually democratic ideals and feeling of comradeship under managing of irrigation by joint efforts. Developing of irrigation in Central Asia can be apt illustration of above statements. A small management group, elected from experienced peasants and water managers (in Uzbek language - mirabs or aryk-aksakals)²⁵, was in charge of construction and operation of big and small irrigation canals and systems. Water users themselves carried out all labor-intensive works related to construction, repairing, cleaning, and maintenance of irrigation canals and water infrastructure by means of khashars (general and voluntary activity), as well as maintained the management group. Such an approach to implementing of irrigation works that was uncommon for other regions was a forerunner, or more exactly, congenial to tasks of water user associations – the system that has arisen in Europe at the beginning of the 19th century, and is now

²⁴ Jerome Priscolli. The World Water Council and Civil Society (the speech at TV program. Marseilles, 20 October 2000)

²⁵ Abror Kodirov, Uzbekiston Irrigatiaysi Tarixidan Lavkhalary. Tashkent, «Khalk Merocy». 1998. p.140.

applied in many countries all over the world under.²⁶ The major task of such water user associations is equitable sharing of available water resources among all water users. It is obvious that moral and ethic norms were always the integrated part of water relations together with technical and economic aspects.

In the 20th century we have got already used to terms "modern civilization", "world civilization" etc., and at the same time we are of opinion that separate civilizations do not exist and the process of globalization and merging of modern civilizations is in progress. The attempt to review the modern practice of fresh water use and to show the historical ties between people and water resources in the broader context of forming civil society was undertaken as noted above. The alienation of people from nature, first of all, of urban population, along with fast developing of available fresh water resources and their pollution is the distinctive feature of the current 21st century with its globalization processes. Many town-dwellers, living in multistory apartment houses and working in the similar premises, have vague ideas concerning a city water supply.

Globalization is a shift of modern civilization to a new level. Due to advances in communication, transportation, and information technologies the growing economic, political, technological, and cultural linkages connect individuals, communities, businesses, and governments around the world. A fast growth of the population around the world was undoubtedly the first cause and catalyst of globalization. The unprecedented rates of the population growth were observed during the last one third of the 20th century (see Table 4, the population growth in Uzbekistan). According to forecasting of specialists approximately the same rates will kept by 2025, and only in the mid of 21st century the considerable decrease in the population growth is possible. Since the mid of 20th century some economic sectors were subjected to globalization. Water professionals and land reclamation specialists were among the leaders who have established their international nongovernmental organizations. And this is clear. As was mentioned in the beginning of this book, about fifteen countries have faced the fresh water deficit as far back as in the 1950s, and the number of such countries has fast increased. On the other hand, in the post-war period, many countries around the world have begun large-scale development and irrigation of virgin lands; however, shortly thereafter it became clear that the portion of abandoned area of irrigated land owing to different causes (salinization, waterlogging, desertification etc.) made up a considerable part of new-developed lands. These problems have got the global scale.

²⁶ Douglas L. Vermillion. Irrigation Management Turn over: Structural Adjustment or Strategic Evolution? IIMI Review. Vol.6. №2, 1992

Under these conditions, progressive scientist, professionals, engineers, and managers engaged in water-related sectors have initiated establishing international non-governmental organizations that cover some specific fields of water management and land reclamation as the ICID, IWRA, GWP, UNESCO IHE, and others. Finally, in 1996, the International Water Council (IWC) was established. To demonstrate the objects of these organizations we cite as an example one statement from the Charter of the International Commission on Irrigation and Drainage: "The Mission of ICID is to stimulate and promote the development and application of the arts, sciences and techniques of engineering, agriculture, economics, ecological and social sciences in managing water and land resources for irrigation, drainage, flood management and river training applications, including research and development and capacity building for achieving sustainable irrigated agriculture around the world."

Taking into consideration their fields of activity or specialization, their own objectives and tasks are set forth in the Charters of other international organizations, and therefore there should not be an overlapping in their activity.

The collective leadership represented by presidents democratically elected from among leading water professionals and scientists heads all these organizations. In many countries of the world, they have their own primary units – the national committees or commissions (for example, the ICID has its national committees in more than 80 countries). They routinely hold international congresses, conferences, symposiums, and seminars, as well as publish their proceedings and disseminate this information through the national committees.

In short, they carry out the huge and useful work related to exchanging the experience and knowledge between water professionals, scientists, and managers that present elite in the field of water management and land reclamation.

However, some aspects are needed to discuss. The following thoughts were contained in the abovementioned speech of Jerome Priscolli: "There are trite expressions, like: we are living in the epoch of Internet and informational governance; and democracy is developing and all people should have equal opportunities to participate in the decision-making process affecting their interests. It is correct for participants of activity in the water sector. In fact, the base for professional decision-making has transformed from paternalism (I, engineer, shall care for you) to co-ordination (I, user, need your experience, but all decisions will be jointly made)".

However, there is the reverse of the medal (another reality of these new relations-powers): the world of separation caused by globalization. We have a dread of faceless global organizations that neglect local interests and rights for the sake of global interests. Globalization seems to provide a new form of paternalism, which proclaims, "We are here in order to care for you, and everything will turn out well."

This is the vision of problems from the point of view of the water professional who tries to illustrate both positive and negative aspects of the process of globalization in the water sector.

It is necessary to note that Mr. Priscolli is simultaneously both right and wrong. He is right because the abovementioned organizations engaged in water management and land reclamation were established for narrowly specialized activity, and they have united under their banners of professionals, scientists, and managers (i.e. the elite). Leaders of these organizations, as well as leaders of numerous working groups, are although elected in the actually democratic manner but from among the representatives of the elite of different countries who are sometimes related by corporate interests, personal contacts etc. The water elite, diverse according to its professional composition, delegates its representatives into international organizations without real consideration of the specific profile of that or another body.

However, it is the most important that the water elite did not still abandon its paternalism approaches with regard to water users in some countries. In this case, it is difficult to agree with his opinion that "... the nature of professional decision-making has transformed from paternalism to co-ordination..." Under such conditions, the process of decision-making within the international organizations can be subjected to influence of corporative and narrow departmental interests. For example, the dispute (it is more exact how this dispute is conducted at the international level) concerning the report of the International Commission on Dams (the report was prepared based on reviewing the experience of designing, construction, operation, and maintenance of eight dams built in different countries in Asia, Africa, Europe and America) which highlights adverse impacts of dams under operation on the environment resulting in rivers' degradation, damage of existing ecosystems etc. and proposes new rules and concepts for justification of construction of new large dams.

It is necessary to emphasize that sentiments against large dams have arisen neither today and nor at once. At the beginning of the 1990s, reviews devoted to the global consequences of anthropogenic activity resulting in destruction of river ecosystems have appeared in some journals ("Our Planet", "Science" etc.)²⁷. In particular, Dr. Philip Williams, the president of the International River Network, considering impacts of large dams, has written that degradation of river ecosystems can be explained by different anthropogenic impacts including pollution, deterioration of catchment areas and transformation of drainage patterns. However, the large dams should be undoubtedly ranked as the first ones among above causes because they exert the direct impacts on river ecosystems with far-reaching implications. They radically impact the hydrological regime and change, beyond recognition, the flow

²⁷ From the reviewing paper: Water is Invaluable Gift of Nature. ICWC, SIC. Tashkent. 1997.

pattern of even the largest rivers, for instance, of such rivers as Nile and Indus.

Further, he has mentioned that the United States was the first country that started to construct large dams and suffered from this activity. In fact, more than 49,300 dams of 7.5 m (25 ft) high and above, including 20,000 dams out of the supervision of the federal bodies, were constructed in the United States²⁸. The dams not only affect naturally established ecosystems but also exert risks for downstream areas under emergencies. In 1972, two major accidents were at dams in the United States – the Buffalo Creek Dam in West Virginia and the Canyon Lake Dam in South Dakota. After these accidents, the United States Congress has adopted the laws “On the Inspectorate for Dams” and “On Dam Safety”.

In 1997, the special seminar was held in Switzerland under the aegis of the World Wildlife Fund for Nature and the World Bank with participation of representatives of Governments, private sector, international financial organizations, NGOs and the population suffered from accidents, as well as experts engaged in dam construction and their permanent critics. After intensive debates, participants have proposed to establish the international group with the highest level of competence for comprehensive revising the world experience of dams’ construction.

The Resolution of this seminar was the basis for establishing the special commission consisting of 12 independent experts under the WWC in the beginning of 1998. This commission has arranged the study of dams in eight countries of the world excluding China and India where diversity of natural and economic conditions predetermined the peculiar approach with the purpose of covering the entire multiplicity of their experience.

By the way, the assessment of dams’ construction is ambivalent in China as well. On the one hand, frequent heavy storms in Central China cause destructive floods over the Yangtze River’s floodplain. In the report of 1954, it was shown that in order to avoid destructive consequences of summer floods that destroyed 3 million houses and resulted in 2,000 victims, 2.2 million people were resettled, and the decision to control the wayward river was made. Therefore, a cherished dream of Chinese rulers during the 20th century was construction of the dam “Three Canyons” that would allow to control floods.²⁹

Opponents of this project (a dam’s length of 1,609 m, and its height of 182 m) present a number of sound counterarguments – fast siltation and pollution of the reservoir, flooding about 4 million hectares of adjacent land, high cost (US\$ 75 billion against US\$ 17 billion officially approved by the Government) etc.

²⁸ Safety Evaluation of Existing Dams/ US Bureau of Reclamation, Denver, 1992

²⁹ Proceedings of the seminar “Water Issues in Eastern Asia” (China, Japan, and South Korea). The SIC of ICWC, Tashkent, 2000.

Under existing conditions, a dispute of fundamental importance between two international professional organizations - the International Commission on Dams (ICD) and the International Commission on Irrigation and drainage (ICID), which, by the way, are responsible for different fields of activity (river training and flood control, and irrigation and drainage) is possible and even expedient. However, in our opinion, such a dispute should be conducted in another manner different from the current one. A citation from the letter of Secretary General of the ICID under the name "Dams for Developing the ICD" can be given as the illustration of this dispute³⁰. "Do you remember as the Interstate Commission for Dams (ICD) has raised a clamour based on the review presented by the World Bank (WB) and the World Wildlife Fund for Nature (the matter concerns the review that was presented at the international special seminar in Switzerland) on inefficiency of dams constructed in the past and on the need to strengthen criteria and rules for construction of more efficient dams in the future? In fact, I shall never realize for what this Commission was established while everyone sees a role that dams play..." After that, the letter signed by three presidents of international professional organizations - the ICID, ICLD (the Interstate Commission for Large Dams), and IAHS (the **International** Association of Hydrological Sciences) and addressed to the President of the World Bank Mr. J.D. Wolfensohn has appeared, since the WB has stopped financing the dams under construction in developing countries... Later, the letter of Secretary General of the ICD was disseminated with clarifications of the position of this organization and so on. The thought of teaching somebody never occurred to the author, but there is an attempt to evaluate the correctness of a position or proposals of Jerome Priscolli. His position is based on the following principles:

- A relation between water policy and ethics is recognized over the world to an increasing extent;
- Ethical considerations with respect to decision-making and water management are related to such questions as: how and who does participate, and at what level of the decision-making process; whether they have access to developing of alternatives; what are possible expenses under consideration; and what basic assessments of alternatives?
- Finally, water resources management is regional activity, but powerful international corporations that affect the regional governance have their own agenda, which should be adjusted to the regional needs;
- These issues contain an ethical aspect. They clearly show that water is one of symbols of life, revival, purity, and hope. This is our relation with nature and our cultural heritage; and

³⁰ News Update, Special Issue, October & November 2000

- Today, it has become clearer than ever that construction of water infrastructure by means of collective participation is the important way for creating of civil society or, as it is else called, for environment management.

Public participation in the decision-making process should be adequate with an extent of ethical considerations of these decisions regarding water resources. In his opinion, all these statements are the powerful imperative for the World Water Council (WWC) for extension of its relations with civil society. Declaring the idea of establishing the world intellectual center, the WWC has undertaken obligations for developing a dialogue and partnership between professional water elite and managers and civil society.

The Second World Water Forum was held by the WWC under the aegis of the World Bank in March 2000 in Hague. Along with water professionals (scientists, specialists, and managers), statesmen and numerous representatives of civil society (representatives of farmers, female organizations, and youth organizations), as well as representatives of mass media have participated in this forum.

In his opening speech at the Third World Water Forum held in Japanese Kyoto City, 16-23 March 2003, (more than 6,000 participants), the President of the WWC Mohamad Abu-Zeid has set forth some priority topics for the water sector, and it is remarkable that the issue of water ethics was mentioned as the primary task.

This fact allows hoping that the accrued problem concerning dams will be adequate solved, and the WWC shall play a leading role.

In conclusion, it is necessary to mention that further globalization of water problems in the future is unavoidable and positive. Self-contradictions more often occur when an opinion expressed by civil society is neglected in the process of decision-making, and decisions themselves are nontransparent and misunderstood for the most water users i.e. the requirements of social ethics are left behind. In addition, such decisions should be made under a motto "for the sake of a man and nature" in contrast to the present one "for the sake of a man." The way of overcoming the nascent contradictions runs through the joint discussions of all stakeholders and making a compromise.

