

# Bioregionalism as a Key to Secure Central Asia

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*PROBLEMS OF REGIONAL AND INTERNATIONAL SECURITY*

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■ **Mintaqaviy va xalqaro xavfsizlik muammolari** ■ **Проблемы региональной и международной безопасности** ■

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***Introduction***

The recent conference «*Central Asia: Shared Past and Common Future, Cooperation for Sustainable Development and Mutual Prosperity*», (Samarkand, November 10-11, 2017), was an important step for the region and the globe. This high level conference was convened by Uzbekistan’s President ***Shavkat Mirziyoyev*** in conjunction with the United Nations and with the cooperation of the other Central Asian nations. Two themes for the conference addressed water as a sustainable resource, on one hand, and regional security, on the other. These two themes were tightly interwoven, as it was recognized that there can be no regional security in the midst of an unfolding ecological and/or climate crisis. And without an agreement on security, finding common ground on water would be challenging.

Discussion of security was possibly the easier of the two topics, as there is a strong common desire to see extremism kept from the region and the instability of Afghanistan from spilling north. Of greater complexity is the geopolitical battle for the region being played out by the Chinese, the Russians and the Iranians. The right moves on this geopolitical playing board may prove to be the wrong moves for long term sustainability. Caution is demanded.

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*Problems of regional and international security*

The issue of water is more challenging because, left to their own national thinking, each nation would maximize its use of the two principal rivers of Central Asia in pursuing its own development and needs. However, the unfinished challenge of addressing one of the earth's largest ecological catastrophe's, the desiccation of the Aral Sea in little over fifty years, reminds all of the scale with which mistakes can be made, the extent and speed of damage caused, and the resulting difficulty of recovery. The stage is set for a classic zero sum "Tragedy of the Commons" in which national or corporate greed destroys the resource for all.

**While negotiations over mutual compromises proceed, the one thing that cannot be compromised is the restoration of ecological health to the region. Bioregionalism is a framework for thinking about the health of the whole, multi-river system.**

That the nations involved in this complex situation have previously seen fit to cooperate in the International Fund for the Aral Sea (IFAS) and have created a nuclear free zone sets the stage for negotiating a series of new agreements aimed at water security and addressing the Aral region. The conference was a high level diplomatic event that advanced this cooperative framework impressively. It was thus impressive to see Foreign Ministers and a President, top heads of UN agencies and other high level participants dedicate themselves to a common agenda of mutual benefit.

I was deeply honoured to be asked to speak at the event. My effort to interject the concept of Bioregionalism into the discourse offers an alternative frame for approaching this ecologically frail region. While negotiations over mutual compromises proceed, the one thing that cannot be compromised is the restoration of ecological health to the region. Bioregionalism is a framework for thinking about the health of the whole, multi-river system.

Today, Central Asia is historically united by many factors, including biogeography, the melting pot of the Silk Road legacy, the Soviet yoke and the continuing environmental and social disasters it caused, and the potential to act in unity to create a region forged by Sustainable Development to play a leading role in a changing world. There are significant opportunities but they depend on addressing significant challenges. And the way that these challenges are addressed will open or close

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various doors to the future. One cannot create a sustainable future without addressing the legacy that you have inherited. Of preeminent concern is water. The region is united by its shared dependence on the Amudarya and

*Michael R. Edelstein*

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Syrdarya, by the common disaster of the Aral Sea, spreading desertification, challenges to food security and issues of internal and cross-boundary contamination. To build the future that we want, we must address our common realities.

In this presentation, I will offer a clear framework for addressing the negative legacy and environmental challenges faced by the region that open doors to a sustainable future, with an emphasis on the Aral Region and water, food security and contamination and a focus on bioregionalism, strong sustainability and creating positive interdependencies. These are issues that cannot be addressed by any nation in the region alone. Resilient models of cooperation must be built that allow for mutual action and result in mutual benefit. An additional key element is making innovative learning opportunities available to our young people. These elements are essential to a strong economy, healthy lives and regional security.

It is a pleasure to be back in Uzbekistan and in the magnificent city of Samarkand at a moment made possible by a new openness to create a common Central Asian future. Thank you for the opportunity to participate.

