



## ARAL DISASTER AND ENVIRONMENTAL RESPONSIBILITY: MODERN APPROACHES

*Nurlan Yusupovich Jamalov*

*Samarkand State Veterinary Medicine, Livestock and  
assistant of the Nukus branch of the University of Biotechnologies  
Nukus, Karakalpakstan*

### ABOUT ARTICLE

**Key words:** Aral Sea tragedy, environmental responsibility, modern approaches, sustainable development, water resources, international cooperation.

**Received:** 04.02.26

**Accepted:** 05.02.26

**Published:** 06.02.26

**Abstract:** This article analyzes the ecological disaster caused by the drying up of the Aral Sea and its regional and global consequences. The Aral Sea disaster is one of the largest environmental problems in Central Asia, negatively affecting the environment, economy, healthcare, and social spheres. The article examines the concept of environmental responsibility based on modern approaches, highlighting the role of sustainable development, transboundary water resource management, environmental security, and international cooperation. The implementation of environmental restoration projects in the Aral Sea region, their effectiveness and prospects will also be discussed. The research results show the relevance of modern approaches to finding sustainable solutions to environmental problems and increasing environmental awareness.

## OROL FOJIASI VA EKOLOGIK MAS'ULIYAT: ZAMONAVIY YONDASHUVLAR

*Nurlan Yusupovich Jamalov*

*Samarqand davlat veterinariya meditsinasi  
chorvachilik va biotexnologiyalar universitetining Nukus filiali assistenti  
Nukus, Qoraqalpog'iston*

### MAQOLA HAQIDA

**Kalit so'zlar:** Orol dengizi fojiasi, ekologik mas'uliyat, zamonaviy yondashuvlar, barqaror rivojlanish, suv resurslari, xalqaro hamkorlik.

**Annotatsiya:** Ushbu maqolada Orol dengizining qurib borishi natijasida yuzaga kelgan ekologik falokat hamda uning mintaqaviy va global oqibatlari tahlil qilinadi. Orol dengizi fojiasi Markaziy Osiyodagi eng

yirik ekologik muammolardan biri bo'lib, atrof-muhit, iqtisodiyot, sog'liqni saqlash va ijtimoiy sohalarga salbiy ta'sir ko'rsatmoqda. Maqolada zamonaviy yondashuvlar asosida ekologik mas'uliyat tushunchasi ko'rib chiqilib, barqaror rivojlanish, transchegaraviy suv resurslarini boshqarish, ekologik xavfsizlik va xalqaro hamkorlikning o'rni yoritib beriladi. Shuningdek, Orolbo'yi mintaqasida amalga oshirilayotgan ekologik tiklash loyihalari, ularning samaradorligi va istiqbollari muhokama qilinadi. Tadqiqot natijalari ekologik muammolarga barqaror yechimlar topishda zamonaviy yondashuvlarning dolzarbligini hamda ekologik ongni oshirish zarurligini ko'rsatadi.

---

## АРАЛЬСКАЯ КАТАСТРОФА И ЭКОЛОГИЧЕСКАЯ ОТВЕТСТВЕННОСТЬ: СОВРЕМЕННЫЕ ПОДХОДЫ

*Нурлан Юсупович Жамалов*

*Ассистент Нукусского филиала Самаркандского государственного университета ветеринарной медицины, животноводства и биотехнологий  
Нукус, Каракалпакстан*

---

### О СТАТЬЕ

**Ключевые слова:** Аральская трагедия, экологическая ответственность, современные подходы, устойчивое развитие, водные ресурсы, международное сотрудничество.

**Аннотация:** В данной статье анализируется экологическая катастрофа, возникшая в результате высыхания Аральского моря, а также её региональные и глобальные последствия. Аральская трагедия является одной из крупнейших экологических проблем в Центральной Азии, оказывая негативное влияние на окружающую среду, экономику, здравоохранение и социальную сферу. В статье рассматривается понятие экологической ответственности с современных позиций, включая устойчивое развитие, управление трансграничными водными ресурсами, экологическую безопасность и роль международного сотрудничества. Также обсуждаются реализуемые в Приаралье проекты по экологической реабилитации, их эффективность и перспективы. Результаты исследования подчёркивают актуальность современных подходов к решению экологических проблем и повышению экологического сознания.

