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Die Welt in der Krise - Klimawandel, Pandemie und Krieg

The Aral Sea region faces challenges on multiple levels, but reforms are underway

Environmental degradation, public health and human rights in the Aral Sea region

Von Astrid M. Knoblauch, Gulara Afandiyeva, Aatreyee Das, Dominik Dietler und Helen Prytherch

Over the past decades, the Aral Sea has declined to less than 10% of its initial size due to global warming, hydrological changes, and excessive irrigation for cotton cultivation. The low water table has uncovered sediments full of toxic substances, which were deposited during decades of heavy insecticides and pesticides use. Winds from the dry lake distribute these pollutants across distances of several hundred kilometers. This environmental disaster is negatively impacting the health of the vulnerable population of the Aral Sea region.

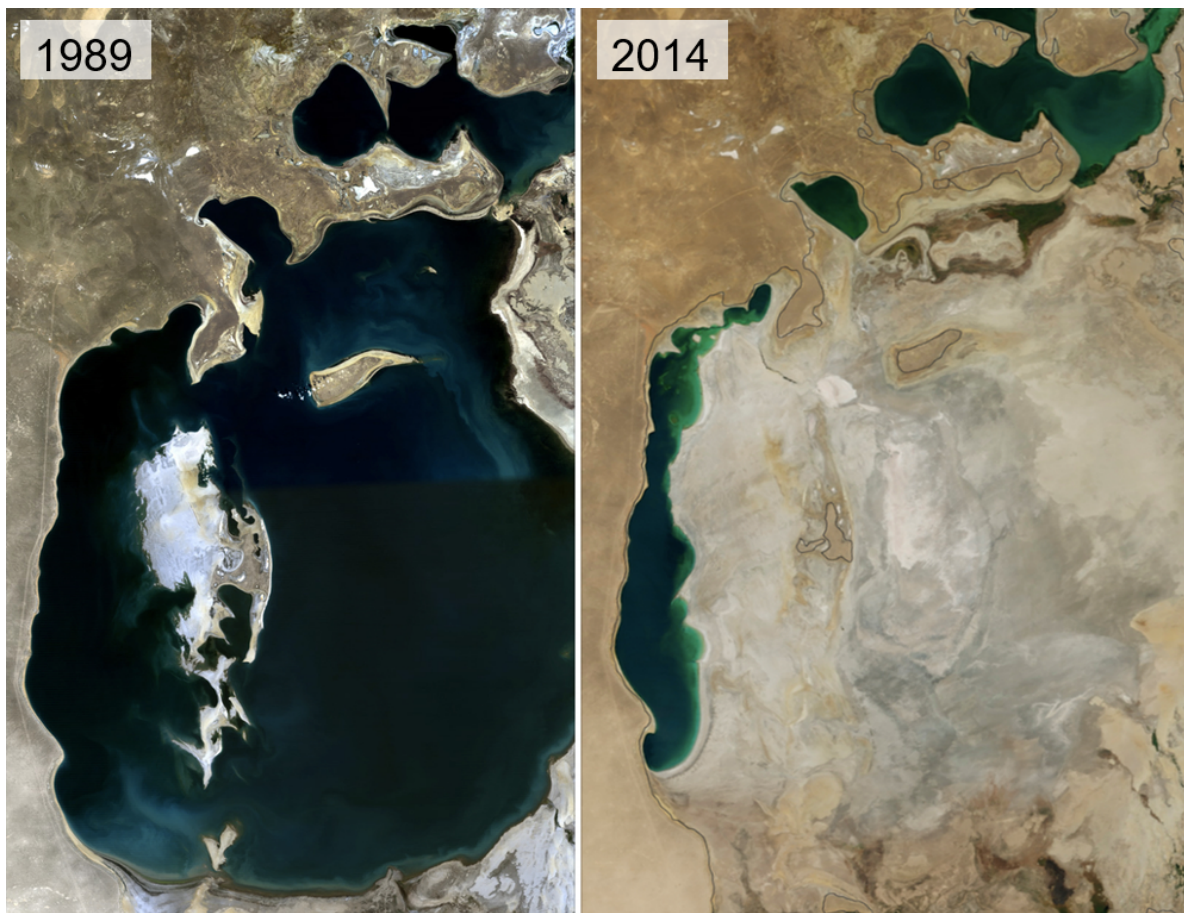


Dried out Aral Sea basin. Photo: Swiss TPH

An interesting yet challenging context

The Aral Sea region is a shared area between the Central Asian countries of Uzbekistan and Kazakhstan. Uzbekistan is a former Soviet country and in addition to the administrative oblasts (regions), there are also semi-autonomous regions. The largest and least populated of these semi-autonomous regions is the 'Republic of Karakalpakstan'. It is located in the north-western part of the country and includes Uzbekistan's part of the Aral Sea.

Sixty years ago, the Aral Sea was the 4th biggest lake in the world. In the 1960s, massive Soviet irrigation projects, especially for cotton production, started in the region. As a consequence, the rivers in Uzbekistan and Kazakhstan were feeding significantly less water into the Aral Sea, depleting the water body. As this excessive water use for agricultural projects continued, the Sea was losing large parts of its surface over a short period of time. By the 2000s, the lake was left with less than 10% of its original surface, leaving behind a deserted sandy area with sparse vegetation (Tussupova, K., et al., 2020).



