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Requiem for a dying sea

The drying-up of the once-great Aral Sea - until recent times the world's fourth largest lake - is well known. But the associated human tragedy affecting the health and survival of a whole nation has been overlooked. Don Hinrichsen travelled through the region to research this special report for *People & the Planet*.



Gazing out over what used to be the Aral Sea's southern shore from a high ridge on the edge of Muynak, Jasmurad Kenesbay pulls up the collar on his threadbare overcoat and bends his head into a fierce December wind. "I don't think I will ever fish again," he shrugs. "As the sea dies, so does this village. Our entire economy has been destroyed and so have our lives."

The sight from this perch, known as *Tigrovi Hvost* (Tiger's Back), is sobering. As far as the eye can see, the former seabed is now a salt pan desert, a virtual graveyard littered with the rusting remains of fishing trawlers and barges and the bleached bones of cattle, which died from eating salt-poisoned vegetation.

The fate of Muynak is closely tied to the fate of the Aral Sea itself. In 1950, Muynak was an island in the generous delta of the Amu Darya River, one of two major river systems that replenished the Aral Sea with some 50 km of freshwater a year. By 1962, four years after huge canals began to siphon off water from the river to irrigate cotton fields and rice paddies in Uzbekistan, Turkmenistan and Tajikistan, Muynak became a peninsula, shaped like a crooked finger pointing west. Within a decade (1970), the sea was 10 kilometres away from the former seaport. In 1980, the sea had receded 40 kilometres and at the beginning of 1995 it was 70 kilometres away across a trackless wasteland.

Until the late 1960s, more than 3,000 fishermen worked the rich waters around Muynak, hauling in some 22 different commercial species of fish, including carp, bream, pike-perch, roach, barbel and a local variety of sturgeon.

"In 1957, our last record year for fishing," recalls Kenesbay, "Muynak fishing collectives brought in nearly 26,000 tons of fish, accounting for over half of the total catch for the entire sea."

That same year, Muynak produced 1.1 million farmed muskrat skins which were sold to furriers and made into fashionable coats and hats. "We had a good economy then," says Kenesbay. "I belonged to one of 12 state farms which specialized in fishing. We were hauling in more than enough fish, and everyone had money to spend."

That soon changed. "All commercial fishing ceased in the Aral Sea by 1982," points out Kenesbay. "It was already too far away and too saline to sustain fisheries."

With irrigation needs increasing steadily, the sea continued to contract year after year as more water was diverted from the two river systems which fed it - the Amu Darya in the south and the Syr Darya in the north. By 1995, the amount of water supplied by these two rivers hardly amounted to a trickle, a mere 2-3 km³. Between 1960 and 1995, its surface area shrank by more than half, from 64,500 km² to less than 30,000 km². At the same time, it dropped 19 meters and its salinity tripled. More than 50 lakes in the Amu Darya delta dried up and its wetlands shrank from 550,000 hectares to less than 20,000 hectares. Once the world's fourth largest lake, the Aral Sea has now lost so much of its water volume that what little remains is contained in three separate highly saline lakes.

Today, there are no more than 250 fishermen in the entire district around Muynak. They drive to work in beat-up jeeps, instead of boats. Of the two dozen species taken in the Sea and the Amu Darya estuary three decades ago, only four species survive in the Delta's polluted waters and its few remaining lakes. No more than 3,000 tons of fish - consisting mostly of an oily-fleshed type of carp - were caught in 1994. Virtually nothing can be harvested from the sea itself. And the muskrat farms have all but disappeared, along with the delta's wetlands.

Muynak's fish cannery continued to operate, processing frozen fish brought in at great cost from the Baltic and North Atlantic. With the breakup of the Soviet Union, the newly independent Baltic States refused to ship more Baltic fish to Muynak. Authorities tried to buy fish from the Caspian Sea and as far away as the Pacific, with little success. Although the cannery is still technically open, it produced only 4 million cans in 1993, out of a total capacity of 27 million. In 1994 it operated for only a few days.

The collapse of fisheries was only the first ecological link to come apart. The sea used to regulate climate in the region, buffering the cold winds that roared out of Siberia in the winter, and acting as a huge air conditioner in the summer. With the demise of the sea, this climate modifying function has been lost. The climate around the sea has changed, becoming more continental, with shorter, hotter, rainless summers and longer, colder, snowless winters. The growing season has been reduced to an average of 170 days, fewer than the 200 frost-free days needed to grow cotton.