The drying up of the Aral Sea is one of the largest ecological disasters of the 20th century. It had a profound impact not only on nature, but also on the socio-economic life of the entire Central Asian region. This article discusses the causes, environmental and social consequences of the Aral Sea disaster, as well as modern environmental approaches and responsibility concepts. The Aral Sea region as a zone of environmental innovations President Shavkat Mirziyoyev, at a special session of the UN General Assembly on May 18, 2021, took the initiative to declare the Aral Sea region a zone of environmental innovations and technologies:

"The initiative to declare the Aral Sea region a zone of environmental innovations and technologies was unanimously adopted on the basis of a UN resolution."

Thanks to this decision, the Aral Sea region has become an open platform for international scientific, environmental, and social projects.

The causes of the Aral Sea disaster - By the end of the twentieth century, humanity faced the problem of preserving a favorable habitat and natural objects that had significantly deteriorated under the influence of anthropogenic activity as a result of the rapid development of various industrial sectors and increasing involvement in the exploitation of natural resources.

Since the 1960s, most of the water of the main sources flowing into the Aral Sea - the Amu Darya and Syr Darya - has been directed to irrigate cotton and other agricultural crops. As a result of the incorrect water policy implemented during the Soviet era, the natural water balance of the sea was disrupted. As a result of this process, the sea began to recede rapidly.

The bottom of the Aral Sea was formed as a result of subsidence under the influence of colostonic movements. The initial filling of this sediment with water from the Amu Darya and Syr Darya occurred in the first half of the first millennium BC. Then, due to the increasing and decreasing water levels of the Amu Darya and Syr Darya rivers, the sea's waters sometimes decreased, sometimes increased. If we look at history, over the past 200 years, the water level in the Aral Sea has risen three times and decreased two times. The reason for this is that, when considering natural factors, the periodicity of the sun and the activity of its radiation are associated with periods of humidity and drought, which affected the water regime of rivers. The reason is that during this period, the anthropogenic impact on the water resources of the Aral Sea basin was still weak.

**IT IS POSSIBLE TO BRIEFLY EXPLAIN THE CAUSES OF THE ORAL SEA  
PROBLEM.**

1. Development and placement of water-intensive production enterprises	4. Incorrect determination of irrigation norms, without taking into account local and climatic conditions, in order to achieve high yields.
2. Expansion of the sown areas of the most water-intensive crops on the farm, especially cotton and rice.	5. Scientifically unfounded processes that can affect the environment in the economic development of the region.
3. Opening new sown areas with low yields and difficult irrigation, and neglecting the quality of irrigation work.	6. Poor quality of design, construction, and operation of systems

One of the environmental problems, that is, the tragedy of the Aral Sea, which was once the fourth largest lake in the world, is one of the global environmental problems. The ecological disaster of the Aral Sea is an example of illiterate use of natural resources and a vivid example of ill-conceived human activity. The disappearance of the sea is associated with the implementation of projects to divert river flows. Historically, the Aral Sea was the center of development of such peoples as Uzbeks, Kazakhs, Karakalpaks, and Turkmens. Since ancient times, with the development of irrigated agriculture, cotton farming has been practiced here, peaches, apricots, grapes, as well as other types of fruit and melon crops were grown. The Aral Sea region is considered a territory with diverse flora and fauna, in which there were 38 species of fish and 1 million saiga, flowers, and a composition of 638 plants. Social problems - Environmental problems directly affected the way of life of the population living around the Aral Sea. The decline in agriculture and fisheries - as a result of the decline in seawater, the fishing industry practically disappeared, and agriculture collapsed due to salinization. 2. Health problems - due to dust and salt storms, respiratory diseases, especially bronchitis and asthma, have increased. 3. Population migration - due to economic difficulties, many people were forced to leave the region, which damaged the social balance. Measures to solve the problem - various projects are being implemented at the regional and international levels to overcome the Aral Sea crisis. Among them, the following can be highlighted: Projects for the restoration of the North Aral Sea - the project of the Karakalpak Reservoir (Koksaray), implemented in Kazakhstan, helped to restore part of the North Aral Sea. The use of water-saving technologies - drip irrigation in agriculture and other modern methods - is aimed at reducing the amount of water taken from rivers. International cooperation - Within the framework of the International Fund for Saving the Aral Sea (IFAS), the

countries of Central Asia are implementing joint projects aimed at solving environmental and social problems. The International Fund for Saving the Aral Sea (IFAS) was founded in 1993 by the countries of Central Asia.

