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## Save Urmia Lake

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### Topic:

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**Topic author:** aoren

**Subject:** Save Urmia Lake

**Posted on:** 21 Feb 2014 03:34:04

**Message:**

I opened this topic at the request of Nikolay Aladin and I am looking forward to his input.

### Replies:

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**Reply author:** NikolayAladin

**Replied on:** 06 Mar 2014 06:54:13

**Message:**

Dear All,

let me present you some ideas of Dr. Brad MARDEN form USA.

SAVING LAKE URMIA

SUMMARY THOUGHTS ABOUT THE CONFERENCE INCLUDING IDENTIFIED DATA GAPS AND RECOMMENDATIONS

BRAD MARDEN

February 21, 2014

ISTANBUL, SULTANAMET

PHILOSOPHICAL COMMENTS

Saving Lake Urmia is indeed an urgent necessity of the highest order; the current condition of Urmia is a crisis on a massive scale and it is on the verge of becoming an ecological tragedy of enormous proportions. Notwithstanding the urgency of the need to find solutions, nor of the magnitude of the problem, there may be an alternative perspective through which to view the crisis: it could be viewed as an opportunity for all people to come together and solve the crisis, and in the process everyone involved will be elevated in terms of their physical, emotional, economic and spiritual status. By joining together to solve this huge crisis all people involved, whether they are local farmers, engineers, hydrologists, toxicologists, biologists, geologists, politicians, limnologists, social workers, health care professionals, professors, students, construction workers, laborers, secretaries, drivers, or simply local people who care, all of them can contribute in a significant manner and in the process extract great meaning and value out of their efforts and their lives. I therefore firmly believe that the Lake Urmia crisis can be viewed as an opportunity for people to join together and to do something of true greatness and lasting significance with their lives.

My comments below are based on two central premises: 1) that access to reliable research data and information leads to good decisions, and 2) that the more people that are "on board" with the concept of saving Lake Urmia, the more likely it will be that it is successful. If enough people become involved, it will be very hard for politicians to deny support for the initiatives to save Lake Urmia. Based on these two fundamental premises I make the following comments.

The comments are based on a long-term process of saving Lake Urmia. Clearly immediate things need to be done to return more water to the lake. The following recommendations are based on a long-term commitment to the restoration. I hope that some of these ideas can be of use and incorporated into the Roadmap to Success for Saving Lake Urmia.

SPECIFIC COMMENTS AND RECOMMENDATIONS ORGANIZED ACCORDING TO TOPIC

1) RESEARCH STATUS

There exists a laudable patchwork of excellent information about Lake Urmia. There have been

studies done on the hydrology, geology, biology, watershed features, dams, river flows, and desiccation characteristics. There have been some studies on improvements in the management of the water supply and a variety of other studies. Whereas these are all good and valuable studies and research developments, I feel there are many data and research gaps that need to be filled and, most importantly, that there needs to be a unified means of linking all of the research projects together. In other words, there must be a central data processing and access point for research projects and data for Lake Urmia. Therefore I make the following recommendations with regard to research on Lake Urmia.

## 2) CENTRAL DATA CENTER for LAKE URMIA (CDCLU)

There should be a single central website where all research findings and raw data can be accessed (I believe this was suggested previously by others but it apparently was not implemented). I suggest designating a team of software engineers, statisticians, and computer data base experts to set up a website that allows users to access, but NOT change, data and information contained therein. As an example the Great Lakes in the USA has an excellent website where information on the Great Lakes can be accessed. I further suggest that some members of the database team continuously evaluate the broad scope of the data and identify data gaps. Based on these gaps in the data further research priorities could be established. I also suggest that consideration is given to developing a Lake Urmia Crisis APP for smart phones that could be downloaded onto smart phones and would allow access to current developments and research results from Lake Urmia.

### TOP TIER CATEGORIES (i.e., ESSENTIAL DATA) FOR THE CDCLU

The essential categories for the CDCLU would include, but would not be limited to the following:

- Watershed: hydrology, stream flows, dam capacities and current level (stream gauges and reservoir levels detection systems need to be installed and the data uploaded to a stream flow website).
- Limnology: current water level, volume, temperature, salinity, pH, water chemistry, dissolved oxygen, contamination.
- Ground water: level, total volume, geographical area, contamination, regulations, conservation measures.
- Political Developments: Report important decisions, meetings, regulations, proposals, and the like.
- Economics: Provide economic analysis of resources, health related issues, engineering projects, extractive industries, recreation and tourism income, and other economic factors.
- Engineering Projects: define proposed, on-going, historic, and current projects. Get public feedback and clearly show the value of such projects.

