

A New Geoecological Situation in the Aral Sea Region As A Result of the Aral Sea Drainage

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Annotation: This article highlights the information on the various negative consequences in the Aral Sea region emerged as a result of the Aral Sea drainage and their solutions.

Keywords: The Aral Sea, Amu Darya, Syrdarya, agriculture, dusts, salts.

1. INTRODUCTION

The Aral Sea was one of the biggest lakes in the world until 1960, it gained the second place according to the area of the water levels in Asia and the fourth place in the world. The water level was 53.4 m, the water volume was 1083 km³ and the water surface area was 66086 km². [4] The Aral Sea was taken advantage for fishing and transportation purposes.

It was determined that the sea level changed 1.5-2m, even the Aral Sea withered several times and filled with water again in the ancient historical times. However, the change in the surface of the water has occurred without manual effect. The last drying of the Aral Sea was influenced by anthropogenic factor. Plenty of irrigation and melioration activities have been implemented in Central Asia since 1960; many reservoirs and drainage systems have been built and put into practice, resulting the great use of country waters. The water of the Amu Darya and Syrdarya rivers, which is poured to the Aral Sea decreased. The decline of the Aral Sea since 1961 has varied in different years. 1961-1970 decline was 21 cm on average, 58 cm in 1971-1980, 80 cm in 1981-1985 and 46 cm in 1986-1995. In some years the decline in water levels was even higher than 1 m (A.A. Rafikov).

The natural habitat of the dried part of the Aral Sea is unique, and a sandy zone has occupied the preceding sea. In the deserts, we can meet *Salsola richteri*, black *Haloxylon*, *Tamarisk*, a-year-goosefoot shrubs and other plants. As the deserts go down slowly into the Aral Sea, it is replaced by saline soils.

The salt collection is intensifying in the dry part of the sea. According to the information of the Kazakhstan Institute of Hydro-meteorological Research, the dried area in 1961-1970 was 6.9 thousand km. The average annual salt collection was 4.85 million tons, the drainage area of 1971-1980 was 9.6 thousand km. and 2.95 million tons of salt per year, and in 1981-1985, the average annual salt content was 4.82 million tons. The dried up area has become a huge salt

reservoir. This has a strong negative effect on the environment [1].

From the second half of the 20th century, the Aral Sea basin has become a multi-branch agricultural region based on intensive irrigation. In 1950 there was 2.9 million hectares of watered land in the Aral Sea basin, and nowadays the watered land area is about 7 million ha.

During the preceding 10 years, the rise in water consumption to develop industry and to irrigate, as well as last-longing drought, have led to a gradual decline in the flow of rivers to the Aral Sea, even to the point of complete discontinuation. By the early 1990s, the sea level had dropped to 38 meters and its water volume decreased to 400 km³. Minerals increased by 21 g / l. The use of water to irrigate cotton fields has led to a sharp decline in the waters of Amudarya and Syrdarya rivers in recent years. The sea level dropped more than 14 meters, and the water area decreased by one third compared to the beginning of the 1960s. The water volume decreased by 60%. As a result, the quality of the river water in the lower streams of the Amu Darya and Syrdarya has been deteriorated, even not available for the consumption, the land is getting salty, the ecological system of the animals and plants is deeply degraded, and the soil fertility of the watered lands is decreasing. As a result, the ecological and sanitary epidemiological situation that threatens the health of the people is appearing. The dried up Aral Sea area is now 26,000 km². From this area, about one million tons of sand and dust flies all over the Aral Sea regions. In recent years, the climate has even worsened. The deserts and dried areas of the Aral Sea is the basis of sandy winds and dusts. Dust extends even beyond 200 km. Every year, from 15million up to 75 million tons of dust is distributed to the atmosphere. The Amudarya delta mainly consists of low-glacial and alluvial (river-flowing) rocks and is less saline. Here, the wind and water erosions are bounded, and the storm creates a complex relief. In the sandy fields long-lasting plants, such as *Salsola richteri*, *Tamarisk* and thicket sprouts are developing well. 1 million ha *Oqtepa* archipelago in the northern part of the Aral Sea is the basic

reservoir of salts. This archipelago continues to the north-eastern part of the Kzylkum and consists of high, streamy sands. They are 10-15 meters in height [3].

The dried area of the Aral Sea bed is characterized by galageo long-term chemical process, depending on the intensities of the layers of the lithologic layers and surface and the depth of the underground waters.

In the Amudarya Delta, artificial lakes and ponds are organized, by sending a large amount of water (about 1-1.5 km³) each year. This process allows for the development of fishery in the summer, as well as water supplies to pastures and hay fields. As a result, livestock farmers are able to accumulate fodder base. These measures, in turn, prevent the desertification, allowing the thicket fields to remain at a certain level. With the development of fishing in the new freshwater basins, these water basins have become a home for many birds. The relative humidity has risen slightly and created favorable conditions for the growth of the grassland. However, these processes are the activities of local people without any engineering projects. The geocological situation in the country would have been greatly improved if hydro-technical facilities were built and put into operation on the basis of major engineering projects in the Aral Sea area and sufficient water was available for everywhere [2].

2. CONCLUSION

In conclusion, the problem of the Aral Sea today is not only a regional problem, but also a global problem. The dust and salts flowing from the Aral Sea to nearby areas are leading to the salinization and as a result of this, the environment is getting polluted. It is leading to the deterioration of agricultural crops, as a result of salinization of the land. In order to prevent such a negative phenomenon, it would be better to increase the saline-tolerant plants in the dried up Aral Sea basin. Because even less plants can be used to minimize the spread of salts and dust in the environment.

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