5. «INHUMAN ATTITUDE» TO WATER OR SOCIAL ETHICS OF WATER USE

Now practically everybody knows that physiological functioning and economic activity of a human being are related to producing wastes that are very diverse, from excrements and household wastes to technological wastes including hazardous wastes of chemical and nuclear industries. It was estimated that, on average, about one metric ton of various wastes is produced per capita annually, and consequently more

than 6 billion tons of wastes per year are accumulated on Earth, but the saddest fact is that major part of wastes somehow get into water sources (rivers, lakes, and groundwater). The fact is that this process is in progress at increasing rates not only following to the population growth (by 2025 – 8 billion people, and by 2050 – 12 billion people) on our planet but also according to the growth of water-consuming economic sectors (irrigated agriculture, mining, and chemical industry). According to K.S. Losev, under manufacturing of one metric ton of finished commodity the following volumes of wastewaters are discharged: leather – 82-110 cu m; synthetic rubber – 250 cu m; sulfuric acid - 60-140 cu m; and kapron – 2,500 cu m. It is known that for production of one metric ton of cotton fiber (or 3 ton/ha of raw cotton) about 10,000 cu m of water are needed, and at the same time, one third of this water is disposed into the drainage systems as return water. Obviously, one cannot hurry determining all these things, as “inhuman attitude” to water resources, because developing of civilizations, especially of the modern civilization, is impossible without the growth of water consumption and use, as well as without certain deterioration of water quality. However, in this case, what does mean the term “inhuman attitude” to water resources?

Of course, it is possible to present obvious and striking examples of “inhuman attitude” to water. Many people have watched full-length documentaries made by the team of Jacques Yves Cousteau, French scientist and traveler, in the process of researching waters of seas and oceans and processes taken place there. Waters along a coastline of the Mediterranean Sea near large industrial cities present the rather sad picture. Lifeless submarine deserts without flora and fauna have formed due to poisonous effect of untreated discharges both of industrial enterprises and sewerage systems of large cities. According to Cousteau, “... the world ocean is under threat, and its fauna bears irrevocable losses – during the last 25 years fauna has reduced by 20 to 30 percent. Pollutants do not have any outlet from this largest water reservoir on Earth... ”

B. Kommoner has written even gloomier: “Asthma threatens the ocean, but a dead ocean means a dead planet.” Such a disaster having the beginning can be endless: once started, as in case of a chain reaction, it might have intense continuation and development with unpredictable consequences in the form of “creeping damage” or even as “creeping crisis.” A specific feature of such “creeping” hardships is impossibility or extreme complexity of specifying driving forces and initiators of these events because the stage of “creeping” breakdown or crisis arises during a certain period of time when many things can be changed beyond recognition. Above-mentioned thoughts may be clarified by the following example.

Let us present, first of all, brief historical excursus. Commander, ruler, and poet Zahiruddin Babur, the last representative of the Timurid

dynasty, who founded the Mughal Empire of northern India, left us his autobiography entitled *Baburname*³¹ (published in English as *the Memoirs of Babur*). He has described some cities and settlements, which he visited at that time (Andijan, Samarqand, Shakhrizyab, Tashkent, Kabul and others). In his descriptions, he was emphasizing availability or lack of clean flowing water in irrigation ditches (ariks in Central Asia), considering this aspect as an important indicator of the living standard of local population. Majestic gardens and parks of Samarqand and Shakhrizyab that remained after Tamerlane have amazed imagination of young Babur. The major place among all this magnificence belonged to water – murmur flowing water in irrigation canals, mirror-like surface of ponds, fountains etc. in combination with trees, flowerbeds, lawns, and architecture of small forms (pergolas, pavilions etc.). Later, Babur was very surprised when he has not seen the irrigation ditches with flowing water in gardens of Delhi, Agra, and other cities of India conquered by him. According to Indian historian Ranghava, one of merits of Babur and his ancestors is the creation of perfectly designed landscape architecture around palaces of the rulers, Maharajahs and other men of means. Waters in the form of ponds, fountains, and canals are important components of landscape architecture. However, a yearning for flowing water in the irrigation network of his native land did not leave him and was reflected in his poetry of the Indian period. In one of his quatrains, he has written “A grief of parting with flowing water made my eyes also wet...” (an interlinear translation).

There is evidence in *the Baburname* that townsmen of Tashkent have used flowing water from irrigation ditches (15th century). A few centuries later, when the troops of Russia after the monthly siege of Tashkent went into the city, they have seen the same picture (May 1865), or it is more exact they used this fact to force the city to surrender... Closing the main canals that supplied water to the city promoted the siege. It was the beginning of supplying fresh water into the urban irrigation network. Water in ponds was nearing the end, and there were not practically wells in the city due to rather deep freshwater aquifers... About 100,000 people inhabited the city in that time. The city was enclosed with a fortress wall with 12 gates. The city was surrounded by waste areas crossed with roads starting at city gates, and only from the direction of the Niyazbek locality (in the west), orchards, vineyards, and vegetable gardens of townsmen overstepped the limits of the city, as well as walls experienced the destructive impact of the time. At that time, Tashkent occupied about 1,100 ha in area extent, and its water supply was entirely based on water delivery through irrigation canals³².

³¹ Zahiruddin Babur, *Baburname*.

³² Tashkent. The Atlas. The Department of Geodesy and Cartography under the Cabinet of Ministers of the USSR. Moscow. 1983 (issued in view of the 2000-year anniversary of Tashkent).

After establishing Turkistan Territory under ruling of the Governor-General (1867), construction of a new part of Tashkent, so-called "a new city", with the network of semi-ring and radial-directed streets with the center at the present square named after Tamerlane was started based on the Master Plan. Having studied the experience of water supply and irrigation in the old part of Tashkent, Russian engineers have brilliantly used it for a new part of the city: irrigation ditches on each side of a roadway with planting of local species of trees – plane-tree, oak, and poplar. The irrigation network within residential areas was also a source for drinking water supply and other purposes: household use, irrigation, creating of microclimate under conditions of hot climate in Tashkent. An attempt of the local administration to build a water-pipe in the "new city" with a water tower at the Salar Canal (at that time, the Salar Canal has run along a frontier of the new city; i.e. radial streets named after Pushkin, Khamza (former K. Marx), Akhunbabaev (former Kuybishev) and others have run from the center (the monument of Tamerlane) to this canal) undertaken in the last quarter of the 19th century was unsuccessful: the project was developed with faults, its route was poorly selected, and generally the administration did not have funds for its remodeling and completion³³.

It is interesting to note that at the beginning of 20th century, 28 aryk-aksakals (operators of irrigation canals) and mirabs (irrigators), and 2 tuganchis (operators of regulators), including two aryk-aksakals, 6 mirabs, and partly two tuganchis in the new part of the city, have managed main canals and an entire irrigation network of the city that covered all households in the old part and residential areas in the new one³⁴.

Thus, the water supply of Tashkent using flowing water of irrigation canals was based on traditions related to the devout attitude of our ancestors to water as a certain sacred object or a certain source of "luminosity" (let us remember a saying: "water is luminosity").

Paradoxically, but it is the fact that such a morally pure attitude to the water became to change since the mid of 1930s. Unfortunately, piped water, which at the beginning of the 1930s was supplied to a new part of the city, and on the eve of the World War II to the centers of residential areas of an old part of the city and later in post-war years and at the beginning of the 1950s to each street and to impasses, and at last in the 1970s reached the most courtyards of the old Tashkent has played a certain role in above mentioned process. These wonders of engineering, seemingly, provided our homes with the facilitation in private life, health, and joy; however, it is better not to hurry with specific conclusions. The recollections of those years, sometimes joyful

³³ A. Tyurikov. Salar: kecha, bugun va ertaga. Newspaper «Toshkent okshimi». 1977, 1st April

³⁴ The temporary rules for irrigation in Turkestan Territory (approved by the first Governor-General K.Kaufman), 1878.

and vivid, sometimes sad and dim, are always on author's mind... A gang of boys, which pick unripe apricots or apples in their own courtyard or in neighboring one, are in hurry to wash these fruits in an irrigation ditch, because they remember instructions of their parents: do not eat fruits without washing. In the morning, our mothers have taken water from the same aryk (an irrigation ditch) into buckets and washbasins for its settling and then for cooking.

Later, having become youths, the same boys equipped with shoulder-yokes and two buckets and special coupons for water (2 kopecks for each bucket with drinking water) were in a hurry to a water-pipe post in a guzar (a center of residential block (in Uzbek language: makhallya)). When a water pipe was extended up to the end of each street, delivery of water to households become more easy occupation for boys and girls, however, an aryk with merrily loquacious water and a small pond in the center of our courtyard have lost their former function – now water from aryks is only used for irrigation of a flower garden, trees, and in especially hot days after sunset for watering of streets and courtyards in order to create coolness. In addition, water from aryks was used for preparing the clayey mixture to form adobe bricks. With delivery of clean tap water into each courtyard, aryks have fast lost their functional value and, first, turned into runoff ditches and then went out of operation completely. Now, all functions of aryks with flowing water were inherited by a water pipe. However, in the end of the 1960s, during the summer period, closer to the evening, water taps did not meet the requirements to water pressure – it is apparently that all residents watered their courtyards, flowers, and trees simultaneously.

Unfortunately, the similar situation was repeated after the 1966 earthquake in reconstructed Tashkent, but in another scale. For short, let me make a quotation from the paper of the correspondent of "Literary Newspaper" Mr. Tyurikov³⁵(1975): "...Tashkent increases in size and grows prettier each day. At the same time, paradoxically, many residential blocks are subjected to torment by dust and sunlight." Moreover, hereinafter: "What is a reason? In our opinion, this is lack of aryk water. The Contractor "Glavtashkentstroy" has left new residential areas of Unus-Abad District without water... The irrigation network of residential areas of Chilonzar and Karakamish districts is also out of operation... This sad list of losses is too long."

Data given in Table 4 demonstrate the output rate growth of the Tashkent's Water Supply System and increase in water consumption per capita for the following years: 1965, 1975, 1980, and 1998. It is necessary to note that the old standard developed for cities of South Russia recommends the rate of water consumption equal to 250 l/day per capita that is quite high.

³⁵ Tyurikov V. Prose for Aryks. «Literary Newspaper», March 5,1975 No10.

Such a rate was applied under designing of residential areas in our country until last years. A new rate of 330 l/day per capita was put into practice by the Resolution of the Khakim (mayor) of Tashkent dated October 13, 1995³⁶.

In Mr. Salikhojaev's opinion, he was the Director of the Water Supply Agency for Tashkent "Tashvodokanal", this is a rather high rate of water consumption in comparing with the rates adopted in Western Europe (1.5 to 2.0 times higher) and in Japan (3 times higher).

Table 4

Indicator	Years			
	1965	1975	1980	1998
Population in Tashkent, million people ³	1.174	1.595	1.821	2.130
Municipal water supply through water-pipe, mln. m ³ /year ^{37/38} Total:	163.0	459.0	573.0	899.0
Including: for the population and for communal-general needs	101.0	323.0	452.0	687.0
Water consumption, liter/day per capita (actual) Total:	381.0	790.0	864.0	1,160.0
Including: for the population and for communal-general needs	236.0	556.0	682.0	886.0
Standard water consumption, liter/day per capita	250.0	250.0	250.0	330.0 ⁴³
Efficiency factor of water-supply in the city	0.85*	0.807	0.785	0.70 ⁴²
Total water losses in the water-supply system, liter/day per capita	57.0	152.0	186.0	348,0
Specific water consumption for the needs of the city (communal-general needs of enterprises, irrigation, construction industry, etc.), liter/day per capita	74.0	288.0	428.0	482.0

However, this issue should be the subject of much study taking into consideration climatic and other conditions of our country. As regards the amount of specific water consumption given in Table 4 (if to present actual water consumption per capita that equals 1,160 l/day as the number of buckets for visualization, a storage capacity of an average bucket is 10 liters, then specific water consumption amounts to 116 buckets per a person) it exceeds all reasonable limits. Doubtless, this volume includes many water losses within the urban water supply network. Therefore, it is extremely important to know components of specific water consumption in the city. According to data of the Institute "Tashvodgeo"⁴², at present, the efficiency factor of the water supply system in Tashkent is rather low (0.65 to 0.75). As regards an efficiency factor in 1965, it may be conditionally assumed as equal to 0.85 (the efficiency factor in Moscow in the 1970s). Efficiency factors for the

³⁶ Khabirov R.C., Gutnikova R.I. Water Supply Problems in Uzbekistan. Proceedings: «Water Resources, the Aral Crisis, and Environment», Tashkent University, 2000.

³⁷ S. Gulomov, R. Ubaydullaeva, E. Akhmedov (see above, Chapter 1)

³⁸ Z. Salikhojaev. Living Water. «Shark», Tashkent, 2000. Data for 1998 (pp. 218 and 228).

³⁸ Tashkent. Geographical Atlas, AoS of UzSSR, Moscow, 1984 (issued for the 2000-year Anniversary of Tashkent. Data for 1965, 1975, and 1980).

* Academician V. Yanshin: Speech at the Plenary Session of the VI All-Union Hydrological Conference. Proceedings, Leningrad, 1978, Volume 1.

⁴² Khabirov R.S., Gutnikova R.I. (see above)

interim period (1975 to 1980) were calculated by interpolating between the values of 0.85 (1965) and 0.70 (2000).