### SECOND TIER CATEGORIES FOR THE CDCLU

- Playa: size, composition of salts, dust reports (dust storms, composition of dust, impact on agricultural areas, etc.), mitigating measures to lower particulate suspension into atmosphere, detailed particulate/flow dynamics research.
- Wetlands and Shoreline: Provide information on shoreline wetlands areas, habitat structure, biodiversity, management, and restoration.
- Weather: Current conditions, predictions, models, short-term and long-term trends.
- Contaminant Issues: Report contaminant issues pertaining to the Lake Urmia Watershed.
- Air Quality: Install air quality monitors around Lake Urmia basin and provide links to the data.
- Agricultural production: Show production trends and condition in the region. Provide cost/benefit analysis of crops and their water consumption requirements.
- Ecology: Plants, birds, mammals, amphibians, zooplankton, algae, microbes.

## 3) STRATEGIES FOR SUCCESS

**Water usage:** implement methods to enhance efficient use of water. Do thorough assessment of wells and their water usage. Apply economic incentives to improve efficiency through compliance—for example impose fines on wasteful or excessive usage. Impose regulations on well construction and usage.

**Create partnerships:** Create partnerships with industry, the public, youth groups, and between Provincial areas. As an example the Great Salt Lake brine shrimp industry pays a fee each year for the Artemia resource. The money from these resource fees are used for ecological studies and projects to improve ecological condition of the Great Salt Lake as well as other streams, rivers, lakes, in the Great Salt Lake watershed. It is a true positive outcome: commercial exploitation money is used to improve the resource. Also, the brine shrimp industry conducts its own ecological research and shares the outcome with the government resource managers. On

Lake Urmia you could require industry that exploits the resource to contribute to the saving of the lake—they could use some of their resource revenue income to sponsor conservation projects or improvements in habitat.

**Empower people on a local level:** Get people involved in conserving water at all levels. Organize local groups to monitor and improve efficiency of well usage and water use in general. Make people proud of their great ability to conserve water. Give people ownership of the restoration process and its success—this is a far better way to get compliance and cooperation than through penalties. Make sure that there are programs that reward peoples and for their involvement in saving the lake, rather than punishing them in order to save Lake Urmia.

**Management units on Lake Urmia:** Create management sub-units of Lake Urmia with economic incentives provided for managers of the management sub-units. Authorities of these management units would receive government financial rewards or income through development projects that bring in commercial partners or tourism. Have each management unit define it beneficial use objectives and accomplishments in restoring these beneficial uses.

**Education:** Create programs to educate people about Lake Urmia issues and empower them to get involved. Do this through the school system and through community programs. The more people that are involved and care, the more likely it is that you will be successful. Teach people the value of conserving water at ALL levels—from the length of their shower to the extensive use for agriculture. Teach people to water crops in the night or early morning and never during the heat of the day.

**Public Involvement:** Create “Adopt a Stream” program that can be implemented to give people a bond and a purpose for the streams or rivers. People could adopt a river and have programs to visit their river and to ensure it is clean, to improve habitat structure, and to monitor efficient use. These types of programs have been used very effectively in the USA to improve streams, riparian habitat and cleanliness of the rivers and streams. Once the level of Urmia begins to be re-established create “Adopt a Shoreline” program where people adopt a section of shoreline and they improve the structure and composition thereby recreating habitat for wildlife and also for recreation. Give awards to the most successful group that improved their section of shoreline.

**Youth Programs:** Make saving Lake Urmia the fun and exciting thing to do for children of all ages. Create youth programs with fun excursions to Urmia and its tributaries. Give awards and scholarships for the best student projects designed to Save Lake Urmia. Make sure youth groups that come up with good ideas are in the press and on TV. Make it fun and exciting for the youth to be involved. Actually make it so popular that every child will want to be involved.

