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**THE PROBLEM OF THE ARAL SEA**

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**ABSTARCT**

This article talks about the problems of the Aral Sea and measures to eliminate this problem.

**Keywords:** Aral Sea, Solutions, Water, Salt, Environment

The Aral Sea is situated in Central Asia, between the Southern part of Kazakhstan and Northern Uzbekistan. Up until the third quarter of the 20th century it was the world's fourth largest saline lake, and contained 10grams of salt per liter. The two rivers that feed it are the Amu Darya and Syr Darya rivers, respectively reaching the Sea through the South and the North. The Soviet government decided in the 1960s to divert those rivers so that they could irrigate the desert region surrounding the Sea in order to favor agriculture rather than supply the Aral Sea basin. The reason why we decided to explore the implications up to today of this human alteration of the environment is precisely that certain characteristics of the region, from its geography to its population growth, account for dramatic consequences since the canals have been dug. Those consequences range from unexpected climate feedbacks to public health issues, affecting the lives of millions of people in and out of the region.

The shrinking of the Aral Sea in Central Asia is considered one of the most dramatic examples of a natural area destroyed by human activities. For almost 30 years the use of water for irrigation of the cotton monoculture and the heavy application of insecticides, pesticides, herbicides and defoliants has brought not only ecological, economic and social insecurity to the resident population, but also created a critical situation for human health. However, the real tragedy is in the associated impacts on the health and well being of the local population and the ecological balance in the region.

Most of the changes in climate and landscape in the Aral Sea basin that we are about to explore are at the least indirect products of Human induced changes. While we must remember at all times that society is responsible for the crisis that has unfolded in and around the Aral, the point we want to make is that most of the actual changes that have afflicted the Sea since the 1960s are the result of our environment's reaction to the stresses society has imposed on it. Thus, the difficulty lies as much in understanding the way climate and other natural systems function as in being capable of weighing the potential consequences of our actions before we undertake them. Risk assessment combined with scientific understanding should undercut our actions more efficiently; adding an ethical dimension to the equation remains more than welcome in addition to those more accessible and quantifiable factors, but is too fragile to be the centerpiece on which our decisions rely before we commit to large scale actions which can often, as we are about to see, engender even larger responses from our environment. For thousands of years, the Aral Sea was one of Earth's largest inland bodies of water, straddling what is now Kazakhstan and Uzbekistan. The name roughly translates as "Sea of Islands," referring to more than a thousand islands along which fishermen would sail, bringing bounties of fish to markets along its shores. Now, despite nearly 50 years of discussions on how to save it, its people and the regional economy, less than five percent of the sea's former glory remains and local livelihoods are increasingly harsh and unsustainable.

The lake started to dry up in the 1960s as water was diverted to nourish the region's thriving agricultural economy. In its place, a vast new desert appeared, permeated with toxic pollutants from industry and agriculture. Those who lived along its shores either fled, or struggle for existence. Children and mothers are particularly at risk as the levels of environmental pollutants like dioxins are among the highest in the world.

In responding to the crisis, a consortium of United Nations agencies including UNDP, the World Health Organization, UNESCO, the UN Population Fund and UN Volunteers are working together through a joint programme called Sustaining Livelihoods Affected by the Aral Sea Disaster. We, together with the Government of Uzbekistan and many other local and international organizations, have been working tirelessly over the years to improve the lives and livelihoods of those effected by the crisis.

The environmental and ecological problem which occurred in Central Asian and Uzbekistan is Aral Sea. During 1911–1960 years Aral Seas was flown into about 52 km<sup>3</sup> in every year. And its salinity level was 9.5–10 percent, water level was 52 metres, depth of water was 16 meters. The water level in the Aral Sea started drastically decreasing from the 1960s onward. In normal conditions, the Aral Sea gets approximately one fifth of its water supply through rainfall, while the rest is delivered to it by the Amu Darya and Syr Darya rivers. Evaporation causes the water level to decrease by the same amount that flows into the Sea, making it sustainable as long as inflow is equal to evaporation on average. Therefore the diversion of rivers is at the origin of the imbalance that caused the sea to slowly desiccate over the last 4 decades. And since building new canals and big dams amount of water flown into Aral Sea by Amudarya and Syrdarya caused water decreasing. Level of salinity rose from approximately 10g/l to often more than 100g/l in the remaining Southern Aral. Salinity of the rivers varies with place and time, as well as through the seasons. When going through the desert, rivers often collect some salt compounds residues in the ground that result in higher salinity, but may well be lowered again after going through irrigated lands. Dams also affect salinity, notably by reducing its variability with the seasons. Smaller lakes within the Aral Sea that have stopped being fed by river flows tend to have higher salinity due to evaporation, causing some or all fishes that either survived or had been reintroduced in the 1990s to die. Even re-watering those lakes does not compensate for the increased salinity over the years. In 1998, water level was down by 20m, with a total volume of 210 km<sup>3</sup> compared to 1,060km<sup>3</sup> in 1960. Area is getting small year by year. Nowadays 2 main tasks are being adjusted by Government of Uzbekistan. And it means there are 2 solutions for the country: first is to keep the amount of water and second is to improve ecological environment around Aral Sea. To keep the amount of the Sea with water level 33 meters the Sea must be flown 20 km<sup>3</sup> water by Amudarya and Syrdarya in every year. The main way of improving ecological environment consists of providing population who live around the Sea with clear water, sending water to dried lakes, areas regularly, fortifying soil with plants and widening grassland, increasing meliorated case of the area. But in the past time The Aral Sea was considered as one of the main inside seas and was used for fishing, transportation and for other needs. In ancient time water level contained 1.5–2.10, was up to natural features of climate, and amount of water was 100–150 km<sup>3</sup>, water level area was 400 km<sup>3</sup>. In dry years amount of water flown into Amudarya and Syrdarya deltas decreased. So, at present time water level of the Sea lowered 16.8 m comparing with 1961. The desiccation of the Aral Sea greatly increased the number of dust and salt storms in the area. Satellite images have revealed that there are up to ten major dust storms occurring annually in the region, most of them occurring between the months of April and July (Glantz 1999). While before, the pressure from

