The Aral Sea Encyclopedia

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Springer

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The Aral crisis is the most dramatic example of the environmental problems with serious socioeconomic consequences facing, directly or indirectly, all states of Central Asia. The crisis related to the drying of the Aral Sea emerged as a result of the agrarian orientation of economics based on development of irrigated farming and growing volumes of consumptive water use for irrigation.

Fourth Conference of Ministers
"Environment for Europe"
Central Asian States:
Environmental Assessment,
Denmark, Orkus, June 1998

Once upon a time the sea was here
Near the steep slope.
The Aral fishermen enjoyed themselves
Just on its scope.
They were catching fish by fishing tackle,
Lived in peace and concert,
Spent the nights near campfires,
Sang the songs, and never thought
That the sea would disappear here,
And no place would be for them
In the sea expanse.
The Aral went away,
We'll never meet again,
The only thing which left
It is its name...

Olga Krestovskaya
Pupil of the 6th class
Aralsk, 1998

It takes all our strength and resolution not to leave things that will make our future generations feel shameful.

Saigo Takamori,
last samurai of Japan

Contents

Introduction

The "Aral Sea Encyclopedia" is the first one in the new series of encyclopedias about the seas of the former Soviet Union.

Preparing it we faced certain difficulties. The thing is that this encyclopedia is a *monument to the sea* that is disappearing during our lifetime.

The world community considers the situation with the Aral Sea and all changes that occurred in its whereabouts in the recent decades as one of the most serious, if not disastrous anthropogenic environmental crises of the 20th century.

Before 1960, this was a water-abundant sea-lake that was fourth among world lakes after the Caspian Sea (USSR, Iran), the Great Lakes (USA, Canada) and Victoria Lake (Africa). This was a real "pearl" among the sands of the largest deserts, the Karakums and the Kyzylkums. Navigation between the sea ports Muinak and Aralsk and fisheries famous for the Aral breams, barbells, sturgeons, shemaya, and others were developed here. One could find beautiful recreational zones and beaches here. The deltas of the Amudarya, the major river of Central Asia, and the Syrdarya bringing their waters into the Aral Sea were famous for their biodiversity, fishery, muskrat rearing, reed production. The local population found occupations related to the water infrastructure.

However, the development of wide-scale irrigated farming in an attempt to create cotton independence for the former Soviet Union demanded regulation of the Amudarya and Syrdarya flows and construction of water intake structures there. With the expansion of irrigated lands, the water inflow into the Aral Sea diminished and the process of its drying and salinization was set in motion. This led to a practically complete degradation of the historically established ecosystem and, as a result, to the socioeconomic crisis in the whole Circum-Aral area.

By the mid-1980s, the Aral crisis was acknowledged by the whole world and became one of the most significant environmental protection issues. The Aral problem is not global, but nevertheless it stirs global interest. For many years, it was used by various interested parties to stress how quickly human activities may cause degradation of vast expanses on our planet.

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Fig. 1 The map of Asia (http://www.lib.utexas.edu/maps/asia.html)

Former US Vice President and 2007 Nobel Prizewinner Al Gore, who visited the Aral Sea during the period of its drying, wrote that more often many people define their nationality using ecological rather political terms. Thus, the Aral Sea region was populated by the people from some former Soviet republics affected by the regional environmental disaster of the Aral Sea (Al Gore, Earth in the Balance, Ecology and the Human Spirit, 1992).

Today much of the geographical and hydrographic "infrastructure" of the Aral has been lost, and, unfortunately, we have to write about this in the past time. This loss includes islands, bays, capes, arms, and straits. Of course, their contours are changing, and now they are not found among the waves of a blue sea, but in the "sea" of the stiffened, sandy waves of the world's youngest desert – Aralkums. And today, the Aral really turns into a "glass of water" as A.I. Butakov, who studied this sea, wrote in the mid-19th century (although in Butakov's time this "glass of water" was rather full).

The Aralkum "sea" is a museum in the open air. Its main exhibits include remnants of ships that not long ago sailed over the real sea but have now turned into rusty metal hulks, replaced by the live "ships of the desert" – camels.