**Celebrity Involvement:** If there are very popular singers or other celebrities that have broad appeal in Iran, then get them involved. Promote concerts or other entertainments that bring people together to solve the crisis in Lake Urmia. Make it known that great people of high distinction are involved in saving Lake Urmia.

**International Partnerships:** Create international partnerships with experts and programs from abroad. Bring in experts on successful projects that can be implemented to help Lake Urmia. Send Iranian experts to other countries for exchange of ideas and training. One example might be the embayment projects in Great Salt Lake where man-made structures were constructed and successfully created habitat structure and restored ecological functions. Expertise exists on the biological and water chemistry conditions that need to be developed in order to optimize water quality for biological diversity or biological specificity.

**Health and Microbiology:** Analyze dust storms and report accurately health impacts from the dust. Conduct microbiological assessments of the dust to determine if any harmful pathogens exist in the dust (e.g., the Valley Fever dust related impacts in the San Joaquin Valley in California, USA).

**Media Support:** Make sure the media is behind the project to save Lake Urmia. Use television and the press to promote the idea (I know this is already taking place-I saw the reporting on Iranian television.)

**Stakeholders and Beneficial Uses:** Emphasize involvement of identified stakeholders and get input from them on the beneficial uses of the lake that they desire. Beneficial uses can be: recreation, aesthetics, hunting, fishing, weather, air quality, commercially available resources, relaxation, ecological functions, etc. Analyze projects in terms of the beneficial uses and functions of the lake that are restored. Use the restoration of beneficial uses to prioritize projects and spending.

**Engineering projects:** These should be done in a step-wise, systematic, and scale-appropriate

manner. Also make the engineering projects adaptable—meaning they can be modified in the event that circumstances change and their initial application and use is no longer needed.

**Embayments and Ponds:** Create three categories of embayments or ponds: 1) Near shore/Wetlands embayments; 2) Habitat Enhancement embayments or ponds; and “Thin Film” embayments. Each would have different functions and conditions. Make the Near shore/Wetland embayments designed to promote the development of wetlands for biota and the shoreline for recreation, aesthetics and relaxation. Construct Habitat Enhancement embayments and ponds for the purpose of growing microalgae, plants, zooplankton (especially *Artemia*), or vertebrate species. Create “thin film” embayments to reduce particle aerosolization. Make the combination of these structures designed to restore most of the ecological, aesthetic, and climatic functions of the former Lake Urmia.

**Economic Tools:** Use economic incentives to promote the restoration projects. Also use economic incentives to encourage conservation and to penalize wasteful uses of water.

**Positive Feedback Loops:** Work with society, agricultural sector and industry to design positive feedback loop processes. Create linkages between industry and the lake restoration that produces positive feedback loops meaning that commercial exploitation of restored resources should lead to the improvement of the lake and therefore more resources to be exploited (e.g., revenues from *Artemia* ponds can be used to create more *Artemia* ponds thereby enhancing the restoration of the lake’s biological functions yet at the same time producing more *Artemia* for commercial exploitation).

**“Viewshed” Concept:** Adopt the “viewshed” concept from restoration projects in other countries. The idea is that when the entire natural system cannot be restored a functional “viewshed” is restored. This is usually in reference to human/nature interactions and essentially it is the idea that the user can have the same positive experience in nature within a limited range of the former boundaries of the natural setting. So money is saved by restoring a “viewshed” rather than the entire region (this is done in cases where it is simply cost prohibitive to restore the entire system).