I have been many times in Samarkand and always visit Registan Square.

**Now we refocus, the states blur, and the outline of the Aral Sea basin becomes dominant, from the headwaters of the two great rivers Amu and Syr to the final destination of the waters, from mountain to sea. This reframing serves to refocus on the common identity and future of the region and away from any divergence of national interest. The bioregion unites what the nation-state can easily sunder.**

There my eyes are invariably drawn to the madrasa on the right and specifically to the twin tile murals that embrace its edifice. Depicted is a rising sun smiling upon a tiger stalking a deer. I know this may not be the traditional interpretation, but for me the symbolism is clear: a healthy environment bathed in the light and power of the sun and a profound respect for nature and its gifts. The future of the region depends upon it.

A reframing is required—a shift of focus. Imagine a typical map showing

Central Asia. The boundaries of the five states are prominent. Now we refocus, the states blur, and the outline of the Aral Sea basin becomes dominant, from the headwaters of the two great rivers Amu and Syr to the final destination of the waters, from mountain to sea. This reframing serves to refocus on the common identity and future of the region and away from any divergence of national interest. The bioregion unites what the nation-state can easily sunder.

We are all aware of the current Bonn Climate Negotiations. The vanishing of the Aral Sea over half a century offers perhaps the best “dry run” or rehearsal for a mega scale climate disaster that we have seen to date. And everyone here knows that the results are beyond catastrophic. Illustrated

is a system of accelerating change where a tipping point passes that prevents any hope of return. The result was the desiccation of the sea and the death of all connected living systems, a tragedy that is being replicated at this moment at numerous places around the globe. The Aral Disaster may not be reversible, but the message is clear for these other sites—turn back before it is too late.

Now we know beyond doubt that Global Climate Change is a human-caused phenomenon. But it is not the primary cause of the Aral Sea Disaster. That Disaster goes beyond human cause. It was a designed event, a desired outcome, a willed death, a premeditated murder. The perpetrator was the Soviet Union. The cause, a vision that dramatically contradicts the mural of nature in balance on the Registan.

Stalin is quoted as saying “Any drop of water flowing down the Syrdarya or Amudarya that reaches the Aral Sea is a wasted drop of water.” With a similar assessment, Soviet scientists and planners wrote the Aral off. They followed the edict of the Virgin Lands Initiative, “We cannot wait for favors from nature—our goal is to take them from it.” Under Khrushchev, Central Asia was deemed a Virgin Land, needing a purpose, a way to serve the nation. It was determined that the best service was to become the primary cotton producing region for the USSR. Central Asia’s semi-arid steppe was reshaped as a cotton belt, fed by irrigation and using labor from a new farmers transplanted to the region. The limited rainfall in the region was not seen as an impediment. Through modern alchemy, irrigation waters could be taken from the two mighty rivers and turned into white gold. In effect, the Syr and Amu rivers would be diverted away from the Aral Sea to fill the water tables of Uzbekistan’s agricultural heartland.

My knowledge of the resulting disaster stems from an epic journey I mounted in summer 2011 with a team of Americans matched with colleagues from Samarkand Architectural and Engineering Institute and funded by the Trust for Mutual Understanding, a foundation that funds environmental collaborations between Americans and citizens of FSU states.

The purpose of the trip was to find the missing Aral Sea. Importantly, had we just flown to Karakalpakstan to see its remnants, we would never have done so. Instead, we had decided to rent a bus and driver, and to head west, stopping at every major University along the way to hold consultations or conferences with Uzbek colleagues. What we discovered is that rather than traveling far to find the Aral Sea disaster, that the Aral Sea disaster had come a long way to meet us.

Not far from Tashkent at the beginning of the trip, we stopped to lunch with local professors along the banks of the Syrdarya. The lunch was wonderful, but there was something noticeably absent—the river! As we stood on a boat dock that formerly jutted into the river, we could barely

*Michael R. Edelstein*

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see water far in the distance. The Syrdarya had obviously shrunk dramatically in a relatively short period of time.