Aral Sea from space, 1989 and 2014. Photo: CIA Factbook / NASA

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Alongside the tragedy of the excessive water loss, pesticides and insecticides were heavily used for the agricultural activities, which were washed in by the rivers flowing into the Aral Sea. As the water body depleted, the lake basin sediments that contained these toxic materials and salts became exposed. Strong winds and storms carry dust, toxic substances, as well as massive amounts of sand and salt up to hundreds of kilometers across the region. This further accelerated the desertification of the area and was, at the same time, damaging human health and the environment in general.

Climate change and hydrological changes contributed to the disaster (Narbayep, M. and V. Pavlova, 2022). Global climate change leads to hotter summers, longer cold spells, more frequent droughts and more intense dust storms. Furthermore, the drying of the Aral Sea itself affected the local micro-climate. Within 100 km of the original coastline, the level of air humidity has decreased and accordingly, the amount of rain has decreased.

The evident environmental and human health impacts are intertwined with socio-political and economic challenges. Due to the dire environmental situation, many people lost their livelihoods, especially in the fisheries and cotton industries, leading to substantial out-migration from the area. This included out-migration of skills in many sectors, including service provision sectors such as health. Left behind was a vulnerable population that did not have the option to leave.

The population in the Aral Sea is now in desperate need for national support and the Government is making considerable efforts. However, due to the semi-autonomous status of the Republic of Karakalpakstan, certain tensions remain when the population of the Republic demand better rights, for example for health care. There have been occasions when protests have been handled rather oppressively, further exacerbating an already challenging situation.

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Human health as a human right

In the frame of the health sector reform, the Swiss Tropical and Public Health Institute was involved in a feasibility study with the task to propose meaningful investments for the Aral Sea region to the Ministry of Health and the Kreditanstalt für Wiederaufbau (KfW Development Bank).

Data from a desk review, epidemiological statistics, interviews with health care providers and community focus group discussions were triangulated to assess the burden of disease and the health and human rights impacts of the environmental degradation in the Aral Sea region.

Official national and regional data show a steady increase of Non-Communicable Diseases (NCDs), specifically cardiovascular diseases, oncology diseases and mental health conditions. Hospital admissions for CVDs rose by 33% between 2007 and 2019 according to Ministry of Health data, and admissions for cancers rose by 36% for the same timeframe according to the WHO Health For All database (WHO, 2022).

Literature over the last decades suggests that morbidities and mortalities, especially of chronic conditions, are linked to exposure of various pollutants, including natural salts and carcinogenic substances (Anchita, et al., 2021). The high salt concentration of the used waters leads to

hypertension, hypercalciuria, cardiovascular diseases, high blood pressure, kidney stone, and bone metabolism disorders [5]. Studies suggest that the inhalation and oral intake of metals like nickel, cadmium, arsenic, selenium, mercury, manganese, phosphate, nitrate, copper, cobalt, and chromium might have led to various disease outcomes among the population of the Aral Sea Region, including cancers, anaemia, heart disease, gastrointestinal issues, biliary and renal calculosis (Tussupova, K., et al., 2020; Abedin, et al., 2020; Mamyrbayev, A., et al., 2016; Sadeghi-Bazargani, et al., 2019). In fact, morbidity rates for biliary calculosis have increased ten-fold, rates for chronic gastritis four-fold, renal diseases eight-fold and arthrosis and arthritis by five and seven times (Shamsiyev, et al., 2008). In addition, levels of self-rated health in the Aral Sea region of Uzbekistan are low relative to other parts of the country and well below what is found in western nations, which was associated with environmental concerns (Crighton, et al., 2003).

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Foto von Patrick Schneider auf Unsplash

Local perceptions assessed in our study aligned greatly with the findings from the literature. Almost all community members mentioned the widespread air, soil and water pollution, high salt content of drinking water, and the poor socio-economic situation of the population. This

socio-economic situation is characterised by high rates of unemployment, increasing poverty and stress related to high levels of migration and dependency on remittances. However, these remittances have been severely disrupted during the Covid-19 pandemic.

The study found also a discrepancy between the burden of disease and the number of specialists and types of services for the above-mentioned diseases, which are and will increasingly become more prevalent due to the continued exposure to risk factors.

The combination of environmental degradation, climate change, economic hardship and social challenges result in an increased burden of disease in the Aral Sea region. The population faces a difficult political situation, with knock-on effects on human rights, including the lack of human and other resources for basic service provision, including health.

Hope through reforms and investments

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Recently, the Government of Uzbekistan and its partners have started to take steps to alleviate the Aral Sea conundrum by working to restore the delta and wetland areas, create new livelihoods, and promote human rights, including through health and social reform processes. By ensuring stronger basic service provision, including through better equipped primary health care facilities, medicine supplies, and health “brigades” (teams) trained in the prevention, control and management of NCDs, the right to health is more strongly respected. Certain entitlements are also being introduced, e.g. a basic package of health services that are covered by a new health insurance, thus reducing the amount of out of pocket payments for services.

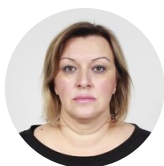
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Aatreyee Das is an epidemiologist specialised in modelling infectious diseases. She has a background in physics and computational biology, and has completed a PhD from Swiss TPH, focusing on the persistence and elimination of malaria and human African trypanosomiasis.



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