Unfortunately, an efficiency factor of the urban water supply system was not specially studied, and therefore there are not reliable published data. Above-mentioned values of the efficiency factor are based on expert judgments. At the same time, it is necessary to note that a water supply system, for example in the old part of Tashkent, especially the distributing network within the residential areas that was installed in trenches using steel pipes, as a rule, without any protection measures as far back as in the 1960s and later, was not rehabilitated not only after expiring the service life (15 to 20 years) but also up to now. Under these conditions, forming numerous cracks in pipes is doubtless. In addition, the low quality of stop and regulating valves (valves, faucets, shower mixers etc.) in apartments and public buildings contribute in forming steady leakages that nobody deals with... Heavy losses of drinking and hot water take place in subbasements of multistory apartment houses (about 10,000 in the city) due to poor maintenance by communal service agencies. Therefore, numerical data given above with respect to efficiency factors can be even overestimated

...

Based on data on annual specific water consumption and its trends during the 35-year period it is possible to make conclusion that nowadays the urban water supply system is operating under conditions of steadily increasing useless water losses and consumption for irrigation and other needs that are not directly related to drinking and household water supply to the population. Today, inhabitants of Tashkent do not practically face problems related to water deficit but this well-being is provided at the high cost – only about one fourth of water delivered to the water supply system is used for its direct allocation. In other words, all water entering into the water-supply network is subjected to the complicated and expensive treatment (settling of river water in sedimentation reservoirs, chemical and biological treatment, aeration etc.) in order to achieve the acceptable level of water quality in line with the standard of drinking water (water should be transparent, without odors, and mineral and organic impurities hazardous for health etc.). On the other hand, under real water supply conditions in the city when all water needs are met by the urban water supply system in full volume, it is difficult to separate components of water consumption and to provide special measures for reducing their amounts. For example, in order to reduce useless water losses and to increase the efficiency factor of the water supply, at least, up to 0.85 it is necessary to rehabilitate the distribution network (at the level of streets and courtyards) that was built in the 1960s and even in the 1970s, as well as to replace the stop and regulating valves in private houses and multistory apartment houses, to install water meters etc. At the same time, in order to reduce maximally consumption of tap water for water applications it is

necessary to rehabilitate the irrigation network in courtyards and residential areas that today is out of operation. Apparently, owing to this cause, the current level of water consumption was taken for drawing up the Master Plan for Development of Tashkent until 2015 already adopted. A daily water supply to the city was specified at the level of 2.51 million cu m per day (almost 900 liters per day per person or more than 1 billion cu m per year) in view of the population growth up to 2.8 million people. Such a situation can be classified just as "creeping damage."

We would like to restrict ourselves to above comments and not dramatize the situation, but one matter should be noted: when we allow over-consumption of the drinking water that is treated to meet sanitary requirements for other needs of the city removed from drinking water supply, especially under withdrawing water from freshwater aquifers whether, we don't use the share of water resources belonging to future generations of townsmen?

Considering the current situation with water supply in Tashkent in detail, the author has as two his objects. Firstly, he would like to show that this process has a spontaneous nature although there were the Master Plans for developing the city. The notorious approach when an achieved level was as the reference point for following long-term planning has played an adverse role in developing the water supply system in the city: negative consequences of the practice of satisfying all increasing water needs by means of the urban water supply have permanently accumulated without necessary studying and consideration. Therefore, today it is almost impossible to specify major and minor factors that have resulted in such a situation.

Secondly, because of the complexity of this matter and numerous stakeholders in the field of water supply and water use often with different interests, the author can be easily accused of malevolence or of something else. However, timely settling these issues and providing public awareness are more important than possible accusations.

In a general way, I am trying to formulate unpopular answer to this painful question: "Why it was possible?" Firstly, we all, water professionals and scientists of older generation who engaged in water management (water managers, hydrologists, hydrogeologists, water supply specialists and others) have studied in the universities where along with numerous engineering subjects we learnt that "a human being is the master of nature, and according to his will the rivers can flow in the converse direction..." Based on these positions, we have got the persistent perception that water is a renewable and abundant natural resource, and it must serve the interests of people always and everywhere; and a man is free in his actions i.e. does not bear any responsibility for water resources. Only last 20-25 years, other functions of water resources (economic, social, recreational etc.) and the necessity of their protection are under serious consideration.

Secondly, owing to replacing the religious ideology by the new Soviet ideology and upbringing, customary moral and ethic rules and norms formed by centuries have become gradually deformed, and, at the same time, new and actually reasonable moral norms were not completely formed or were not sunk in consciousness of people. This circumstance becomes apparent in our attitude to water as well: we (of course, not all) do not experience "the discomfort due to loss of flowing water", we are indifferent with respect to "the prose of aryks" and are able to fill them by excavated material or to pollute their water by the most inhuman way (by our domestic and other wastes), changing an aryk into a sewerage ditch, as if our internal brakes, at once, have stopped working.

In addition, in the process of making important decisions at the different levels of water management, a core attention was paid to engineering, technological, or economic aspects of the projects, but their social and ethic sides retreated into the shadow, for example, there was no a case when townsmen have been informed about the resolutions related to water management of the former authorities of Tashkent, let alone their public discussion. Quite the contrary, the critical comments presented even in the central newspapers, as was in the case of publications of V. Tyurikov and A. Tyurikov, were disregarded by the city administration.

Answers to the questions "Is there a way out from the existing situation?" and "How to stop the creeping damage?" will be even less "comfortable" than answers to previous questions.

The fact is that such a way out is related to absolute recognizing of the existing situation. The next step is the recognition that capabilities of the city administration are insufficient to separate the sources of water supply for different purposes: drinking water supply, technical water supply, irrigation etc. Therefore, without the broad support of population it is impossible to settle this problem, including its discussion in mass media and at the meetings of city inhabitants. The social and ethic aspects of this problem or the core of "human attitude to water" starts to appear just in such actions. Further the following issues should be settled:

- Institutional-management issue – by means of establishing the commission consisting of representatives of different groups of the population, water professionals, and scientists; and
- Financial issue – by means of creating the special fund (for example, called «Obi-Khaet for Tashkent») with the contribution of finances from the city budget, state budget, and some sponsors.

The first and most important activity financed by the Fund should be complete audit of all the water-supply system and irrigation network of Tashkent with specifying their physical conditions in detail. After studying and analysis of collected information, the scientifically based concept of water supply in Tashkent should be developed for the long-

term outlook (until 2025 and 2050) with specifying the priority objects of rehabilitation and remodeling of the water supply system and irrigation network.

The large-scale activity according to its scope of works and investments has to be undertaken in order to eliminate "creeping damage" and to achieve sustainable water supply in Tashkent.

All known events of "creeping damage" or "creeping crisis" (the Lake Aydarkul, lower reaches of the Syr Darya, and the Aral Sea) have not arisen at once, but developed during the long, as if "latent", period (similar to the latent period of specific human diseases) when their adverse consequences were discussed within the circle of professionals who appealed to the public unfortunately only at the last stage of crisis.

The social ethics of water use under the ecological preservation of water resources and their sources starts with recognition of the fact that water, as the natural resource, belongs to all people, and, at the same time, it is not only the gift of Lord (or gift of Nature, if so) but also the special product that has the cost and characteristics of ownership, as well as of vulnerability in case of the uncivilized attitude to water. In this connection, any decisions associated with water use, proposed by the water elite (water professionals), and approved in appropriate governance bodies should be transparent i.e. accessible and understandable for most of water users. Only under meeting the requirements of social ethics, it is possible to hope that even unpopular decisions, related to water resources, will be supported and properly implemented.

6. ONLY A MORAL PERSON CAN PRESERVE WATER

As it follows from the head of this paragraph, the human merits will be discussed hereinafter. It is not a secret that a different attitude of people to water can be met in our life – from worship of water as the certain sacred gift towards an odious behavior when a man disposes his wastes into flowing water of aryks or canals. However, a person with such an attitude to water can show concern with respect to an abandoned slice of bread - shakes off it from dust, places against his forehead, and carefully puts it in a secluded nook. Why is his behavior so different with respect to bread and water, although he knows, or has to know, that a role of water in our life no less important than of bread? For instance, a man can survive without water only three days, and without bread a few weeks. Why an internal "protective relay" or moral brakes of a man function in different ways under different situations? Of course, such a matter is in the competence of psychoanalysts and specialists in morality and ethics, but it is of interest for all.

In this context, it is needed to remind one discussion shown on TV. The Sunday evening telecast (Mach 19, 2001) was devoted to the

meeting of a broadcaster of TV show "Miror" Nikolay Svanidze with the Metropolitan of Smolensk and Kaliningrad Cyril. The substance of some statements of Archbishop Cyril is given below. In particular, he said: «The Christian Orthodox Church recognizes values of the liberal idea of the west: human rights, private property, and democratic freedoms. However, there are separate moments or the sides of these values, which the church rejects, for example, homosexuality, abortions, alcoholism etc. as freedom of a choice; or equal rights of women in the hierarchy of church management ... all this contradicts the Divine word. Hence, all this is sinful, and the church stands up for freedom from sins».

Replying to the broadcaster, Metropolitan Cyril has noticed that the Church keeps up closely with debates in the State Duma of Russia with respect to the agrarian law, because the agrarian law for Russia not only social, but also moral aspect. In his opinion, large cities are the most religious in Russia. As to the Russian villages, here the moral disintegration among Christians has taken place during all 70 years of the Soviet regime as result of a combination of an interdiction of religion, persecutions on ministers of religion simultaneously with destruction of the Russian peasantry (dying villages in the prospering chernozem region of Russia in former times, drunkenness and alcoholism among the population) as the main support of Russian society. As a way out from the created situation, Archbishop Cyril offers to commence the integration process: on the one hand, the liberal idea formed in the western countries with its values, and, on the other hand, - the values of Russian Orthodox Church. He is sure that if to sit down at the round table with kind intentions, it is possible to find options satisfying interests of the Parties - because Russia is the Eurasian country familiar with values both of Europe and of Asia. The model of the human standard developed by such a way can be recommended to a new world civilization of the 21st century.

The author is not familiar with the literature of the Christian Orthodox Church and consequently cannot judge, as far as statements of Metropolitan of Smolensk and Kaliningrad Cyril are perceived by other church figures of extensive Russia. However, there are the constructive moments in his judgments that are interesting even from the point of view of problems under consideration in the present monograph.

In fact, an issue related to landed property was undoubtedly fundamental at all times, not only now, (we could recollect the movement for repealing the serfdom, crisis in the agricultural sector and Stolypin's reforms, the Decree on Land in the period of the Soviet regime etc.) for agrarian Russia despite of its boundless expanses and abundance in land resources suitable for farming. Therefore, Metropolitan Cyril has considered this matter as the moral category.

For us, inhabitants of Uzbekistan, landed property is also the fundamental issue, its sanctity is stated not only in sacred books of the

Islam that is practiced by the majority of the population, but also in the Constitution of Republic of Uzbekistan, and in the Land Code. Our society does not recognize a private property on land resources, except for the cases stipulated by the law, does not recognize purchase and sale of the irrigated lands, this great common property of all population of the republic. Under conditions of Uzbekistan, a matter concerning fresh water resources being also property of Uzbekistan's people is no less moral. Land (irrigated) and water are a corner stone of economy of the republic, the base for sustainable development of the national economy in the 21st century.

From our point of view, a proposal to develop «the world standard of a person of the 21st century» is very interesting. However, the second part of this proposal (to synthesize this standard based only on the liberal idea of Europe with its values and on values of Christian Orthodox Church of Russia) was not completely thought over, since the ancient experience of other countries, which was accumulated under influence of other world religions (the Buddhism, Judaism, Christianities, with faiths distinct from Orthodoxy Church, and Islam) and their values cannot be neglected. It is not only unfair, but also immoral.

In addition, it is still not clear whether the concept of «the standard for a person» is acceptable, because it is not completely coincided with limits of habitual for us definitions of a man as a person and as a member of civil society equal in rights, though similar standards, for example, «the standard of a bachelor» or «the standard of Master of Arts» were put in our practice. Therefore, it will be probably more expedient to consider, first, «the code for a person of the 21st century» or «a complex of vital views of a person of the 21st century» (these names are conditional and can be specified) rather than "any standard", taking into consideration the common legal and moral norms in coordination with restrictive measures in the field of wildlife management and of preservation of the environment.

It is interesting, even in general way, to fancy «the code», for example, for a citizen of the Republic of Uzbekistan in the 21st century. It is not difficult to assume that it may consist of the following sections:

1. General:

- 1.1. The constitution of the Republic of Uzbekistan guarantees equal rights for all citizens of the republic, irrespective of age, gender, nationality, race, religion, education etc.

- 1.2. He is loyal with respect to the national idea aimed at creation of the sovereign, democratic, secular, and advanced state in Uzbekistan.

- 1.3. He follows the national (rather than nationalistic) ideology that points the way of achieving the overall objective and of protecting him against encroachments of alien ideologies.

2. He shall know the following provisions:

2.1. It will be difficult for a person to organize his life without sound general education in the 21st century. It is never late to study (the Constitution guarantees such opportunities) and to get knowledge.

2.2. Such merits as diligence and labor skills should accompany him during all his conscious life and be improved and increased with time.

2.3. During all his life, a person is within an environment (or under influence) of legal and moral notions; his behavioral actions and relations in the family, makhallya, society, at work, and in the State as a whole is adjusted - visibly or invisibly - by a set of specific laws, moral and ethical standards and rules, and he should aspire to comprehend and know them according to his abilities.