Its goal is to mitigate the ecological crisis in the Aral Sea region, expand opportunities for economic development, and ensure socio-economic recovery. Several strategic programs and reports have been developed within the framework of IFAS. The ecological education of the population, ecological knowledge, and the development of ecological consciousness in people play a key role in the history of all human development. If we emphasize that human factors contribute to the emergence of the global environmental problems studied above, then the preservation of Mother Nature will also be influenced by human factors. Of course, for this, we can prevent the escalation of existing environmental problems and prepare for future climate change through a highly developed ecological consciousness in humans.

This, in turn, today requires the study of the relationship between man and the environment as a psychological problem. At the same time, it also requires the involvement of psychologists in studying the root causes of all emerging environmental problems. Environmental problems have a negative impact on human psychology and psychophysiology. It is necessary to conduct psychological research on the existing environmental problems of the Aral Sea region, diagnose the psychological health of the population, and provide them with various types of psychological services. It is advisable to study the psychological health of the population, introduce types of services for psychoprophylaxis, psychodiagnostics, and psycho correction. Environmental consequences

The drying up of the island caused the following environmental problems in the region:

- Air pollution due to saline and toxic dust released into the atmosphere;
- Salinization of water and soil;
- Reduction of flora and fauna, destruction of ecosystems;
- Regional climate change - increased heat in summer and severe cold in winter.

Socio-economic consequences

- Complete disappearance of the fishing industry;
- Increased unemployment and poverty;
- deterioration of public health - especially an increase in respiratory diseases;
- Population migration.

Modern ecological approaches

1. Reconstruction projects of the Small Aral Sea

Within the framework of the "Little Aral" project in Kazakhstan, the Kokaral Dam was built, and the water level began to recover. As a result, fishing was partially restored, and positive changes occurred in the lives of the local population.

## 2. International cooperation

Organizations such as the UN, the World Bank, and the International Fund for Saving the Aral Sea (IFAS) support projects related to the Aral Sea. The issue of regional integration and fair distribution of water resources is on the agenda.

## 3. Sustainable agriculture

The introduction of modern irrigation technologies (for example, drip irrigation) and the transition to low-water crops are bringing ecological relief.

## 4. Raising the ecological awareness of the population

Environmental education and active public participation are an integral part of sustainable development. Teaching the younger generation ecological responsibility is of great importance.

The Aral Sea tragedy clearly demonstrated the severe consequences of humanity's poorly controlled and short-term interest-based attitude towards nature. The drying up of the sea negatively affected not only the ecological environment, but also the health, social life, and economy of thousands of people. Learning from this tragedy, it is necessary to rely on modern approaches, that is, the principles of sustainable development, rational management of water resources, international cooperation, and environmental responsibility. Current restoration projects, including the "Little Aral" experience, measures to increase the environmental awareness of the population, the introduction of water-saving technologies, and environmental education, serve to mitigate the consequences of the tragedy. However, this is not enough - the solution of the environmental problems of the Aral Sea region requires continuous scientific research, practical work, and joint efforts at the international level.

The fate of the island is a lesson that concerns all of humanity. Maintaining a healthy ecological environment for future generations is the common responsibility of every person, every society, and every state.

### References:

1. Нукуская декларация государств Центральной Азии и международных организаций по проблемам устойчивого развития бассейна Аральского моря (г. Нукус, 5 сентября 1995 г.)

2. Международный Фонд спасения Арала «Программа конкретных действий по улучшению экологической и социально-экономической обстановки в бассейне Аральского моря на период 2003-2010 гг.– Душанбе – 20031. BMT yangiliklari sayti (<https://news.un.org>)

3. Jamalov N. SOCIO-PHILOSOPHICAL IMPORTANCE OF RENAISSANCE CULTURE IN CENTRAL ASIA //Galaxy International Interdisciplinary Research Journal. – 2024. – T. 12. – №. 6. – C. 400-404.

4. UN News Website (<https://news.un.org>)