In Samarkand we shared a helpful issue-framing conference with colleagues before the bus headed west to Bukhara. Along the way, we saw farmers toiling in cotton fields, people on animal pulled carts, frequent irrigation ditches crossing the road and on occasion a strange view of white snow-covered fields in the considerable summer heat of the region. At lunch and a tour in Bukhara with two local Professors, we had explained to us in great detail what we were seeing. We first learned about the irrigation, waterlogging, salinization dynamic that was evident in the Bukhara region but ubiquitous in the region as well. In short, the Amudarya and Syrdarya had been transferred from an endpoint in the Aral Sea to an end point dispersed across the upper water tables of the Uzbek heartland. As massive amounts of water on the order of 70% escaped from irrigation systems, the water filled up the ground bringing the water table to the surface, serving as a transport for salts and minerals previously caught up in the deeper soils abutting the bedrock. The snow covered fields we had seen were actually covered by crystalized salts. Farmers had to literally wash the salts off the field in order to plant their crops, relocating the salt through the stream into the next field. We learned two other important lessons as well.

We also learned that briny ponds and lakes had sprung up across a wide area where the water table spilled out onto the surface at a sufficient scale. Some birds from the Aral Sea had successfully relocated to these new bodies of water.

Back on the road we paused in deserts that appeared to be spreading and adjoining. A short dust storm illustrated how particulate matter was spread across the landscape and posed a health hazard.

But that was not the end of it. In the ancient city of Khiva in Khorozem, where I found air quality to be poor, we had a conference in the Ma'mun Academy that was further eye opening. John Lamers, then of Urgench University presented concrete data demonstrating how far soil fertility had declined due to salinization. It became clear that continued farming of the kind practiced would kill the soils altogether if continued.

Back on the road, near the border of Karakalpakstan, we crossed more desert, encountering a nomadic family living in yurt visible at a distance from the highway. Sitting cross-legged and sipping tea in the comfortable structure, we learned that even the nomadic life was challenged, with little pasture and suitable surface water to maintain herds. It was not clear how much longer this way of life could be sustained in the Aral Region.

In Karakalpakstan, we spent time along the Amu Darya. Here I took a picture of a colleague while I was standing on a platform at a fish restaurant that historically was just above water level.

After a visit to Nukus, we travelled north to Moynak, the former Aral Sea port, fish products center and tourism destination. Here we witnessed a destitute city bordering a huge barren cavity where the sea once had been. We climbed down onto the sea bed itself and posed for photographs standing on abandoned rusting old fishing vessels, which had been lined up along the bottom.

Now the Aralkum, the Aral desert, the “sands” of the unanchored landscape blow freely and far. Heavily constituted of salts and contaminated with pesticides, these blowing winds create toxic air pollution for humans and other life forms, contaminate additional farmlands and water bodies and the salts are implicated in intensifying the effects of global warming by speeding up the melting of the glaciers high up above the headwaters to the east and south. In our session, it was reported that salt has been found in women’s breast milk. One suspects the pesticides are there as well.

And that was it. The Aral Sea was not in its original basin. Instead its waters had been diverted across the lands between the rivers and soaked into the water table or evaporated into the dry atmosphere. Waterlogging, salinization, pesticide runoff, blowing winds of spreading deserts, emergent brine ponds. The transformation of a massive region in little more than half a century illustrates the power and rapidity of climate change. The journey and its implications are discussed in depth in a volume I edited shortly afterwards.<sup>1</sup>

But, even as it is an important dry run for how climate change occurs, the Aral disaster was not caused by global climate change. It illustrates a second cause of climate change that is more regional and local. Together, the two forms have put the squeeze on nature, both pushing in coincident and mutually-reinforcing directions.

On one side, changes to stratospheric gas balance, albedo and other factors have produced a global phenomenon that changes the conditions affecting every place on earth.

On the other side, the replication of local and regional practices carried out in parallel by people across the globe creates another front in climate change.

Neither force is natural. The first was under our control when we could have limited greenhouse gasses to less than 350 ppm. By modifying combustion of fossil fuels. The second even more clearly represents human will and even design, as we saw with the Aral disaster, and was initially firmly under our control. In both instances, we have now entered positive feedback loops, or gone past tipping points—points of no return.