To avoid blunders and illegal actions, he should understand and distinguish since his early childhood some moral and ethical categories, namely:

- Good and evil;
- Permitted actions and prohibitions;
- Righteousness and sin;
- Justice and lawlessness; and
- Honor and disgrace, etc.

2.4. He should realize that a human being is a part of nature rather than its master; therefore, he personally, along with all others, has to be responsible for its (nature) preservation, for cleanliness and well-being of the environment.

2.5. His deeds and behavior, which are not in line with the given set of requirements (more exactly, which break laws of the republic, and rules and norms of ethics), at once or later, should leak out to the public (to relatives, neighbors, colleagues etc.) and be subjected to their condemnation or the official court investigations with a follow-up punishment. Therefore, since his childhood, he himself should try to develop his own internal «protective brakes» that allow avoiding evil deeds and actions.

3. He does have the following rights:

3.1. To use a wide set of democratic freedoms and the rights guaranteed by the Constitution of the Republic of Uzbekistan (human rights, freedom of speech, liberty of conscience (to be a believer or, on the contrary to be atheist), the right to elect and to be elected a member of the legislature of the state, and to be participant of public and nongovernmental organizations etc.);

3.2. To arrange his life at own discretion (for example, to choose a profession and occupation, or to create the family and to have children etc.); and

3.3. To defend his honor and dignity and other legitimate rights, in case of their violation by anybody, having taken it into courts of different instances right up to the Supreme Court of the Republic of Uzbekistan.

4. He should not participate or do the following:

4.1. Illegal activity in any form and under any slogan directed against the existing constitutional order or resulting in economic or other damage to the republic;

4.2. Activity related to narcotics, prostitution, trade in arms and ammunition, or assistance to others in such an activity;

4.3. Actions discrediting his honor and dignity as a citizen of Uzbekistan (bribe taking, corruption, use of official position for selfish ends, official eyewash, improper relations with subordinates etc.);

4.4. Damaging, or permission of damaging by others, the environment in any form, including, first of all, inefficient use of water resources and deterioration of water sources (pollution, losses in the form of leakages, over-irrigation etc.); and

4.5. Abasement of the honor and dignity of other citizens in any form and under any pseudo-justificatory pretense.

The above incomplete draft «code of requirements», more precisely, its first sketch, (certainly, such a work should be originally performed by a group of skilled experts and scientists in the field of jurisprudence, history, philosophy, social sciences, Islam and Shariah etc.) and be nation-widely discussed) allows to state some views and proposals:

1. The 21st century substantially differs from previous ones by fast reducing of nonrenewable natural resources, at the same time, renewable natural resources, for example, water resources are exhausted in many places, and their quality worsens everywhere. Under these circumstances, humanity is obliged to live in conformity with permanently varying conditions; hence, such concepts as economizing, savings, restriction etc. will be determinative in its life. Rationing, limitation, and standardization in all economic activities are one of the basic ways for settling arising problems in the future. Therefore, the framework regulation of needs of a man and his behavioral actions and deeds at work and in social and private life, based on the generally recognized «code of requirements», is practically useful and necessary, and does not infringe upon his rights at all.

2. Prior to practical application, formulation and improvement of "the Code" are no the most difficult part of this task. Difficulties will arise at their putting into practice. All the system of upbringing and education, first of all, of young people – the family, makhallya, school, universities, female and youth organizations, mass media, religious organizations etc. in the course of their activity should permanently explain targets and the value of "the Code." The final goal of this large-scale moral and educational activity is the formation at the majority of population (first of all, among young people) of the deliberate moral mechanisms, as if internal ones, those are automatically acting and preventing evil deeds and actions of a person.

3. This chapter was called: «Only a moral person can preserve water». A sense of this heading is clear, and it is hardly possible to object to its substance. However, another aspect could be mentioned here. As shown above, upbringing of a person, taking into consideration his moral principles, has an integrated nature. A moral person, as a rule, remains a moral man in all his actions; and his human attitude to water is a special case of his moral principles. In other words, I would like to emphasize that if a person is brought up in the spirit of requirements of "the code", he treats to water kindly similar to bread or to the certain sacred gift from God, i.e. economically and with care

CONCLUSION

1. The incipient 21st century will differ from centuries, which went down already in history, by fast reduction and exhaustion of nonrenewable and renewable natural resources, first of all, energy carriers (oil, gas, and coal) and fresh water. Restrictions, allocations, and economizing in their use will be characteristic feature of the new time. Another problem of the new century is the environment protection - air, water, and land - from anthropogenic impacts worldwide.

The intensive population growth gradually ties up two mentioned problems into "a tight knot," to untie which by traditional methods is a difficult task even now. Untraditional solutions and approaches based on a new thinking will be needed.

2. In the power-generation sector, for example, new approaches have caused the revision of established approaches. Generating electric power was emphasized on large hydroelectric power stations, thermoelectric power station, and atomic power plants, but now moving towards large-scale use of untraditional sources such as solar or wind energy is in progress. According to forecasts of experts, by 2060 approximately 40 percent of all needful electric power on our planet will be generated based on untraditional sources. Undoubtedly, water professionals will use achievements of power engineering specialists for increasing available water resources, for example, by means of desalting of brackish groundwater and drainage water. However, in the foreseeable outlook, till 2025, a growing demand for fresh water in the countries where available water resources are already exhausted, for example, in Uzbekistan, will be met for certain by means of water-saving and increasing the efficiency of water use.

3. In the long-term outlook, at the level of 2025, problems related to fresh water and water use in Uzbekistan as a whole, it is possible to present in less detail as follows: the population will increase approximately by 10 million people under the permanence or even some reduction in available water resources. According to rough experts' calculations, only irrigated agriculture requires additionally not less than 5-6 km³ of water resources by the specified term. On the other hand, it

is known that significant volumes of water withdrawn from sources are lost within the irrigation systems due to the low efficiency of both irrigation canals and water application methods in the fields. At first sight, lost volumes of about 25 km³ are great. There is an illusion experienced not only by outsiders but also sometimes even by some experts that we have considerable reserves of water resources, and we are able to use them at any moment at our will. Theoretically, such an opportunity exists, but practically this is not only the expensive but also super-complicated task. It calls to mind the statement of the well-known sculptor Rodin: «In principle, the body of *Aphrodite of Milos* is in each stone lump but the talent of an outstanding artist and his wearisome work are needed in order to take it out from there... »

Undoubtedly, future generations will have to take necessary volumes of water out from water losses and add to usefully employed ones. It is impossible to fancy sustainable development of economy in the republic without such measures, but it can be achieved by means of not only huge investments but also based on new vision of many habitual concepts and methods in water use, and on our frame of mind concerning water. Psychology and thinking concerning water of nowadays living people were formed in the 1960s and 1970s, when water consumption per capita was about 4,000 m³ per year (at that time the population in the country made up 15-16 million people). At the same time, specific water consumption has decreased to the rate of 2,300 m³ per year, and in case of faults with water supply both peasants and townsmen are equally indignant, and start to recollect former years and to criticize severely authorities or water management bodies for their inability, though such emotions should not take place in accordance with the level of specific water consumption. It is clearly that the population is not ready, psychologically and in a practical manner, to such turn of events.

4. The experience learned from Israel, which experiences persistent and escalating deficiency of fresh water since the 1950s is instructive in many respects. Such facts as the technical level and conditions of irrigation canals, their operation, efficient system of drip irrigation, state-of-the-arts technologies etc. are often discussed and held up as an example. All this is correct; however, we spoke about, in short, as far as such an experience is difficultly adaptable to our conditions. Nevertheless, one aspect of the Israeli experience, for some reason, is shaded from our view, and it is not emphasized. In our opinion, this aspect is rather valuable and the most important for us, and it does not demand large funds for putting it into practice. Information on water resources is regularly presented to the general public. In addition, responsible persons immediately inform the public about arising or predictable problems, as well as mitigation measures through mass media. Real conditions when nobody can accuse someone in something, because decisions and measures are transparent, understandable and

concern all without exception, are created. On the other hand, the law sets forth measures of the responsibility and the sanctions in case of infringement of the established norms and rules by citizens. In other words, the status of water is raised up to the level of the most valuable resource; and, as a matter of fact, water relations are regulated by moral and ethical norms along with the Water Law. As a result, each citizen of the country knowingly by his means, work or moral encouragement participates in implementing measures planned by state bodies and the government. In this sense, the experience of Israel deserves all-round studying and use in practice.

5. Ultimately, people that are mainly water-users put into practice any decisions concerning water resources liable to implementation. As was mentioned, in the incipient 21st century, everywhere civil rights and political freedoms become more accessible to people. At the same time, situations related to deficiency of natural resources and obliging people to limit their desires often occur. It means that a man from his early childhood should be brought up in the spirit of understanding of such a state of affairs.

6. It is instead of the epilogue. Our galaxy (the solar system is part of the galaxy with planets revolving around the Sun) with the great variety of astronomical objects and systems is not unique in the universe and self-expanding, i.e. the bodies belonging to this galaxy, including the solar system, equally move away from each other at the enormous velocity... It is well known that Earth revolves around the Sun at a velocity of 107,000 km/h (the period of one revolution around the Sun is about 365 day, and the period of one complete rotation at its axis is about 24 hours). It is even difficult to imagine along what composite path and with what unimaginably high velocity our Earth moves through space. At the same time, the sizes and movement of our galaxy, which is constantly increasing, could be fancied even to a lesser extent - millions of light-years in length and breadth (a light-year is an unit of length sometimes used to measure vast distances and is equivalent to the distance that light travels in a mean solar year at the rate of approximately 300,000 km/sec). In scales of our galaxy, Earth in its size is less than a grain of sand.

Once, God has created all kinds of living creatures including a human being, has placed them on Earth and has said: "...here are land and waters, and other goods; use them and multiply; live in peace and know when to stop in your affairs and desires; and remember that your life on Earth is granted to you as the test; trust me, follow on the true way indicated by me, but do it not on compulsion and at your good will. Those who will select another way, severe punishment expects, if not in this life then in another life: infernal torments will be punishment for their disobedience ..."

And a man began to live and to multiply on the face of Earth, as a homo sapiens, and to learn himself. At one moment or another, he has

got a false idea that he is omnipotent and can achieve everything what he wants. Really, humanity has succeeded in sciences, made many discoveries and uncountable amount of inventions, created powerful machinery and technologies, started to move over the world at high rates by terrain, water and air, constructed vast cities, and created comfortable conditions of life... Humanity has developed near-Earth space and visited the Moon, directly investigates a surface of the Mars, sends devices to other planets of the solar system ... all this is impressive and excellently if to look back, but it is not enough if steadfastly to peer into infinite expanses of time and space. Moreover, the following quatrain excites my imagination:

(Interlinear translation from Uzbek language:

The time will come, the Sun will die out, and the life will disappear
on Earth (as though),

Sacred Book written by Allah will remain without reading
up to the end (as though),

Someone has told: «There is the absolute truth,
but it is impossible to comprehend it» (as though),

He has tried to clue the infinite universe
by his own mind (as though)

Learning of a man and the infinite universe surrounding him is in
progress ...

ANNEX

THE CODE OF REGULATIONS OF MUSLIM LEGISLATION /SHARIAH/ CONCERNING WATER USE AND LAND USE³⁹

/From archival documents of the former Administration for Irrigation Works in Turkistan "IRTUR"/

PREFACE

The water legislation was being formed in Turkistan during millennia, and it is of great value here since water means both life and well-being; famine, death, and resettlement follow the lack of water, its depletion, or unfair allocation. After conquest of Turkistan, the Russian Government unfamiliar with local conditions had to allow to elected representatives of the native population to manage all affairs, which were not of political value, and has retained in force of customs and local written laws (the Shariah). The Kirghiz population has used the Adat in that sphere of legal relationships that could not be regulated by Russian laws for the certain period.

In 1877, 12 years after the conquest of Tashkent, K.P. Kaufman has put into force the temporary rules for the practice of irrigation. Shortly, actual results have revealed the discrepancy of these rules to practical needs (it was naturally due to non-competency of the Russian administration in new business and in the legislation of the Muslim population). However, despite of understanding of an abnormality of this situation, the administration did not attempt to study the local customary water legislation and to organize the proper water use.

Under developing the projects for irrigation and colonization in Turkistan, the former Administration for Irrigation Works in Turkistan (IRTUR) has recognized the necessity of learning the local legislation in detail and has charged a certain Davletshin, the skilled expert on Turkistan's customs, to translate the necessary articles of the Shariah.

Disbanding of IRTUR did not allow to complete this assignment, and a manuscript of translated documents, which was in the record-keeping office of IRTUR, even without the signature of Davletshin, was handed over to A.E. Shmidt, the Professor of the Institute of Oriental Studies in Tashkent, for reviewing, who has written the following review:

1. The manuscript represents a translation of the corresponding chapters of the Shariah from the Arabic language into Russian Language made in the process of compilation of several sources that the author of this translation has indicated.

³⁹ Journal «Irrigation Bulletin», 1924, No 9

2. It was impossible to check up completely the translation and work of the author in respect of his compilation, because I could not get all primary sources used by the translator.

3. The translation of that part, which I managed to check up, is made correctly; I have afforded to make only some amendments.

4. I believe that the translation of other parts was made also well, but, certainly, without full comparing with primary sources I cannot be in full sure, because there were small discrepancies in some articles, if we judge according to the original context.