The Karakum and Kyzylkum Deserts now meet on the Aral's former seabed. The three million hectares of the seabed exposed to weathering has increased soil salinization and desertification around the sea. Dust storms scour the seabed and neighbouring areas, scattering salt and pesticide residues over the whole region. By 1993, some 75 million metric tons of dust and salt were being dumped on surrounding lands. Salts from the Aral Sea have even been traced as far away as Belarus, over 1,000 kilometres to the northwest.

"My own state farm converted from fishing to growing vegetables and raising cattle," notes Kenesbay. By the mid- 1980s, the land around Muynak was already degraded. Decades of poor irrigation practices had waterlogged or salinized formerly fertile soils. "With our equipment broken down and spare parts unobtainable, and no money for soil rehabilitation, we haven't had much success at agriculture," he adds.

As of December 1994, Kenesbay had not received a pay cheque since May. And even if he had, there is no longer a bank in Muynak capable of cashing it. As the economy has collapsed, so has people's faith in state institutions. What little money people have they hide under mattresses or bury in backyard gardens. Kenesbay and thousands of others like him throughout the region now live hand to mouth, in barter economies more reminiscent of the Middle Ages than the 20th century.

Muynak and the rest of the Amu Darya Delta is one of the most badly affected areas in the entire Aral Sea region. This area is part of the Karakalpakstan Republic, which sprawls around the southern portion of the sea, extending southward from Muynak along the Amu Darya River, its boundary ending just north of the ancient Uzbek city of Khiva. An autonomous republic now incorporated into Uzbekistan, Karakalpakia has over 1.2 million inhabitants which are ethnically and culturally distinct from Uzbeks.

"You must remember, the Aral Sea is not only an ecological catastrophe," points out former communist party official Abdikirim Tleyov. "It is above all a human one."

Currently working as the Director of the Muynak Biological Station, set up some years ago with German aid money to monitor the sea's decline, Tleyov is fighting to keep the Station open and his small staff employed. The future looks bleak. Recently, equipment donated by the Germans failed to arrive in Muynak. "We found out later the computers and monitoring equipment intended for our use had been confiscated in Tashkent by officials in the environment ministry," fumes Tleyov. "We got nothing at all."

Tleyov is convinced that the new Uzbek government is not interested in the problems of Karakalpakia. "The government is corrupt," insists Tleyov, banging his meaty fists on the table. "They want to do everything from Tashkent and ignore our efforts entirely. We can't get money from them for anything."

Uzbekistan, with 22 million people, has the largest population of any of the Central Asian republics. With acute water shortages of its own, it is easy to see how the Uzbek government can overlook the problems of Karakalpakia, squatting at the end of the pollution pipeline in the Amu Darya Delta.

But Uzbekistan's neglect of the needs of the Karakalpak people has translated into a human tragedy of mounting proportions. With the desiccation of the Aral Sea has come health problems on an unprecedented scale. Dr Oral Ataniyazova, a gynaecologist and obstetrician, based in Nukus, the capital of Karakalpakstan, thinks that most of the region's illnesses are environmentally induced. "We have high levels of heavy metals, salts and other toxic substances in our drinking water supplies, and the bulk of our vegetables are contaminated with organochlorine pesticides, such as DDT which is still used here in great quantities."

As a consequence, claims Dr Ataniyazova, "our people are dying like flies. Karakalpakia has the highest levels of maternal and infant mortality in the former Soviet Union." As of 1994, maternal deaths were 120 per 100,000 live births, and infant mortality was 60 per 1,000 live births.

According to a region-wide health survey carried out by Dr Ataniyazova over the last few years, this is only the surface of a problem that cuts very deep. Her findings are disturbing. During the past 10-15 years, kidney and liver diseases, especially cancers, have increased 30-40 fold, arthritic diseases by 60-fold and chronic bronchitis by 30-fold. Also, infectious diseases such as typhoid and hepatitis A have increased sharply.

The chronic deterioration of women's health in the republic is cause for grave concern. "Over 20 per cent of all our young women, aged 13-19, have kidney diseases," claims Dr Ataniyazova, who is also Director of the republic's only [Centre for Human Reproduction and Family Planning](#). "Another 23 per cent suffer from thyroid dysfunctions. And many women have high levels of lead, zinc and strontium in their blood." Apparently, the high strontium levels are due to the testing of atomic and hydrogen bombs in the region during the 1950s and 1960s.

In addition, over 80 per cent of all women in Karakalpakia suffer from anaemia. "Nearly all of them haemorrhage while giving birth," points out Dr Ataniyazova. "One reason why the maternal mortality rate is so high."

