a guarantee to halt the process of degradation and depletion of these resources. As long as water-consumption management remains unrectified, no sustainable path stands before us.

Today, no water exists for the revival of the lake; the lake has lost most, and perhaps all, of its water. Even for agriculture, no sufficient water exists, and beyond all, in certain regions, even for potable water supply, we confront grave limitations. Water management and its consumption pattern have remained neglected for years, and unsustainable development, without attention to the climatic capacities of the region, has pursued its course. On one side, we confront the reality of climate transformation and a drastic decline in precipitation, and on the other side, we confront an explosion in water consumption in all sectors. For several years, the subterranean reserves of the lake's watershed have diminished. However, simultaneously, agricultural lands continue to expand. In such conditions, this fundamental question arises: when water resources have drastically declined, how is this expansion of farms and orchards justified? How are water-intensive products such as sugar beet, alfalfa, fodder, watermelon, vegetables, and tomatoes produced and even exported? This contradiction delineates a lucid image of a profound paradox in water governance: a basin that suffers from extreme water scarcity possesses limitations even for the potable water of its inhabitants. However, simultaneously, it becomes a record-holder in the production and exportation of water-intensive products. The watershed of Urmia Lake constitutes only one example of water-resource management at the national level. Today, Tehran is situated within even more catastrophic conditions, and many basins in the west and east of the country confront analogous conditions. Urban water consumption is at least three times the global standard; in some cities, this number has been reported as high as six or seven times, although the share of potable water in comparison with the total renewable resources is minimal. These numbers demonstrate that a large portion of the inhabitants of these regions remain unaware of the depth of the catastrophe and continue to live with the same consumption pattern of 50 or 60 years ago.

If no water exists for the revival of the lake, for agriculture, and even for potable water, how does this level of consumption continue? From where is this water supplied? The answer is clear: a significant portion of this demand is supplied from non-renewable and strategic reserves; reserves that must be utilized only under ultra-critical conditions and for minimal potable needs. However, they are extracted continuously without oversight or prudence. For this reason, in appearance, green landscapes and cultivated lands are still visible, while in reality, we have approached the end of the reserves, and now we witness that, in actuality, no water remains within the lake, and sooner or later, the announcement of the exhaustion of subterranean water reserves shall be formally declared.

The water-intensive nectarine stone-fruit is being sorted at this orchard on the outskirts of Urmia city, northwestern Iran, on August 14, 2016.
urmiacity.blog.ir

Thus, may one declare that grave negligence has occurred in the domain of water-resource management?

What we observe today, more than mere negligence, constitutes a sign of the absence of effective governance over water and soil. Integrated management of water and soil resources, in practice, does not exist, and the perspective of officials regarding this domain still resembles that of 60 or 70 years ago. The colossal edifices of the related ministries, from the Ministry of Agriculture to the Ministry of Energy, and the multitude of universities and scientific institutions, have not yet culminated in practical and effective management of water and soil, and the systematic utilization of international experience is also exceedingly limited. In practice, things have been abandoned, with the justification that perhaps such temporary abandonment reduces livelihood and economic pressures, while this approach has not only failed to produce any meaningful improvement in livelihoods, but has also exposed the environmental and economic structures of the country to irreparable damage and may even constitute a source of security threats in the near future.

A significant portion of today's water problems, of course, originates in global-scale climate change. However, the reality is that a lake with an expanse of approximately 5,000 square kilometers and a volume of approximately 30 billion cubic meters of water has transformed into a desiccated desert. This transformation, unequivocally, influences the local and regional climate, wind patterns, hazes, and the health of inhabitants, and it may result in the emergence of diverse diseases. Simultaneously, the same destructive pattern that has brought the lake to this condition is being repeated today regarding subterranean water resources, and the precipitous depletion of these resources shall render the future of water management far more arduous.

As the Director of the Urmia Lake Studies Research Institute, who has worked and researched in this domain for years, what solution do you propose for saving the lake?