5. On the merits, in my opinion, the publication of these regulations is extremely desirable, since it enables all interested persons get acquainted with regulations of the Shariah just on those issues which are so important here, in Turkistan, and because the Shariah, undoubtedly, greatly affected the norms of customary law, which have been formed during centuries.

Prof. Shmidt

ABOUT DEAD EARTH

1

The dead earth is that earth, which cannot be used due to lack of water there or its flooding, or for other reasons that impede its tilling (*if we deal with waterlogging or desertification with sanding up – author's note*). See Fath al-Qadir, Vol. IX, Page 2; Ibn Abidin, Vol. V, Pages 306 and 307; Mukhtasar al-Quduri, Page 75; and Sharh Ilyas Vol. III, Pages 258 and 259.

2

That earth which has no owners and is in desolation if it is located at such a distance from the nearest settlement that a loud human voice from that settlement cannot reach one's ears on that earth also refers to the dead earth. See Fath al-Qadir, Vol. IX, Page 2; Ibn Abidin, Vol. V Pages 306, and 307; Mukhtasar al-Quduri, Page 75; and Sharh Ilyas, Vol. III, Pages 257 and 258.

3

Only the Imam can allocate the dead earth. See Ibn Abidin, Vol. V, Page 306.

4

A man that tills the dead earth (*i.e. a man making the dead earth suitable for agriculture - author's note*) gets the right of its ownership by authority of the Imam or Qadi. See Fath al-Qadir, Vol. IX, Page 3; Ibn Abidin, Vol. V, Page 307; Mukhtasar al-Quduri, Page 76, and Sharh Ilyas, Vol. III, Page 258 and 259.

5

The tithe is paid from a yield grown on the dead earth under cultivation. See Ibn Abidin, Vol. V, Page 307; Fath al-Qadir, Vol. IX, Page 4.

6

If someone begins to till the dead earth and four other persons will start to till the surrounding dead earth by turns from four sides, a road to the earth originally mentioned should be laid through that plot which began to be tilled by the latest. See Fath al-Qadir, Vol. IX, Page 5; and Ibn Abidin Vol. V, Page 307.

7

If all dead earths that surround the cultivated dead earth are tilled simultaneously from different sides, the road to the plot, which is located in the center, should be laid through that earth which will be specified by the owner of the last one. See Ibn Abidin, Vol. V, Page 307.

8

If the Imam or Qadi will give the dead earth for tilling to somebody only with the right of its use, the designated person does not have the right of ownership. See Ibn Abidin, Vol. V, Page 307.

9

A non-Moslem is equal in rights with a Moslem in the possession of the dead earth tilled by him. See Fath al-Qadir, Vol. IX, Page 5, Ibn Abidin Vol. V, Page 307; and Mukhtasar al-Quduri, Page 75

10

If a person, who has set an abuttal around the dead earth, does not cultivate it within three years, he loses his right to its possession, and the Imam can give it to another person. See Fath al-Qadir, Vol. IX, Page 5, Ibn Abidin, Vol. V, Page 307; and Mukhtasar al-Quduri, Page 75.

11

Setting an abuttal around the dead earth means its fencing by a stone wall or by a fence made of dry trees' branches, and also by an embankment built of weeds burnt on that earth and sand. See Fath al-Qadir, Vol. IX, Page 6; Ibn Abidin, Vol. V, Page 307; and Sharh Ilyas, Vol. III, Page 259.

12

Tilling of the dead earth means its irrigation, preventing its waterlogging, tillage, or sowing. See Fath al-Qadir, Vol. IX, Page 6; and Ibn Abidin, Vol. V, Page 308.

13

One digging of an aryk (irrigation ditch) on the dead earth without its irrigation is considered only as setting an abuttal. See Fath al-Qadir, Vol. IX page 6; and Ibn Abidin Vol. V, Page 308.

14

The dead earth, which is located in vicinity of settlements, should not be cultivated, and serves as a pasture for the cattle belonging to inhabitants of settlements, for cutting of firewood and as a place for a threshing-floor. See. Fath al-Qadir, Vol. IX, Page 6; Ibn Abidin, Vol. V. Page 308; Mukhtasar al-Quduri, Page 76; and Sharh Ilyas, Vol. III, Page 258

15

If the Imam allows planting a tree on the dead earth a specific area is allocated for it, and within this area nobody has the rights to plant other trees. See Fath al-Qadir, Vol. IX, Page 9, and Ibn Abidin, Vol. V, Page 309.

16

The area allotted for planting a tree (Article 15) equals five cubits in circumference. See Fath al-Qadir, Vol. IX, Page 9, and Ibn Abidin, Vol. V, Page 309.

17

On the earth allocated for a draw-well or a water source, it is forbidden to dig a draw-well or a water source by another person. See Fath al-Qadir, Vol. IX, Pages 6 and 9; Ibn Abidin, Vol. V, Page 308, Mukhtasar al-Quduri, page 76, Sharh Ilyas Vol. III, Pages 260 and 261.

18

If somebody will dig a draw-well outside of the area allotted for a draw-well earlier dug or on the border of this area and water will leave the first draw-well for the second one, the owner of the second draw-well will not be responsible for this event. See Sharh Ilyas, Vol. III, Page 261.

19

If a draw-well is intended for a watering place then an area of forty cubits in circumference is allotted around of it. See Fath al-Qadir, Vol. IX, Page 6; Ibn Abidin, Vol. V, Page 303; Mukhtasar al-Quduri, Page 76; and Sharh Ilyas, Vol. III, Pages 260 and 261.

20

If a watering place is intended specially for pack animals then an area of sixty cubits in circumference is allotted around of it. See Fath al-Qadir, Vol. IX, Page 6; Ibn Abidin, Vol. V, Page 308; Mukhtasar al-Quduri, Page 76; and Sharh Ilyas, Vol. III Pages 260 and 261.

21

If there is a water source on the dead earth then an area of five hundreds of cubits in circumference is allotted around it. See Fath al-Qadir, Vol. IX, Page 6; Ibn Abidin, Vol. V, Page 308; Mukhtasar al-Quduri, Page 73; and Sharh Ilyas, Vol. III, Pages 260 and 261.

22

In all cases mentioned in Articles 19-21, the final decision belongs to the Imam. See Fath al-Qadir, Vol. IX, Page 6; Ibn Abidin, Vol. V, Page 308; Mukhtasar al-Quduri, Page 76; and Sharh Ilyas, Vol. III, Pages 260 and 261.

23

For installing and repairing a water pipe an area sufficient for these purposes should be allocated and fixed⁴⁰. See Fath al-Qadir, Vol. IX, Page 9; Ibn Abidin, Vol. V, Page 309; and Sharh Ilyas, Vol. III, Page 261.

24

Old channels of the Tigris and Euphrates, into which these rivers can return with time, should not be cultivated as they will be necessary when they will turn into rivers again. See Fath al-Qadir, Vol. IX, Page 10; Ibn Abidin, Vol. V, Page 319; and Mukhtasar al-Quduri, Page 76.

25

When the returning of the river into its old channel is not probable, such a channel is considered as "dead one" if it does not adjoin to an arable area. In case of any dispute, the Imam exclusively makes decision. See Fath al-Qadir, Vol. IX, Page 10; Ibn Abidin, Vol. V, Page 310; and Mukhtasar al-Quduri, Page 76.

26

A person, being in possession of a river flowing through another's plot, has the right to use its banks for both walking and disposal of silt (sediments) from the river. See Fath al-Qadir, Vol. IX, Pages 10 and 11; Ibn Abidin, Vol. V, Page 310; Mukhtasar al-Quduri, Page 76; and Sharh Ilyas, Vol. III, Page 262.

ABOUT WATER USE

Waters can be divided into the following: 1. Lake waters; 2. Waters of large rivers; 3. Waters in private use; and 4. Waters in ponds. See Fath al-Qadir, Vol. IX, Pages 12 and 13; Ibn Abidin, Vol. V, Page 311; and Sharh Ilyas, Vol. III, Page 264.

1. About Lake Waters

28

Everyone has the right to drink, to water his own cattle, and to irrigate his own land with water from a lake. See Fath al-Qadir, Vol. IX,

⁴⁰ According to other faqihs, the protection zone should not be allocated up to the point where water flows out on the ground surface, because a water pipe is essentially equated with a river. At the moment when water flows out on the ground surface, it is equated with a spring (water sources), and the protected area of five hundreds of cubits in circumference is allotted around it.

Page 12; Ibn Abidin, Vol. V, Page 311; and Sharh Ilyas Vol. III, Page 264.

29

To build a canal from a lake to his own land plot is not forbidden for anybody. See Fath al-Qadir, Vol. IX, Page 12; and Sharh Ilyas, Vol. III, Page 264.

2. About Waters of Large Rivers

30

Everyone has the right to drink, to water his own cattle and to irrigate his own land withdrawing water from large rivers such as, for example, Jayhun (Amu Darya), Saihun (Syr Darya), Euphrates, and the Tigris. See Fath al-Qadir, Vol. IX, Page 12; Ibn Abidin, Vol. V, Page 311; and Sharh Ilyas, Vol. III, Page 264.

31

If somebody, under cultivating the dead earth, wishes to build an aryk from a large river to his plot for irrigation, he has this right at absence of harm for the majority of population. See Fath al-Qadir, Vol. IX, Page 12; Ibn Abidin, Vol. V, Page 311; and Sharh Ilyas, Vol. III, Page 264.

32

Everyone, both a Moslem and a non-Moslem, has the right to forbid construction of an aryk (irrigation canal) to another's land if owing to this action if harm to the majority of population will be done. For example, there will be a flood or access to the large river will be ceased, or navigation will be stopped. See Fath al-Qadir, Vol. IX, Page 12; and Ibn Abidin, Vol. V, Page 311.

33

Whoever has the right to build a water-mill on the large river if it will not harm the majority of population. See Fath al-Qadir, Vol. IX, Page 12; and Sharh Ilyas, Vol. III, Page 264.

3. About Waters in Private Use

34

If water is in private use of any person, an outsider has the right to use it for drinking and watering his cattle. See Fath al-Qadir, Vol. IX, Page 12; Ibn Abidin, Vol. V, Page 311; and Sharh Ilyas, Vol. III, Page 266.

35

If any outsider will wish to irrigate the land cultivated by him using the water which is in private use, owners of the river have the right to prohibit this action, it is indifferently whether harm is caused by this

prohibition or not, because owners have the exclusive right to the river. See Fath al-Qadir, Vol. IX, Page 12; and Sharh Ilyas, Vol. III, Page 266.

36

If a draw-well, water source, pond, or a river is the property of somebody, this person has the right to forbid the entering to his plot to drink or water a cattle if at the distance of one mile it is possible to find nobody's water. If it is impossible to find water nearby, an owner of a river should give water for drinking and watering another's cattle or permit to an outsider himself to scoop up water without spoiling riverbanks. See Fath al-Qadir, Vol. IX, Page 13; Ibn Abidin, Vol. V, Page 312; and Sharh Ilyas, Vol. III, Page 264.

37

If a draw-well, water source, pond, or a river is on the dead earth, an owner cannot forbid to somebody to drink water from this water source or to water a cattle. See Fath al-Qadir, Vol. IX, Page 13

38

If an owner of water wants to prohibit somebody to use water, and the person, who needs water, dreads for himself or for his cattle he has the right to struggle with an owner of water by weapon, because those who refuse him in water, causes his death. See Fath al-Qadir, Vol. IX, Page 13; and Ibn Abidin, Vol. V, Page 313

39

A person, who is not the owner of water, has no right to irrigate the earth, date-trees, and other trees by the water from another's draw-well, aryk, or river without the permission of the owner of the water source. See Fath al-Qadir, Vol. IX, Page 13; and Ibn Abidin, Vol. V, Page 313.

40

A water source or pond, in which water collected by natural ways, is equated to a river, which is in private use. See Ibn Abidin, Vol. V, Page 312.

4. About the Waters in Ponds

41

The water, which has been collected in ponds, is the property and others do not have any right to use it. See Fath al-Qadir, Vol. IX, Page 13; Ibn Abidin, Vol. V, Page 311; and Sharh Ilyas, Vol. III, Pages 264 and 266.

42

A person, who has stolen the water collected in a pond in a district where it is impossible to get natural water, is not to be punished. See Fath al-Qadir, Vol. IX, Page 13.

6. About Dredging and Cleaning of Rivers

43

There are three types of rivers: a) the rivers which belong to nobody; and use of their waters is not subject to distribution (for example, Euphrates), b) the rivers are objects of private use, and their water is subject to sharing, but all population has the right to use their water resources for drinking and watering a cattle and c) the rivers are objects of private use, and their waters are completely withdrawn from common use. See Fath al-Qadir, Vol. IX, Page 14; and Sharh Ilyas, Vol. III, Page 265.

a) About dredging and cleaning of rivers, which are not in private use

44

Dredging and cleaning of rivers, not being private property should be implemented at the expense of public funds. These funds are formed at the expense of duties and a capitation tax. See Fath al-Qadir, Vol. IX, Page 14; Ibn Abidin, Vol. V, Page 313; and Sharh Ilyas, Vol. III, Page 265.