As is known, today the Aral Sea is shared by two independent states, the Republic of Uzbekistan and the Republic of Kazakhstan. They share the suffering of all of the consequences of the Aral Sea drying. But the same

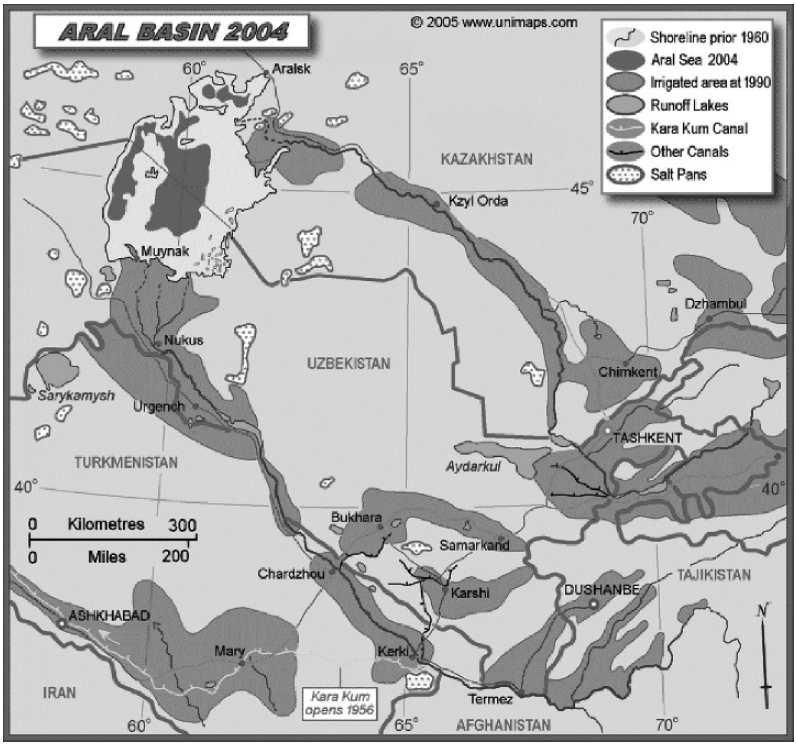

Fig. 2 The map of the Aral Sea Basin (http://unimaps.com/aral-sea/aral-pic.gif)

Fig. 3 The remnants of ships in the Aralkums desert

consequences are faced in the northern territories of Turkmenistan, too, which border the Amudarya delta.

Five independent states located in the Aral Sea basin – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan – demonstrate their truly Oriental wisdom in understanding the significance of the population salvation in this region and imparting stability to the natural-anthropogenic complex of the Circum-Aral area. They have rallied their efforts to create an interstate authority for water resources management in the basin, which has made it possible to attract many leading governmental and nongovernmental international organizations to address many complicated hydrological, hydrotechnical, and socioeconomic issues. The results are already palpable – the Small Aral Sea is being restored; however, a wealth of unsettled issues remain.

This encyclopedia combines the principal results of the fundamental, so to say "benchmark," investigations of the Aral and also information about the leading international programs and projects. Naturally, this was the authors' choice. During preparation of this encyclopedia, the authors faced certain difficulties related to the lack of or not readily accessible information from the Aral countries.

The encyclopedia includes a chronology of historical events relative to the Aral Sea development and study for the past 300 years – from the time of Peter I to the present.

In our opinion, this work is necessary to preserve and highlight for future generations the history of the major mistakes of an authoritative society of "nature conquerors" and attempts at rectification of those mistakes. This work does not claim to be exhaustive in elucidation of the Aral problem. This publication is intended for a wide public – from decision-makers to school pupils and for all those who are interested in the problems of this region – its geography, history, ethnography, economics, and ecology.

We would like to thank Springer-Verlag for the steady interest to the Aral Sea problem, which was initiated by the book by Letolle R. and Mainguet M. "Aral" published in 1993. In 1996 the Proceedings of the NATO Advanced Research Workshop on the Aral Sea Basin, that was held in 1994 in Tashkent, Uzbekistan, were published and till present are cited very often in the scientific publications. The same year Springer published in German the book by Letolle R. and Mainguet M. Der Aralsee (1996). Another interesting book "Sustainable Land Use in Deserts" edited by S.-W. Breckle, V. Veste, W. Wucherer was published by Springer in 2000. In 2005 Springer in association with Praxis Publishing issues "Physical Oceanography of the Dying Aral Sea" by P.O. Zavialov. The present book "The Aral Sea Encyclopedia" continues this very interesting Aral Sea series and starts the new one – "Encyclopedia of the Seas", that will be continued by the following volumes –"The Caspian Sea Encyclopedia" and "The Black Sea Encyclopedia" in 2009. And finally, in 2009 Springer will publish "The Aral Sea Environment" edited by A.G. Kostianoy and A.N. Kosarev.

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