The principal solution constitutes a global and well-tested one; contrary to certain presumptions, the issue of saving the lake is not resolved through the production of water or resorting to extravagant and peculiar technological approaches. The reality is that we consume water far beyond ecological capacity, and no resource exists to replace this magnitude of consumption. Therefore, we must, with speed, rectify the consumption pattern and place demand management at the forefront. Our development trajectory must not advance by relying upon traditional and expansive agriculture, but must move toward modern agriculture.

This transformation signifies the restriction and diminution of agricultural lands and, in contrast, the enhancement of productivity per unit area. At present, not only is water consumption several times beyond the actual need and possesses low efficiency, but the unrestrained usage of fertilizer and pesticide has also produced extensive environmental contamination. The transition to modern and intelligent agriculture, accompanied by the development of other economic spheres such as ecotourism, more sustainable utilization of border potentials, and the creation of alternative livelihoods that require little water yet are highly productive, may delineate a more sustainable trajectory for the region.

If this change of approach does not occur and public participation is not secured, the catastrophe shall reach an irreversible point. Perhaps the first essential step constitutes transparent and sincere communication regarding the true dimensions of the catastrophe. Today, neither the public nor even a segment of officials possesses an understanding proportionate to the depth of the catastrophic condition, and everyday thinking dominates decision-making. Through the augmentation of public awareness, the attraction of local participation, targeted investment in the rectification of agricultural patterns, support for alternative livelihoods, and the decisive reduction of water consumption, we must act before we reach an irreversible point. Under such conditions, with reliance upon societal cooperation and, naturally, a relative improvement in precipitation, one may maintain hope for amelioration.

So, we have not yet reached an irreversible stage; is that correct? And with consumption management, the rectification of the agricultural sector, and reliance upon precipitation, may one hope for the lake's revival?

The reality is that, simultaneously with the catastrophe of the lake, we confront a greater catastrophe in the domain of subterranean water resources, and the danger of this second catastrophe is nearer and more immediate. Prior to experiencing all the consequences of the lake's desiccation, we shall confront the repercussions of extensive subterranean water depletion. The origin of both catastrophes is identical, and if the principal factor — the erroneous pattern of exploitation and water governance — is not controlled, both shall propel us toward a form of hydrological bankruptcy.

From the perspective of one who, for years, alongside other specialists, has expended time and energy upon Urmia Lake, the principal anxiety today concerns, more than the lake itself, the precipitous and unregulated depletion of subterranean water resources and the unauthorized extraction of surface resources. If this process continues, it shall reach an irreversible point, such that even the occurrence of great precipitation and large floods shall not be capable of restoring the subsided lands to their previous condition. In truth, today, Urmia Lake, with its desiccation and its ensuing repercussions, has manifested its reaction to these imprudences.

Now, we witness the uprising of particulates from the bed of the lake in the form of hazes, perceptible transformations in the local climate, and the gradual expansion of problems. In actuality, we remain at the inception of the consequences. Perhaps, by conveying a minimal quantity of water to the bed of the lake and maintaining it in a moist condition, one may control a portion of the severe consequences.

Watersheds exist around the region. However, because of decreased precipitation and unrestrained extraction, no water remains behind the dams to be released toward the lake. The Headquarters for the Revival of Lake Urmia, under current conditions, continues its efforts. However, their unavoidable priority constitutes the provision of potable water and sanitation for the region, and, given the limitation of resources, no share remains for the lake.

If, in the forthcoming years, precipitation improves and, simultaneously, through cohesive management, one can halt unrestrained extraction and even allocate a minimal quantity of water to keep the bed of the lake moist, one may control certain consequences such as hazes. Nevertheless, if the depletion of subterranean waters and land subsidence continue, even under a scenario of the return of high-precipitation periods, the possibility of restoring the land to its previous condition shall not exist. This reality must be considered within all forms of planning.

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A saline dust storm originating in the semi-dry bed of Lake Urmia, northwestern Iran, has surrounded cars passing nearby on August 31, 2019.
SOHEIL FARAJI/ISNA

The saline dust storms have desiccated the trees of this orchard, situated near the shrinking Urmia Lake, northwestern Iran, on October 8, 2017.
AMIR SADEGHI/FARS