45

If there are not funds in the treasury, the Imam has the right to force inhabitants to deepen and clean the public river for common use at their expense if they do not agree to do voluntarily that job. See Fath al-Qadir, Vol. IX, Page 14; Ibn Abidin, Vol. V, Page 313; and Sharh Ilyas, Vol. III, Page 265

6) About Dredging and Cleaning of the rivers being a private property, but placed at public disposal

46

Deepening, cleaning and repairing of riverbanks being a private property, but placed at public disposal, are implemented at the expense of owners. See Fath al-Qadir, Vol. IX, Page 15; and Ibn Abidin, Vol. V, Page 313; and Sharh Ilyas, Vol. III, Page 265.

47

If a co-owner of the river refuses to take participation in deepening, cleaning and strengthening of riverbanks for eliminating damage being general for stakeholders or for all population, the Qadi (Judge) is obliged to force him to do this. See Fath al-Qadir, Vol. IX, Page 15; and Ibn Abidin, Vol. V, Page 313.

Expenses for improving the public river are distributed among all participants. If works are being implemented outside the river stretch in somebody's possession, he is exempted from expenses⁴¹. See Fath al-Qadir, Vol. IX, Page 16; Ibn Abidin, Vol. V, Page 314; and Sharh Ilyas, Vol. III, Page 266

b) About deepening, cleaning and banks' protection of the private rivers that are not placed at public disposal

Deepening, cleaning and banks' protection of private rivers should be implemented at the expense of co-owners⁴². See Fath al-Qadir, Vol. IX, Page 15; Sharh Ilyas, Vol. III, Page 265; and Ibn Abidin, Vol. V, Page 314.

If someone among co-owners of the private river refuses to take part in deepening, cleaning and banks' protection of the river other co-owners can implement works at their expense and demand from the mentioned co-owner to pay his share if works were implemented on demand of the Qadi. A person, who refused to take part in works, is forbidden to use the river until he will pay his share of expenses. See Fath al-Qadir, Vol. IX, Page 15; and Ibn Abidin Vol. V, Page 314.

If works for deepening and cleaning of the river is being implemented outside the possession belonging to an owner of the upper river stretch, he has the right to irrigate his plot, not waiting the completion of

⁴¹ For example, if ten people are the owners of a public river then each of them returns one tenth of expenses for repairing. However, if works are being implemented outside a stretch of a river belonging to one of them then other co-owners return the expenses (by 1/9 out of the total sum) since the first co-owner does not need to clean the river. Thus, the owner of a river mouth bears the most costs because he can benefit only in case the process of cleaning runs up to his stretch of the river. Some specialists in law consider that expenses for cleaning a river should be distributed among all co-owners without exemptions since the owner of an upper stretch of river is also interested in a lower stretch because it needs for disposal of excessive water. In this case, the Imam makes the final decision.

⁴² There is a disagreement concerning the definition of terms: a public river and a private river. One lawyers speak that a river belonging to 10 persons, or if one village is located on it, is considered as private; others speak that a river is private if belongs to less than forty persons; the third consider that a river is private if belongs less than 1,000 persons. Over these numbers of co-owners, a river is considered as public one. It is the most correct solution to allow the Qadi to solve this issue at his discretion. Among all existing opinions, the most sound is the proposal to consider a river as private if it belongs less than 100 co-owners and as a public river if co-owners are over this number.

works⁴³. See Fath al-Qadir, Vol. IX, Page 16; and Ibn Abidin, Vol. V, Page 314.

52

Deepening and cleaning of rivers that are used for disposal of wastewater from streets, households and lavatories are implemented at the expense of all co-owners, and the proprietors of upper reaches participate in the works being implemented at downstream sites⁴⁴. See Ibn Abidin, Vol. V, Page 314.

53

Persons casually using the right to drink and to water cattle do not participate in charges for deepening and cleaning of a river. See Fath al-Qadir, Vol. IX, Page 16; and Ibn Abidin, Vol. V, Page 314.

6. ABOUT THE RIGHT TO USE RIVER WATERS

54

A petition concerning the right to use a water source located at another's plot for the certain number of days confirmed by testimonial evidences is admitted well-founded. See Fath al-Qadir, Vol. IX, Page 17; and Ibn Abidin, Vol. V, Page 314.

55

An uncertain petition⁴⁵ concerning the right to use a water source located at another's plot, even confirmed with by testimonial evidences, is to be declared invalid. See Fath al-Qadir, Vol. IX, Page 17; and Ibn Abidin Vol. V, Page 314.

56

If a river, being a private property, flows through another's plot, that owner can demand its removal only in case of when a river has changed its initial channel. Evidences of river's proprietor are taken into account at occurrence of disagreements. See Fath al-Qadir, Vol. IX, Page 18; and Ibn Abidin Vol. V, Page 314.

57

⁴³ Some lawyers consider that an owner of upstream stretch of a river has the right to use water until all co-owners will finish works on their sites.

⁴⁴ Owners of an upstream part of the river are in need of the entire river for disposal of their wastewater and therefore they should bear most of all charges, those who live downstream are bearing less charge and so on up to the last one.

⁴⁵ If witnesses prove that a given person has the right to use water, without specifying precisely the number of days their evidences are not considered as they concern the uncertain right.

If someone claims his right to possess a river outside his plot and proves that he had an *aryk* with water diversion from this river for irrigation his plot, the Qadi satisfies his petition based on the property right or rights of use. See Fath al-Qadir, Vol. IX, Page 18; and Ibn Abidin Vol. V, Pages 314-315.

58

At occurrence of disagreements concerning a mouth of rivers etc. the Qadi makes decision in line with Item 57. See Fath al-Qadir, Vol. IX, Page 18; and Ibn Abidin, Vol. V, Page 315.

59

In case of disputes concerning water volumes⁴⁶, which co-owners of the rivers can use, the volumes are estimated proportionally a size of their plots⁴⁷. See Fath al-Qadir, Vol. IX, Page 18; and Ibn Abidin, Vol. V, Page 315.

60

If an owner of upstream part of a river can use water only under condition of closing a regulator he has the right to close the last only in time of his turn with the consent of other co-owners. See Fath al-Qadir, Vol. IX, Page 18; and Ibn Abidin, Vol. V, Page 315.

61

If an agreement between co-owners of a river will be reached concerning the order of closing of regulators on the river, it is to declare valid. See Fath al-Qadir, Vol. IX, Page 18; and Ibn Abidin, Vol. V, Page 315.

62

If someone out of owners cannot use the river differently as damming back it and co-owners come to an agreement then a queue of irrigation should be started from a tail part of a river and proceed upstream; when the queue reaches a head stretch, damming of the river is authorized. See Ibn Abidin, Vol. V, Page 316.

63

If co-owners cannot come to an agreement, but at the same time they cannot use water without damming the river, the Imam distributes water among them according to days, and then each of co-owner can close the river in his turn. See Ibn Abidin, Vol. V, Page 316.

64

Nobody among co-owners of a river has the right to build an *aryk* with water diversion from the given river, and also to install a mill on it

⁴⁶If the parameters of water use were not be specified beforehand

⁴⁷ A purpose of water sharing is irrigation.

without the consent of other owners since a consequence of such actions is damage of riverbanks and occupation of an area used by all owners. See Fath al-Qadir, Vol. IX, Page 18; and Ibn Abidin, Vol. V, Page 315.

65

Construction on a private river, which is placed at public disposal, such structures as water-scoops, and simple or arch bridges, is not permitted. Opposite to that, the proprietor of the river has the right both to erect on it the mentioned structures and to destroy those if they were erected without his consent. See Fath al-Qadir, Vol. IX, Page 19; and Ibn Abidin, Vol. V, Page 315.

66

An owner of a plot located at a head of a river cannot widen its channel since this activity may destroy riverbanks and increase the quantity of water used by the given person. See Fath al-Qadir, Vol. IX, Page 19; and Ibn Abidin, Vol. V, Page 315.

67

If distribution of water is provided by means of regulators it is forbidden both increase their carrying capacity and moving upstream. See Fath al-Qadir, Vol. IX, Page 19; and Ibn Abidin, Vol. V, Page 315.

68

If someone wishes to put a regulator deeper or higher he has this right because under distribution of water a size of a regulator (carrying capacity) is considered irrespective of its depth or height. See. Fath al-Qadir Vol. IX page 19 and Ibn Abidin Vol. V page 315.

69

If the distribution of water is provided by means of regulators, and someone wish to distribute water according to the daily schedule, he has rights for that, since the old manner of water distribution should be in force. See Fath al-Qadir, Vol. IX, Page 19; and Ibn Abidin, Vol. V, Page 315.

70

If each co-owner of a private river has the right to the specified number of regulators, nobody among them can add any regulator, even in the event that such actions do not damage the others. See Fath al-Qadir, Vol. IX, Page 19; and Ibn Abidin, Vol. V, Page 315.

71

On a large river, everyone has the free right to arrange an intake at his own discretion. See Fath al-Qadir, Vol. IX, Page 19; and Ibn Abidin, Vol. V, Page 315.

72

If someone has the right to use the specified quantity of water over different days he cannot withdraw all water at once, or just by consent of other co-owners. See Ibn Abidin, Vol. V, Page 315.

73

Co-owners of the river have no the right to use its water for irrigation of those plots which are not to be irrigated by means of water withdrawal from the given river. See Fath al-Qadir, Vol. IX, Page 19; and Ibn Abidin, Vol. V, Page 315.

74

If one of two co-owners of the private river, having his plot upstream, wish to close some common regulators for both owners to prevent flooding of his plot he does not have this right since can damage another co-owner. See Fath al-Qadir, Vol. IX, Page 20; and Ibn Abidin, Vol. V, Page 316.

75

If one of two co-owners of a private river would like to divide the sequence of water use equally, the consent of his co-owner who at any time alike with his successors has the right to refuse from this agreement is required. See Fath al-Qadir, Vol. IX, Page 20; and Ibn Abidin, Vol. V, Page 315.

76

Mutual exchanging by a queue of water use is to be declared invalid. See Fath al-Qadir, Vol. IX, Page 20; and Ibn Abidin, Vol. V, Page 315.

77

Use of natural waters devolves and by the will. See Fath al-Qadir, Vol. IX, Page 20; and Ibn Abidin, Vol. V, Page 315.

78

The next use of water without the land cannot be given for covering of debts of the owner neither *inter vivos* nor after his death. See Fath al-Qadir, Vol. IX, Page 21; and Ibn Abidin, Vol. V, Page 317.

79

The Imam should join the next use of water to debtor's land not having waters and then should sell it with the sanction of the owner, then he should find out cost of land with water and without water and the difference in cost should be used for covering of debts. See Fath al-Qadir, Vol. IX, Page 21; and Ibn Abidin, Vol. V, Page 317.

80

If a proprietor of water does not have a plot the Imam can buy land without water against the property of the debtor and sell it together with water, subtract the price of bought land from the obtained sum and use

the rests for covering debts. See Fath al-Qadir, Vol. IX, Page 21; and Ibn Abidin, Vol. V, Page 317.

81

If someone irrigates his own plot, and water spills over to a plot of other owner resulting in flood or landslip, the owner of the first plot is not responsible for losses. See Fath al-Qadir, Vol. IX, Page 21; and Ibn Abidin, Vol. V, Page 317

82

A person irrigating his own plot or kitchen garden by another's water without the permission of its owner does not respond for this doing. See Ibn Abidin, Vol. V, Page 317.

THE SHIF'AT

83

Shif'at means the preferential right of a neighbor or co-owner to acquiring land; if such a land is already bought by an outsider a neighbor or co-owner has the right to force him to resell this land for the price paid or adequate price. See Ibn Abidin, Vol. V, Page 152; and Fath al-Qadir, Vol. VIII, Page 298.

84

A reason of occurring the Shif'at is the neighborhood or joint ownership by a certain plot. See Ibn Abidin, Vol. V, Page 152; Fath al-Qadir, Vol. VIII, Page 304; and Fatavi Qazi Khan, Vol. IV, Page 448.

85

The Shif'at operates only with respect to real estate⁴⁸. See Ibn Abidin, Vol. V, Page 152; and Holasat Al-Fatavi, Vol. IV, Page 454.

86

The Shif'at is covering also an indivisible real estate. See Fath al-Qadir, Vol. VIII, Page 327.

87

The Shif'at is covering also the real estate subjected to a tithe and land tax, if they are not state lands. See Ibn Abidin, Vol. V, Page 157.

88

The Shif'at can be confirmed by proofs of witnesses; the property right is established by the court or mutual agreement. See Ibn Abidin, Vol. V, Page 152; Fath al-Qadir, Vol. VIII, Page 306; and Fatavi Qazi Khan, Vol. IV, Page 445.

89

A person having the Shif'at for its realization should declare about it in the presence of witnesses to the dealer if the real estate is not sold

⁴⁸ The real estate is understood as gardens, mills, wells: as to buildings, trees etc. the right for priority purchasing can be used only together with land proprietary, instead of being public land.

yet, or otherwise to the buyer. See Ibn Abidin, Vol. V, Page 159; Fath al-Qadir, Vol. VIII, Page 305; and Fatavi Qazi Khan, Vol. IV, Page 447.

90

First of all, a co-owner and then a neighbor have the Shif'at. See Fath al-Qadir, Vol. VIII, Page 294; Fatavi Qazi Khan, Vol. IV, Page 445; and Holasat Al-Fatavi, Vol. IV, Page 454.

91

In the presence of several persons, having the Shif'at, it is prioritized proportionally their shares⁴⁹. See Sharh Ilyas, Vol. III, Page 26; Fatavi Qazi Khan, Vol. IV, Page 445; and Holasat Al-Fatavi, Vol. IV, Page 454.