There are four important take away points here.

1. The Aral Sea disaster is human caused and even deliberate.

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<sup>1</sup> Disaster by Design...

*Michael R. Edelstein*

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2. The disaster is not confined to the formal sea bed but rather envelops the region, uniting the entire Bioregion.

3. The disaster is not just about the desiccation of the Aral Sea, but about a complex of factors including salinization, desertification, wind erosion and polluted air and water.

4. The Aral Disaster was not caused by Global Climate Change, per se. Rather it is the result of human misbehaviour on a massive scale. It is a regional climate disaster that is being replicated worldwide.

5. Thus, we can see Climate Change as a phenomenon that is being driven simultaneously from the atmospheric and biogeochemical realm of earth dynamics and by behaviour at the regional human scale. Both global and regional climate pressures are of human origin. In this sense, Climate Change is a top down and a grassroots phenomenon. The effects of the two dynamics are interactive and probably multiplicative.

Said another way, the Aral Sea was in no way a natural phenomenon or an “Act of God.” Rather it was caused by a human mind-set that saw nature as malleable to human whim, the Aral Sea and its fish as expendable to the desire for cotton. It is not clear that the mind-set has really changed yet, even of the landscape has.

### ***What to Do Now***

I frequently cite the organizational theorist Peter Drucker in my work. Drucker once wrote, “The greatest danger in a time of turbulence is not the turbulence, it is to act with yesterday’s logic.”

The first response to the Aral Sea disaster is to recognize the need for a new logic. For example, old logic suggested that to fix the problem, we needed a source of water that might refill the empty seabed. Extensive discussion and even planning work surrounded capturing Russian rivers that flow north to the Arctic Sea and diverting them instead to the Aral Basin. Of course, this would wreak havoc throughout the areas robbed of these diverted waters and on the Arctic Region which has emerged as one of the globe’s most stressed regions because of Global Climate Change.

Alternatively, I continually hear about the virtues of diverting the Volga River to fix the Aral. This action would doom the already troubled Caspian Sea, leading to a disaster of much larger scale than the Aral Disaster.

Solving one problem by causing even greater adverse consequences can hardly be considered a real solution. Frankly, the adverse impacts and entropy caused by both ideas would exceed the benefits. Even were the Aral saved, an outcome that would not be guaranteed, much worse destruction would occur.

Of course, giving up either of these water sources might have been possible under the banner of the Soviet Union, but to expect Russia to do so is naive.



However, abandoning such “solutions” requires an admission that some seem unwilling to make. There is no feasible way to bring back the lost Aral Sea. Forget it.

It is important not to view the Aral disaster as a concluded historical event but as a chronic continuing event. Disasters never end, they just move on to their next phase. Thus, the Aral disaster is a continuing crisis.

Thus, allowing the continuation of the blowing toxic winds coming off the Aralkum and the spreading of this dead landscape with its erratic and uninhabitable climate conditions is intolerable.

Neither is a continuation of the irrigation/waterlogging/salinization/pesticide dynamic that has diminished soil fertility and contaminated drinking water across the nation. So doing nothing is also not an option. Action is required.

Abandoning yesterday’s logic, what is the new logic needed to guide effective response? I have already suggested that the region needs to be understood and thought of as a “bioregion” rather than as compilation of the national

interests of five independent states (six if Afghanistan is also considered). As new initiatives are planned, such as the upcoming convent for the Syrdarya and Amudarya, there is an opportunity to enact this shift of frame.

The bioregion is defined by the two rivers that contribute the bulk of the water to Central Asia as they flow from their headwaters to their endpoint, once the Aral Sea. In the view of Michael (Mickey) Glantz, one of the most astute long term students of the region, the conception of “From the Mountain to the Sea” is applicable here (as everywhere) as an organizing concept for action needed to integrate and protect bioregions and maintain their health. I co-ran a workshop on bioregionalism with Mickey at Rio+20 in 2012, a conference where some Central Asia states also brought forth elements for bioregional action (a glacier keeper concept and a green economy plan).

