

Mohammad Ali Hamedei discusses Lake Urmia and the consequences of its drying up:

14 million lives at stake

Social Desk

These days Lake Urmia, once dubbed the turquoise solitaire of Azarbaijan, is far from shining. Reports suggest that a significant portion of the lake, potentially up to 95 percent, has dried up. Expert speculations indicate that disastrous consequences of the lake's disappearance could affect the lives and livelihoods of millions of people. It should come as no surprise then that it's the talk of the town, and there's a sea of information and, perhaps an ocean of misinformation about it.

Fortunately, *Asriran* website has recently published a scholarly interview with Mohammad Ali Hamedei, a prominent expert in water management. The main focus of the interview is the reason behind Lake Urmia's drying up, as well as the possibility of reviving it and the potential consequences of its continued depletion. The urgency of the situation is also highlighted by raising a critical question: What will happen if Lake Urmia is not revived? A shorter version of the interview is presented in report form below.

Origins of Lake Urmia

To understand the causes behind the current situation of Lake Urmia, it is important to consider the lake's geographical structure. It is fed by three large watersheds: Simineh River in West Azarbaijan Province, Zarrineh River formed in Kurdistan, and Tappeh River in East Azerbaijan. These rivers used to bring 3.5 billion cubic meters of water to the lake each year, compensating for natural evaporation.

What happened?

Significant developments in agriculture and urbanization in the provinces supplying water to Lake Urmia have increased the demand for water. While Kurdistan Province still supplies 1.5 billion cubic meters of water to the lake through the Shahid Kazemi Dam, West Azarbaijan

has seen a significant increase in water demand due to urban and agricultural development. The cultivated area in this province has increased from 180,000 hectares to about 600,000 hectares in the last decade alone. The 400,000 extra hectares naturally consume a large amount of water in the Simineh River basin. This increased demand for water has led to a decrease in dam water and a great demand for resources that fed the lake through underground aquifers. As a result, the input of water into the lake has been greatly reduced.

With this water, crops such as sugar beets, apples, grapes, and summer crops are cultivated which require substantial amounts of irrigation. Additionally, animal husbandry has been developed leading to increased fodder farming needs.

Progress or mismanagement?

This situation raises concerns regarding mismanagement and favoring agricultural growth over wetland preservation. However, it is important to acknowledge that forty years ago there was a sizable rural population seeking access to clean drinking water as well as improvements in their quality of life and income levels. Agricultural development emerged as an immediate solution that could cater to these requirements most effectively. While management practices in this regard have been more reactive than proactive, they are not solely attributed to government mismanagement but also reflect a collective transformation driven by rural communities' demands.

Rural development encompasses various aspects beyond just the agricultural sector, such as tourism and industry. It is important to recognize that rural development does not solely rely on agricultural growth. In certain regions with naturally arid conditions, other forms of economic activities thrive organically, like handicrafts. One prominent ex-



ample is carpet weaving in cities such as Qom, Kashan, and Yazd. These regions have predominantly relied on non-agricultural occupations. However, it has been a common assumption everywhere that the key to rural development lies solely in promoting agriculture. This narrow perspective often overlooks the potential for developing other sectors within rural communities.

Public ignorance

There was a lack of public awareness in almost everybody regarding our attitudes towards water and soil. The programs implemented were developed by some experts, including myself. We all played a part in this situation without considering the long-term consequences, whether as experts, parliamentarians, or government officials. It would be incorrect to solely attribute the cause of this situation to dam construction by the government. Dam construction is a response to a demand.

In 1969, we had a severe decline in water inflow into Lake Urmia due to drought conditions and climate change impacts on rainfall patterns. These factors combined with our flawed planning have shaped the current state of affairs. However, everyone has had a role in contributing to this erroneous planning process. While drought can occur periodically based on variations in the amount of rainfall, structural drought caused by climate

change does not follow cyclic patterns. Additionally, mistreatment and improper management of water resources have occurred both within the society at large and among political authorities alike. All these factors intertwined, resulting in the current state of wetlands' fate being sealed.

Moment of clarity

About fifteen years ago, we became aware of the gradual drying process affecting the wetlands. It was then that we realized our actions towards the wetlands were incorrect. However, by that time, the main work had already occurred, making it difficult to revert back to previous conditions. The Urmia Lake Restoration Headquarters was established eight years ago, with the aim of revitalizing the lake. The headquarters intended to determine an appropriate water level and devised plans for reducing cultivated areas while providing financial compensation to rural communities.

Initially, the policy of the Restoration Headquarters was to reduce cultivation by 90,000 hectares in Lake Urmia's vicinity and provide monetary compensation as reparation for damages caused. This meant offering cash payments equivalent to a farmer's annual income from agricultural work in exchange for refraining from cultivation activities. This approach has been implemented elsewhere globally as well. Essentially, governments in-

tervene by establishing "non-cultivation zones."

However, due to our political and social structure, implementing such policies proved practically challenging here. Even though cash incentives were provided, some rural communities continued farming despite receiving the cash payment. If authorities attempted a total ban on farming even once, they would face backlash questioning why village life was being disrupted.

What is to be done?

The current state where 95 percent of Lake Urmia has dried up does not necessarily represent a fixed condition. Two years ago, there was a notable increase in water levels of the lake, and it approached its classic historical level.

As of now, our hope lies primarily in returning to normal climatic patterns and subsequently assessing lake levels accordingly. It is estimated that approximately 50 percent of the lake surface area has been lost; however, it can potentially be revived. If sufficient water resources reach Lake Urmia, the lake has the potential to return to its normal level. It is important to note that complete disappearance of the lake is unlikely as it lies in the downstream of some rivers. Therefore, if these river flows are reinstated, Lake Urmia will regain its body. However, whether it will fully recover to historical levels remains uncertain; I anticipate it may reach around 50-60 percent with proper precipitation, but not attain its previous highest point.

It is crucial to strive for balanced development. Through implementing the necessary measures, as well as fostering understanding between the government and local communities reliant on water in the area, the situation can be improved. It is essential to convince farmers within these communities that alternative employment opportunities exist, or that continuous expansion of cultivated land is unnecessary.

Instead, they could focus on limiting cultivation areas while adopting optimized farming practices.

Regrettably, in my opinion, full restoration may not be feasible; however, some revival might occur under favorable conditions. This means accepting that approximately 50 percent of the lake surface has been irreversibly lost.

What to expect otherwise?

The consequences will be distressing. The dust generated from the lost surface area could reach as far as northern Alborz Province. Temperature rise will result in salt particles dispersing with wind currents and could potentially reach areas such as the city of Urmia, Tabriz, Zanjan, and Qazvin. It is estimated that these particles could travel considerable distances.

If the entire lake were lost, the dimensions of this disaster would be even more severe. The drying up of Lake Urmia would pose challenges for approximately 14 million people, specifically in the provinces of West and East Azarbaijan, Qazvin, Zanjan, and parts of Kurdistan.

Mass migration

We can expect a significant displacement of the population along with increased unemployment and the development of urban outskirts. Although providing an exact estimate at this moment is not possible, the Urmia Lake Restoration Headquarters might have conducted studies on the matter. It would be similar to some of the previous mass migrations in our country.

For example, around 1915, about 200,000 people migrated from Iran's Azarbaijan to Baku before the establishment of the Iranian Constitution, thereby forming a part of Baku's Iranian population.