92

If the real estate is divided among co-owners, neighbors do not have the Shif'at. See Fath al-Qadir, Vol. VIII, Page 334.

93

Non-Moslems equally with Moslems can use the Shif'at, as well as men and women of the full legal age and under age. See Fath al-Qadir, Vol. VIII, Page 328; Holasat Al-Fatavi, Vol. IV, Page 454; Ibn Abidin, Vol. V, Page 155; and Fatavi Qazi Khan, Vol. IV, Page 445.

94

Father or the trustee appointed by him can refuse from the Shif'at for a juvenile⁵⁰. See Fath al-Qadir, Vol. VIII, Page 445; Fatavi Qazi Khan, Vol. IV, Page 445.

95

If a seller is a trusted person on behalf of an absent person or a trustee appointed by the deceased, the person having the Shif'at can buy a plot if this plot is at his disposal⁵¹. See Fatavi Qazi Khan, Vol. IV, Page 447.

96

A person having the Shif'at should declare about his right to a buyer or an authorized person of the latter, or a truthful person in the

⁴⁹ If a house or plot belongs to three persons, and the first person possesses a half of the joint property, the second person - 1/3, and the third person - 1/6 and if the person owning a half would like to sell his part the Qadi, at wish of other co-owners to take advantage of the Shif'at, awards the property to them according to their shares.

⁵⁰ Muhammad and Zafar speak that the right of an juvenile on the Shif'at is kept in force until he attains his majority.

⁵¹ In the absence of the father or the trustee appointed by him, they are replaced by a grandfather or the trustee appointed by him; in the absence of these persons the Qadi appoints the trustee of an juvenile.

presence of witnesses. See Fath al-Qadir, Vol. VIII, Pages 307 and 308; Ibn Abidin, Vol. V, Page 157; and Fatavi Qazi Khan, Vol. IV, Page 445.

97

If a person having the Shif'at declares about it, the Qadi asks confirmations from the owner of given real estate. In case of denying of the alleged right by the latter, the Qadi awards to an applicant the Shif'at based on proofs given by him. See Fath al-Qadir, Vol. VIII, Page 308; Ibn Abidin, Vol. V, Page 160; and Fatavi Qazi Khan, Vol. IV, Page 445.

98

The Shif'at not declared, at least during a month⁵² and more, is lost just by the own application of its legal owner. See Fath al-Qadir, Vol. VIII, Page 310, Holasat Al-Fatavi Vol. IV page 455, Ibn Abidin Vol. V page 157; and Fatavi Qazi Khan, Vol. IV, Page 448.

99

The right of ownership to the land subjected to the Shif'at is transferred either by means of the voluntary transfer of land by a buyer to a person having the Shif'at, or by Qadi's decision. See Fath al-Qadir, Vol. VIII, Page 306; and Fatavi Qazi Khan, Vol. IV, Page 445.

100

If the disputable real estate is already transferred to the buyer there is not necessity in the presence of the seller in the process of investigation of the complaint. See Ibn Abidin, Vol. V, Page 160.

101

A person, who has bought a house or plot for whoever, is the respondent with respect to a person having the Shif'at to this real estate. Under transferring the property to the principal, the buyer abdicates all responsibility. See Fath al-Qadir, Vol. VIII, Page 314.

102

If a buyer of the real estate denies the Shif'at declared by other persons, the Shif'at of an applicant is considered at the adjuration. See Fath al-Qadir, Vol. VIII, Page 312; Ibn Abidin, Vol. V, Page 160; and Fatavi Qazi Khan, Vol. IV, Page 451.

103

⁵² In Muhammad's opinion, the Shif'at is lost at the end of month after submitting the application in the presence of witnesses with respect to this right

The Qadi examines complaints concerning the buyer only in his presence. See Fath al-Qadir, Vol. VIII, Page 312; and Ibn Abidin, Vol. V, Page 160.

104

The Qadi shall award the Shif'at and define the term of payment to the seller of the real estate before transfer of the real estate sold to the buyer. See Ibn Abidin, Vol. V, Page 160.

105

If the Qadi awards the Shif'at to someone, this person cannot refuse from it. See Holasat Al-Fatavi, Vol. IV, Page 454; and Ibn Abidin, Vol. V, Page 163.

106

A person having the Shif'at to the real estate cannot get a part of the real estate and refuse from another part. See Ibn Abidin, Vol. V, Page 156.

107

If one out of co-owners of Shif'at is absent, the Qadi, at the request of the owner who is present, awards the Shif'at to him entirely. If an absentee will come back and will request to restore his rights the Qadi should award to him his part equal to a part of the first co-owner, when they have identical rights. If an absentee has the preferential right to the Shif'at this right is awarded to him entirely. If his right to the Shif'at is of less priority, the Qadi refuses him to his request. See Fath al-Qadir, Vol. VIII, Page 304; Holasat Al-Fatavi, Vol. IV, Page 455; Ibn Abidin, Vol. V, Page 156; and Fatavi Qazi Khan, Vol. IV, Page 447.

108

If a few persons having the Shif'at will be absent, Shif'at *in corpore* remains in force for the others. See Fath al-Qadir, Vol. VIII, Page 304; Ibn Abidin, Vol. V, Page 156; and Fatavi Qazi Khan, Vol. IV, Page 447.

109

If a person having the Shif'at concedes his part to another person then he loses his right at all. See Ibn Abidin, Vol. V, Page 156.

110

If a plot sold together with trees on which there are fruits a person having the Shif'at has the right to the land and trees with fruits. See Fath al-Qadir, Vol. VIII, Page 326; and Fatavi Qazi Khan, Vol. IV, Page 445.

111

If the real estate was given against the real estate a person having the Shif'at can buy one real estate for cost of other real estate. See Fath al-Qadir, Vol. VIII, Page 319; and Fatavi Qazi Khan, Vol. IV, Page 445.

112

If someone sells his plot together with the right to use water the Shif'at to water belongs, first, to a co-owner of an aryk, after that to an owner of a canal from which water is diverted into the aryk and, at last, to an owner of a large river from which water is diverted into the canal. See Ibn Abidin, Vol. V, Page 155.

113

If a seller of the real estate is the person empowered to act for an absentee or the trustee appointed by the deceased, the person having Shif'at to the given property can demand it from the seller if it is with him. See Fath al-Qadir, Vol. VIII, Page 314; and Holasat Al-Fatavi, Vol. IV, Page 456.

114

If the real estate was sold not against cash, a person having the Shif'at can receive the plot immediately or wait for the term of payment for the plot bought, but he does not have the right to receive the plot immediately without the payment of its cost in cash. See Fath al-Qadir, Vol. VIII, Page 319; Holasat Al-Fatavi, Vol. IV, Page 456; and Fatavi Qazi Khan, Vol. IV, Page 445.

115

A person having the Shif'at is not obliged to pay for the plot, which was sold not against cash, by the same things for what it was sold, but may pay only their cost. If the real estate is sold against things that can be measured or weighed the person having the Shif'at can buy it for the same measure or weight. See Fath al-Qadir, Vol. VIII, Page 318.

116

If someone will buy a half of the unshared real estate, and a seller will divide that a person having the Shif'at can purchase his half from the buyer or refuse from it. See Fath al-Qadir, Vol. VIII, Page 345; and Fatavi Qazi Khan, Vol. IV, Page 453.

117

At judicial trial, the person having the Shif'at should pay the cost of land plot entirely, and the new owner can keep the plot until will receive its cost entirely. See Fatavi Qazi Khan, Vol. IV, Page 452.

118

If the Qadi awards the plot according to the Shif'at to someone after a buyer has already erected his buildings or planted trees at the plot, a person having the right to the plot can get the plot in such kind as it exists, after paying for the cost of buildings and trees, or to offer

the buyer to move buildings and cut trees. See Fath al-Qadir, Vol. VIII, Page 322; Holasat Al-Fatavi, Vol. IV, Page 455; Fatavi Qazi Khan, Vol. IV, Page 448; and Ibn Abidin, Vol. V, Page 163.

119

If after declaring the Shif'at by someone and if a house on this plot, without someone's bad intention, will be ruined or destroyed by fire, or trees of the garden will dry up, a person having the Shif'at has the free choice to buy the real estate for its cost or to refuse from it. See Fath al-Qadir, Vol. VIII, Page 315; and Holasat Al-Fatavi, Vol. IV, Page 455.

120

If a buyer will remove buildings a person having the Shif'at at his own discretion can buy a plot for its cost or refuse from it, but does not have the right to take away buildings removed. See Fath al-Qadir, Vol. VIII, Page 326; and Holasat Al-Fatavi, Vol. IV, Page 455.

121

A person having the Shif'at can examine the real estate and refuse from it if he will find out any defects, even if a new owner has rejected any his responsibility in the process of transferring a plot subjected to the Shif'at, but he does not have the right to lay down any conditions or to defer the payment of cost of the plot. See Ibn Abidin, Vol. V, Page 161; and Fatavi Qazi Khan, Vol. IV, Page 445.

122

If a person having the Shif'at, after purchasing of the real estate, will refuse from it without the Qadi's court, owing to any defect or improper conditions his Shif'at remains in force. See Fath al-Qadir, Vol. VIII, page 334; and Fatavi Qazi Khan, Vol. IV, Page 445.

123

If a few persons will buy the real estate at one person, the person having the Shif'at can claim only to one part. If one person will buy the real estate at several persons, the person having the Shif'at, has a free choice to buy all land or refuse from it. See Fath al-Qadir, Vol. VIII, Page 345; and Fatavi Qazi Khan, Vol. IV, Page 450.

124

If a person having the Shif'at will refuse from his right in favor of the known buyer but instead of him a man of straw will act the right Shif'at is restored in favor of the initial legal owner of it. See Fath al-Qadir, Vol. VIII, Page 341; Holasat Al-Fatavi, Vol. IV Page 455; and Fatavi Qazi Khan, Vol. IV, Page 446.

125

If a person mentioned in Clause 124 learns that a buyer to whom he has conceded the Shif'at purchases the property together with the third party he can reserve to himself the Shif'at in a share of the third party. See Fath al-Qadir, Vol. VIII, Page 342; Holasat Al-Fatavi, Vol. IV, Page 455; and Fatavi Qazi Khan, Vol. IV, Page 446.

126

If a person having the Shif'at, will concede it in half of the property, but in practice all property will be sold the Shif'at concerning the second half remains in force. See Fath al-Qadir, Vol. VIII, Page 342; Holasat Al-Fatavi, Vol. IV, Page 455; and Fatavi Qazi Khan, Vol. IV, Page 446.

127

If someone makes a present in the form of the real estate with some conditions the Shif'at is kept in force only after performance of these conditions. See Fatavi Qazi Khan, Vol. IV, Page 445.

128

In case of the disagreement between a person having the Shif'at and a buyer of the property concerning its price, the opinion of the buyer is considered. See Fath al-Qadir, Vol. VIII, Page 315; Ibn Abidin, Vol. V, Page 160; and Fatavi Qazi Khan, Vol. IV, Page 452.

129

If a seller of a plot shows the price higher than a buyer then after the adjuration by both, the Qadi approves the price shown by the sworn, and the person having the Shif'at receives the plot at this price. See Fath al-Qadir, Vol. VIII, Page 317; Ibn Abidin, Vol. V, Page 161; and Fatavi Qazi Khan Vol. IV page 451.

130

If both arguing parties agree to take the oath the Qadi declares a bargain as invalid, and a person having the Shif'at gets the plot at the price of the seller. See Fath al-Qadir, Vol. VIII, Page 317; Ibn Abidin, Vol. V, Page 161; and Fatavi Qazi Khan, Vol. IV, Page 451.

131

In the presence of proofs at both arguing parties, the proofs of a person having the Shif'at are taken into account. See. Fath al-Qadir Vol. VIII page 315, Ibn Abidin Vol. V page 160, Fatavi Qazi Khan Vol. IV page 452

132

If at purchasing of the plot according to the Shif'at a buyer specifies one price, and a seller specifies another price, and at the same time smaller and actually yet not received, the person having the Shif'at

can get the property at the price specified by the seller. See Fath al-Qadir, Vol. VIII, Page 317; Ibn Abidin, Vol. V, Page 161; and Fatavi Qazi Khan, Vol. IV, Page 451.

133

If a seller makes discount from the quoted sale price for a buyer, a new price is considered as valid and for a person having the Shif'at. If a seller refuses from a payment at all, such a refusal is void with regard to a person having the Shif'at. See Fath al-Qadir, Vol. VIII, Page 318; and Fatavi Qazi Khan, Vol. IV, Page 448.

134

If a buyer increases the price quoted by a seller this extra charge is not obligatory for a person having the Shif'at. See Fath al-Qadir, Vol. VIII, Page 318; and Fatavi Qazi Khan, Vol. IV, Page 448.

135

The Shif'at does not cover the real estate received by a husband as the marriage portion or given to a divorced wife, or as the payment made for to shed one's blood. See Fath al-Qadir, Vol. VIII, Page 329; Holasat Al-Fatavi, Vol. IV, Page 454; and Fatavi Qazi Khan, Vol. IV, Page 445.

136

The Shif'at does not cover a personal estate (vessels, buildings, and trees sold without land). See Fath al-Qadir, Vol. VIII, Page 329; Holasat Al-Fatavi, Vol. IV, Page 454; and Fatavi Qazi Khan, Vol. IV, Page 445.