The major approach to addressing the Aral disaster, write large, is the application of a field called permaculture, which essentially uses nature and natural principles to heal nature. The goal is to re-establish healthy nature where it is most likely to succeed. I like the idea of an ecosystem by ecosystem approach to the disaster because, rather than throwing a large scale solution at a large scale problem, a mismatching of scale is more appropriate. In other words, I believe the Aral disaster needs to be addressed at a small to intermediate scale but simultaneously in many places. Small scale approaches can afford to fail, while we learn from those failures. And when success occurs, we can build on what works. And when enough small-

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scale ecosystems are established, these patches of nature can be infilled to create large living systems. And, it may be that nature is already experimenting in the Aralkum, with some plants able to establish themselves successfully in the harsh conditions. By looking for such natural experiments and then building upon them, nature becomes a lead partner in the process of restoration.

These are steps that, with capacity building, can be undertaken by local populations that have suffered from a dearth of work and meaning since the Aral Sea disappeared. By empowering people and giving them the task of clean-up, and compensating fairly, a new cottage industry is created. Elsewhere in the FSB and in the U.S., contaminated sites have opened up opportunities for workers to do clean-up activities. The same can happen here.

The goal here is to restore living systems in place of dead desert, stabilizing soils and lessening wind erosion, with its attendant pollution. Reduction of salt in emergent lakes, phytoremediation of pesticide residues and salts from soils, and other effects can be employed to bring the desert back to life. The Aral Sea is not restored, but living systems, perhaps eventually able to foster clean water supplies and attenuate micro climates, will be created. This system can be used beyond the Aral Sea bed per se, addressing salinization and desertification throughout the region.

Already experiments done under the United Nations have seen tree planting in the Aral Region done by local residents to act as windbreaks. Steps are also being taken by the Uzbek Government in conjunction with the UN to introduce a better diversity of food crops requiring less water and pesticide application than demanded by a cotton monocrop. Similarly, efforts have been introduced to use of drip irrigation and other water saving techniques that can help reverse the transfer of river water into the water table, stopping new salinization events. As an effort is made to clean up existing legacy of problems, it is necessary not to create new problems in doing so. These efforts complement the suggestions made here. Only, it is time to unleash activities at a scale commensurate with the problem and to assure that they are staffed and funded to succeed.

As such activities occur in the Aral and agricultural regions, parallel efforts are needed upstream to protect glaciers and forests and in Turkmenistan to decrease evaporation from large-scale surface storage of water.

Years ago, the Club of Rome sought to understand why its path breaking study called *Limits to Growth* had met with such resistance. *Limits* was arguably the first major research effort pointing toward the need to fashion a sustainable future from among alternatives. In a subsequent study, the Club of Rome reasoned that the kind of learning engaged in by society limits

or opens up its potential for meeting changed conditions effectively. While most education, they found, simply maintains the culture as is, what they termed “Innovative learning” instead prepared people to anticipate change and participate in directing it. What is required to meet challenges such as the Aral Sea disaster is a generation of generalists well prepared to think innovatively. The deep understanding of Central Asia as a bioregion is a foundational step.

There is an additional need to consider how the 17 UN Sustainable Development Goals will be achieved in a region where ecological footprints are growing and bio-capacity diminishing. How can food systems be made secure in a water impaired region? How can dependence on fossil fuels be avoided by growing the renewable energy sector and curtailing dependence on gasoline and natural gas? How can housing be developed so as to protect and maintain community? And the bazaars protected to maintain local food production and economies? How can industrial pollution be curtailed in order to protect human and ecosystem health?

In this regard, I recommend that the Central Asian nations jointly undertake a special Environmental Impact Assessment designed to examine the limits and abilities of key living systems and the potential for sustainable growth and change. This sustainability assessment would examine the threat to habitability within the region and the potential for feasible mitigations. Done properly, it would further serve as a Sustainability Plan offering a decision-making blueprint for future innovative management of the entire system.

I close my eyes and clearly see the sun rising over a tiger chasing a deer. Living nature must be restored and sustained using renewable sources of powers if the bioregion that defines Central Asia is to be resuscitated. This end is within your collective grasp. Hold out your hands together and get to work.

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