With all the ecological and economic problems afflicting Muynak, perhaps it is not surprisingly that the town is also a health disaster. According to the Institute of Clinical and Experimental Medicine in Nukus, nearly 70 per cent of the town's remaining 2,000 residents have "pre-cancerous conditions," with cancer of the oesophagus reaching epidemic proportions. Its annual death rate is said to be around 100 per 1,000 people! If true, and if nothing is done, the entire population could be wiped out in one generation.

"We simply don't have the facilities or personnel to diagnose and treat many of these diseases and chronic conditions," notes Dr Ataniyazova. In the entire republic, for example, there is only one children's hospital, in Nukus. This 400-bed facility has only ten working incubators and not enough blood stocks to keep up with demand.

"We don't have the necessary equipment capable of measuring for trace chemicals and other toxins in the human body, such as DDT, PCBs or dioxins," she explains. "We really need to be able to monitor and study the combined effects of multiple chemical contamination on the human body." Unfortunately, appeals to Tashkent for assistance have fallen on deaf ears. "Uzbek authorities are not interested in our problems," she concludes.

Meanwhile, the land and its people continue to wither away. By the end of the 1980s, more than three billion m³

of drainage water contaminated with agricultural chemicals from Uzbek and Turkmen fields, together with untreated industrial and municipal wastes, were being dumped in the Amu Darya River each year. Much of it ended up in the delta, where it poisoned aquatic ecosystems and contaminated drinking water supplies.

But the real killer of the land is salt. Thanks to decades of indiscriminate irrigation that paid more attention to centrally-planned quotas than the state of the environment, nearly the whole of Karakalpakia is either salinized or waterlogged. Driving through the heart of the republic along the Amu Darya River, the visitor passes field after field covered with what looks like winter's first light snow. The "snow" is really salt which has worked its way to the surface, a result of improper drainage of the soils and the use of too much irrigation water. Irrigation efficiencies in the region are said to be no better than 40 or 50 per cent - the rest is lost before it reaches the fields; the water soaks into unlined canals, or is evaporated. In other areas, standing pools of water mark the groundwater level, which has risen dramatically over the past 30 years, another result of poor drainage.

"There is an old Uzbek proverb," explains Usuatdin Matkarimov, Chief of the Karakalpak State Committee for Nature Protection, "which goes like this: 'At the beginning you drink water, at the end you drink poison.' That sums up the plight of Karakalpakia; we're at the wrong end of the watershed."

Although the four Central Asian republics which share the watershed of the Amu Darya River - Uzbekistan, Turkmenistan, Tajikistan and Kyrgyzia - have banded together to better manage the region's limited water resources, few practical solutions have emerged so far. In March 1993, all five of the Aral Sea watershed states (including Kazakhstan) signed a multinational agreement to improve the situation in the Aral Sea Basin. A fund was established to pay for needed restoration efforts, requiring each country to contribute one per cent of its annual GNP. In January 1994 another meeting, this one held in Nukus, reaffirmed their commitment to resolving the crisis. However, with the region's immense political and economic problems taking precedence, the finances needed to put some muscle into the rescue plan have simply not materialized.

Nor are funds likely to be forthcoming. Most of the watershed states are now busy trying to squeeze as much water out of the Amu Darya and Syr Darya Rivers as possible. Ironically, the extra water, they argue, is needed to expand irrigated agriculture (mostly cotton for export), which each of the region's governments sees as a way to improve their faltering economies. Once again, environmental concerns have been shoved aside by short-term economic considerations.

At the end of 1994, the region still had no unified water management strategy, no water pricing policy, no supporting environmental legislation, and no clear ecological objectives. The watershed states can't seem to agree on whether to try to stabilize the sea at its present low level, or attempt to revive the delta's ruined ecology by concentrating on wetland rehabilitation and the resuscitation of its lake system. The one thing they can agree on is the need to conserve water.

At the same time, an international effort, led by the World Bank, has also stalled. The story is not new to officials in Karakalpakstan. "I've seen many international delegations come through here, but none of them appears interested in putting money into saving the sea," comments Dr Akmed Hametyllaevich, Director of the Institute of Bioecology in Nukus. "We probably only have ten years left before the sea is beyond hope and the whole region is turned into desert."

There is an even worse prediction. This one made by Dr Oral Ataniyazova. "Since 99 per cent of the Karakalpak nation lives within its boundaries, we may very well be witnessing the death of a nation as the result of human folly."

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