137

The Shif'at does not cover navigable rivers and public roads. See Ibn Abidin, Vol. V, Page 155.

138

The Shif'at does not cover the *vakuph realty*⁵³, and owners of the *vakuph realty* do not have the Shif'at. See Ibn Abidin, Vol. V, Page 157; Holasat Al-Fatavi, Vol. IV, Page 454; and Fatavi Qazi Khan, Vol. IV, Page 449.

139

A person empowered to act for an owner who sells the real estate does not use the Shif'at. See Fath al-Qadir, Vol. VIII, Page 340; Ibn Abidin, Vol. V, Page 168; and Fatavi Qazi Khan, Vol. IV, Page 449.

140

The Shif'at does not cover a property incorrectly bought. See Fath al-Qadir, Vol. VIII, Page 332; and Ibn Abidin, Vol. V, Page 166.

⁵³ The *vakuph realty* is the real estate which rich men grant to a minister of religion, teacher of the madrasah etc. without the right to sell it.

141

The Shif'at does not cover the real estate conditionally sold. If the conditional character of the property is ceased, the Shif'at comes into force. See Fath al-Qadir, Vol. VIII, Page 331; and Fatavi Qazi Khan, Vol. IV, Page 445.

142

The Shif'at is not excluded for a conditional buyer of the real estate. See Fath al-Qadir, Vol. VIII, Page 331; Fatavi Qazi Khan, Vol. IV, Page 445; and Ibn Abidin, Vol. V, Page 170.

143

If an owner of the real estate will sell all his land having left a strip of arshin⁵⁴-wide along the entire border with his neighbor the Shif'at for the latter is abolished. See Fath al-Qadir, Vol. VIII, Page 342.

144

If a person having the Shif'at and having learned about sale of the real estate will not take care of the invitation of witnesses, having an opportunity for that, he loses this right. See Fath al-Qadir, Vol. VIII, Page 335; Fatavi Qazi Khan, Vol. IV, Page 445; and Holasat Al-Fatavi, Vol. IV, Page 455.

145

If a person having the Shif'at, prior to the Qadi's court, sells the real estate, which is subjected to the Shif'at the latter ceases to be effective. See Fath al-Qadir, Vol. VIII, Page 339; Fatavi Qazi Khan, Vol. IV, Page 445; Holasat Al-Fatavi, Vol. IV, Page 455; and Ibn Abidin, Vol. V, Page 170.

146

If a person having the Shif'at and having bought the real estate will refuse from it in line with the Qadi's court owing to any defect or an improper condition, then after this fact his Shif'at ceases to be effective. See Fath al-Qadir, Vol. VIII, Page 334; and Fatavi Qazi Khan, Vol. IV, Page 445.

147

If the real estate, which is covered by the Shif'at, turns into a cemetery or a mosque, or *vakuph*, or will not be rented, the Shif'at for it ceases to be effective. See Ibn Abidin, Vol. V, Page 170; and Fatavi Qazi Khan, Vol. IV page 448.

148

If a person having the Shif'at and having bought a land plot, dies up prior to the Qadi's court he loses this right. See Fath al-Qadir, Vol.

⁵⁴ Arshin is old linear measure (= 0.711 m. = 2 ft. 4 in.)

VIII, Page 339; Fatavi Qazi Khan, Vol. IV, Page 445; and Ibn Abidin, Vol. V, Page 170.

149

If a person having the Shif'at dies after purchase of a land plot in line with the Qadi's court, but not having paid its cost, the bargain is obligatory for successors of the deceased person. See Fath al-Qadir, Vol. VIII, Page 339; Fatavi Qazi Khan, Vol. IV, Page 445; Ibn Abidin, Vol. V, Page 170; and Holasat Al-Fatavi, Vol. IV, Page 455.

150

If a person who has bought the land plot dies, the Shif'at keeps in force. See Fath al-Qadir, Vol. VIII, Page 339; Fatavi Qazi Khan, Vol. IV, Page 445; Ibn Abidin, Vol. V, Page 170; and Holasat Al-Fatavi, Vol. IV, Page 455.

MUZARAAT

151

"*Muzaraat*" means an agreement between two persons with regard to cultivating the land plot belonging to one of them for payment in kind (a part of the yield). See Fath al-Qadir, Vol. VIII, Page 354.

152

The *Muzaraat* is considered as valid under observing the following conditions:

1. The land plot should be suitable for agriculture⁵⁵;
2. An owner of a plot and a person cultivating a plot have to have the right to signing the agreement⁵⁶
3. Term of validity of the agreement has to be precisely designated;
4. A person who should supply seeds for sowing has to be precisely specified;
5. A person who should not supply seeds for sowing has to be precisely specified;
6. The land plot has to be free (unsown) and is given to a farmer at his full disposal⁵⁷;
7. A seeds' variety has to be specified. See Fath al-Qadir, Vol. VIII, Pages 386 and 387; Fatavi Qazi Khan, Vol. IV, Pages 223 and 224; and Ibn Abidin, Vol. V, Pages 193 and 194.

153

The Muzaraat is permitted if the following conditions are met:

⁵⁵ If at making the *Muzaraat* the plot appears unusable for cultivation for any casual reason, which can take place, as for example, the temporary lack of access to water or wintertime then the agreement made is considered as valid.

⁵⁶ The contracting parties should be of the full legal age and capable

⁵⁷ The landowner should be familiar with land conditions because due to a various type of soils the farmer is not capable to specify an extent of efforts.

- 1) The plot and seeds are provided by one party, and labor and personal labor by another party;
- 2) The plot and personal labor are provided by one party, and labor and seeds by another party; and
- 3) The plot, seeds and labor are provided by one party, and personal work by another party.

See Fath al-Qadir, Vol. VIII, Pages 388 and 389; Fatavi Qazi Khan, Vol. IV, Pages 226 and 227; Ibn Abidin, Vol. V, Page 194, Mukhtasar al-Quduri, Page 77.

154

If the *Muzaraat* sets forth provisions necessary for producing a crop with respect to a farmer, for example, to deliver water for irrigation, etc. the agreement is considered as valid. See Fatavi Qazi Khan, Vol. IV, Page 229.

155

If the *Muzaraat* sets forth provisions, without which a usual crop cannot be produced, for example, tilling of soil with respect to a farmer the agreement is considered as valid. See Fatavi Qazi Khan, Vol. IV, Page 229.

156

If such provisions as repairing fencings, construction of canals, water supply for irrigation are set forth with respect to an owner the *Muzaraat* is considered as valid irrespective of whether seeds will be given by him or a landowner. See Fatavi Qazi Khan, Vol. IV, Page 229.

157

If the *Muzaraat* does not set forth provisions that provide for deepening and cleaning of the rivers, and a farmer performs these works voluntarily the *Muzaraat* is considered as valid and a farmer does not have the right receive a fee for these works. See Fatavi Qazi Khan, Vol. IV, Page 230.

158

If the *Muzaraat* is considered as valid the crop should be shared according to its provisions. See Fath al-Qadir, Vol. VIII, Page 393; Ibn Abidin, Vol. V, Page 196; and Mukhtasar al-Quduri, Page 77.

159

The *Muzaraat* is considered as valid if it states that grain is shared fifty-fifty between both parties without the mention of straw, which should be given away to an owner of seeds. See Fath al-Qadir, Vol. VIII, Page 392; and Ibn Abidin, Vol. V, Page 196.

160

A farmer is obliged to irrigate a plot if without irrigation a usual crop cannot be produced. See Fatavi Qazi Khan, Vol. IV, Page 230.

161

If the land produces a usual crop without tillage, but with tillage it will produce much more, a farmer has the right of free choice to plow land or not. See Fatavi Qazi Khan, Vol. IV, Page 230.

162

If the land does not produce a crop without tillage at all or produces a poor yield, a farmer has no the right for sowing without tillage. See Fatavi Qazi Khan, Vol. IV page 230.

163

If a farmer supplies seeds he has the right of free choice to make the contract setting forth the provision concerning tillage or to refuse from it. See Fatavi Qazi Khan Vol. IV, Page 230.

164

When rainwater is in shortage a landowner is obliged to irrigate his plot. See Fatavi Qazi Khan, Vol. IV, Page 230.

165

If a farmer supplies seeds, and a crop cannot be produced without tillage a farmer is obliged to till land. See Fatavi Qazi Khan, Vol. IV, Page 230.

166

If land will not produce a crop a farmer will receive nothing. See Fath al-Qadir, Vol. VIII, Page 392.

167

The *Muzaraat* is considered as void if the following conditions are met: 1) a plot and labor are provided by one party, and seeds and personal labor by another party; and 2) seeds are provided by one party, and a plot, labor, and personal labor by another party. See Fath al-Qadir, Vol. VIII, Page 390; Fatavi Qazi Khan, Vol. IV, Page 226; Ibn Abidin, Vol. V, Page 195; and Mukhtasar al-Quduri, Page 77.

168

The *Muzaraat* is considered is as void if the following conditions are met: 1) a specific part of a crop is precisely specified for one of contracting parties; 2) it is envisaged that one party should receive straw, and another party should receive grain; and 3) it is envisaged that both parties should receive straw, but only one of them all grain. See Fath al-Qadir, Vol. VIII, Page 392; Fatavi Qazi Khan, Vol. IV, Page 227; Ibn Abidin, Vol. V, Page 194; and Mukhtasar al-Quduri, Page 77

169

If the *Muzaraat* will be considered as void, the owner of seeds will receive a crop. See Fath al-Qadir, Vol. VIII, Page 393; Fatavi Qazi Khan, Vol. IV, Page 228; Ibn Abidin, Vol. V, Page 196; and Mukhtasar al-Quduri, Page 77.

170

If a farmer tills and irrigates a plot but does not receive a crop, he has the right to receive a respective fee when a landowner has provided seeds. See Fath al-Qadir, Vol. VIII, Pages 385 and 393; Fatavi Qazi Khan, Vol. IV, Page 232; Ibn Abidin, Vol. V, Page 193; and Mukhtasar al-Quduri, Page 77.

171

In case of a poor harvest, if a farmer provides seeds he should pay a rental. See Fath al-Qadir, Vol. VIII, Pages 385 and 393; Fatavi Qazi Khan, Vol. IV, Page 232; Ibn Abidin, Vol. V, Page 193; and Mukhtasar al-Quduri, Page 77.

172

If after making the *Muzaraat* the party that has given seeds will refuse from works it cannot be forced to that. See Fath al-Qadir, Vol. VIII, Page 394; and Mukhtasar al-Quduri, Page 77.

173

If after making the *Muzaraat* the party, which has not provided seeds refuses from works the Qadi is obliged to force it to work. See Fath al-Qadir, Vol. VIII, Page 394; and Mukhtasar al-Quduri, Page 77.

174

The *Muzaraat* that envisages a payment at the rate 1/3 or 1/4 of yield is invalid. See Fath al-Qadir, Vol. VIII, Page 384; and Mukhtasar al-Quduri, Page 77.

175

If one of contracting parties will die after harvesting the *Muzaraat* is ceased⁵⁸. See Fath al-Qadir, Vol. VIII, Page 395; and Mukhtasar al-Quduri, Page 77.

176

If an owner of a plot will die prior to sowing the *Muzaraat* is ceased and a farmer does not receive anything for his work in spite of tillage and digging of arys. See Fath al-Qadir, Vol. VIII, Page 396; and Ibn Abidin, Vol. V, Page 197.

177

If a farmer will die after standing crops, and his successors will agree to continue work until a harvest they have the right to keep the *Muzaraat* in force, even if an owner of this plot does not assent, but they

⁵⁸ For example; if a farmer rents a plot for 3 years under the *Muzaraat*, and after the 1st year someone of contracting parties will die the *Muzaraat* for other 2 years is ceased after distribution of a crop according to the agreement.

do not have the right to demand any compensation for their work. See Fath al-Qadir, Vol. VIII, Page 398; and Ibn Abidin, Vol. V, Page 198.

178

If an owner of a plot is compelled to sell his plot for covering debts it is permitted to cancel the *Muzaraat*. See Fath al-Qadir, Vol. VIII, Page 396; and Ibn Abidin, Vol. V, Pages 197 and 198.

179

If there are sprouts but a crop is not harvested yet the plot can be sold for covering of debts only after harvesting. See Fath al-Qadir, Vol. VIII, Page 396; and Ibn Abidin, Vol. V, Pages 197 and 198.

180

At expiring the term of the *Muzaraat*, if crops has not yet given a yield a farmer should pay a rent corresponding to a share of the plot area prior to harvest, and the expenses related to the crop should be distributed between an owner and a farmer proportionally to their rights. See Mukhtasar al-Quduri, Page 77.

181

In case of the validity of the *Muzaraat* if a farmer does not irrigate a plot resulting in loss of a crop he is responsible for all losses. See Ibn Abidin, Vol. V, Page 199.

182

If in a case specified in Clause 181 it is impossible to specify the cost of a crop, then prices of this plot with crop and without crop are determined, and a variation in prices is the cost of the lost crop. See Ibn Abidin, Vol. V, Page 199.

183

Under the *Muzaraat*, the guarantee is not permitted and the guarantor is not responsible for loss of crop to farmer. See Ibn Abidin, Vol. V, Page 199.

184

A farmer and an owner of a plot are responsible for the payment to a reaper, thresher, and for winnowing grain proportionally their shares. See Fatavi Qazi Khan, Vol. IV, Page 229; and Mukhtasar al-Quduri, Page 78.

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