the water surface dampened the strength of the northerly and north-easterly winds, the loss of the sea meant that its protective action from the wind was significantly reduced. The receding sea left behind large amount of salt, and ground water evaporation further increased the amount of salt from the exposed sea bed. The strong north-easterly winds now pick up the sand, salt, and dust, creating strong dust storms. The salt content in the dust made up about 30– 40 % of the volume in the summer, and was as high as 90 % in the winter (Hydro meteorological Center of Uzbekistan). The storms are often between 150 and 300 km wide. The dust was distributed in areas far beyond the region — the dust from the Aral Sea region was found as far as 500km away from the original source (Micklin 2007). Some of the salt reached the intensively irrigated and cultivated soils, which even ruined the soil far away from the Aral Sea region. It was estimated that the average amount of salt removed from the entire dried seabed was about 43 million metric tons between 1960 and 1984 (Glantz 1999).

Despite the activities of international and local organizations, there has been little positive change for local people. Indeed, the situation continues to worsen even though international agencies and institutions have been involved in the Aral Sea crisis for decades. Numerous conferences have been held, millions of dollars spent, and many declarations and promises made to save the Aral Sea, but no concrete results can be seen from these efforts.

In order to implement this initiative, together with the UN the programme “Building the resilience of communities affected by the Aral Sea disaster through the Multi-partner Human Security Fund for the Aral Sea” has been developed. An official launch of this programme was held in Tashkent, on February 10, 2017.

Huge efforts are also directed to the practical solution of these tasks at the regional level. A landmark event in this regard was the creation in January 1993 of the International Fund for Saving the Aral Sea (IFAS), the founders of which were Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan. In order to prevent the negative consequences of the Aral problem, within the framework of IFAS three programs have been implemented to assist the countries of the Aral Sea basin (ASBM-1, ASBP-2, ASBM-3).

At the national level, Uzbekistan is undertaking great efforts to combat the negative consequences of the desiccation of the Aral Sea on the environment and human health.

On August 29, 2015 the Cabinet of Ministers of the Republic of Uzbekistan adopted the Resolution "The comprehensive programme for mitigation of consequences of Aral catastrophe, rehabilitation and social-economic development in the Aral Sea coastal area for 2015-2018" that is envisaged to implement projects worth of \$3.9 billion in five main directions: the economical and rational use of water resources and enhancement of the management system, creation of conditions for reproduction and preserving the gene pool and health of the population residing in zones of environmental risk, development of the necessary economic factors and the mechanisms for increase in level and quality of life of the population of Priaralya, protection and conservation of flora and fauna, restoration of ecosystems and biodiversity.

On January 18, 2017 the President of the Republic of Uzbekistan also approved the State program on development of the region Priaralya for 2017 - 2021 aimed at improving the conditions and quality of life of the population of the region, providing for the implementation of projects worth 8.422 trillion sum.

The program includes measures to create new jobs, increase the investment attractiveness of the region, develop water supply, sewage systems, sanitation and recycling household waste, improve public health, housing conditions, improve the territories, create children's and sports play grounds, develop transport, engineering and communication infrastructure of settlements, improve of heat supply systems in Nukus and Urgench.

However, taking into account the planetary nature of the Aral catastrophe, it is necessary to expand joint actions together with the world community in this direction by implementing deeply thought-out, targeted and well-funded projects.

*Position of Uzbekistan on the use of water resources of transboundary rivers in Central Asia.*

The Republic of Uzbekistan believes that the issue of the use of water resources in Central Asia should be considered in accordance with the universally recognized norms of international law that guarantee the rational and equitable distribution of water resources and ensure that the interests of all countries of the region are taken into account.

Given the fact that Uzbekistan currently, like other Central Asian countries located in the lower reaches of transboundary rivers, suffers a serious water shortage, the position of the Government of Uzbekistan on the use of transboundary water resources in Central Asia is as follows:

- the use of water resources of transboundary rivers in Central Asia should be solved taking into account the interests of more than 60 million people residing in all countries of the region;
- any actions carried out on transboundary rivers should not have a negative impact on the existing ecological and water balance of the region;
- the current international legal framework in the sphere of water use and ecology should become the basis for building an effective system for joint use of the resources of the transboundary rivers in Central Asia;
- the implementation of projects should be carried out on the basis of a constructive approach as well as a compromise that does not infringe upon the interests of other interested countries and guarantees two necessary conditions: prevention of the lowering of the water-balance level agreed upon by the parties for downstream countries; prevention of the violation of the ecological balance of the region.

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