**Reply author:** NikolayAladin

**Replied on:** 11 Mar 2014 00:41:09

**Message:**

My opinion (Nikolai ALADIN) is that information about restoration of the Northern Aral Sea with the help of Kokaral dike could be used in the forthcoming restoration projects for Urmia Lake. During the years of successful work of ILEC (International Lake Environment Committee) on lakes in various countries was formulated the ILBM principle/platform (Integrated Lake Basin Management). Let us briefly discuss six fundamental ILBM pillars. The six fundamental pillars are: 1) information; 2) finance; 3) technology; 4) policies; 5) institutions; 6) participation (Fig. 4). Only using these 6 pillars will it be possible to build a healthy house of rising Urmia Lake. ILBM is a way of thinking that assists the lake basin managers and stakeholders in achieving sustainable management of lakes and their basins. It takes into account that lakes have a great variety of resource values whose sustainable development and use require special management considerations for their lentic (static) water properties. Good basin management of a lake can be realized only through ILBM, or continuous improvement of the lake basin governance, that integrates Institution, Policy, Participation, Science, Technology and Finance. ILEC promotes ILBM globally, with long-term and strong political commitment, in order to improve the state of world’s lakes. Integrated Lake Basin Management (ILBM) is a conceptual framework designed for assisting managers and stakeholders in achieving sustainable management of lakes and their basins, with its six fundamental pillars for governance improvement as shown below. The primary characteristic of ILBM is that it is not a prescriptive planning procedure. Rather, it is a compilation of lessons learned from the global experiences of the lake basin management in the past, synthesized to address complex planning issues with a basin governance framework that reflects the unique features of lentic waters such as lakes and reservoirs (i.e., long retention time, complex response dynamics, and integrating the

surrounding environment and human activities).

For a successful lake basin management, it is essential to fill the gaps between what has already been done, and what remains to be achieved in its application process with long-term and strong political commitment. Continuous efforts will be necessary to further expand and refine the concept of ILBM for a better future of lakes and other water bodies that are now under serious threat of degradation, particularly caused from human activities and climate change.

- 1) Institutions. A management system with an appropriate organizational setup helps ensure sustainable benefits to the lake basin resource users. Such institutions are available in the Islamic Republic of Iran.
- 2) Policies. Policy tools must be better developed to facilitate concerted societal actions for sustainable lake basin management. Such Policies are available in the Islamic Republic of Iran.
- 3) Participation. All the lake basin stakeholders should participate in decision making process for sustainable management. Such participation is available in Islamic Republic of Iran.
- 4) Technologies. Although their effect often tend to be limited in certain areas and short period of time, physical interventions, such as shoreline and wetland restoration, provision of sewerage and industrial waste, water treatment systems, afforestation, mitigation measures for siltation control can play a significant role in improving the lake environment. Such technologies are available in the Islamic Republic of Iran. You also need to start Irrigation Revolution (best practice of irrigation) and Green Revolution (to use newly selected domestic plants that need less water for irrigation).
- 5) Information. Scientific and public perceptions on the lake basin management can differ from case to case. Without knowledge generation and sharing, human and financial resources mobilized in the lake basin management efforts may prove futile. Such information is available in the Islamic Republic of Iran.
- 6) Finance. Financial resources should come from all basin stakeholders benefiting from both direct and indirect use of lake resources. Efforts must be made in order to develop innovative approaches for generating locally usable funds. Such finance is available in Islamic Republic of Iran.

Road map for Saving Urmia Lake should be wide and short.

- 1) Only local water in catchment area should be used. No need to bring water from outside of catchment area. No alien water.
- 2) Only local animals and plants should be used. No need to bring animals and plants from outside of catchment area. No alien animals and plants.
- 3) Only local people and only local nations should be used. No need to bring people from outside of catchment area. No alien people and nations.
- 4) Only local people and local leaders should to decide how to save catchment area of Urmia Lake and the lake itself. Experts from abroad should only check available project and evaluate its positive and negative parameters.
- 5) All professional bodies from all the regions of Islamic Republic of Iran should be invited for campaign of saving catchment area of Urmia Lake and the lake itself. Not only scientists and decision makes should have green light. Religious Leaders, philosophies, historians, artists, writers, sportsmen, etc. and of all ages (young and old) and from all nations in Islamic Republic of Iran should have green light.

Evaluate. We followed this way in our road map for saving Northern Aral Sea and we reached first sign of success. As is seen from the foregoing, without the creation of six fundamental ILBM pillars, it is unlikely to achieve perfect health of Urmia Lake basin and the lake itself. Over the coming years, up to 2017, these six pillars of ILBM principle should be set up. This principle works on all continents. We have no doubt that it will work in the Islamic Republic of Iran. Let's create in catchment area of Urmia Lake the relevant institutions, seek necessary funds and raise capable staff. We are sure that the day will come when house of rising Urmia Lake will be built. We advise to build symbolic "Pavilion ILBM" at the coast of Urmia Lake. It will be just a first step towards healthy house of rising Urmia Lake that should be made by 2017. It will be one small step for Urmia catchment area people, but one giant leap for all people and nations of Islamic Republic of Iran.

It will be nice if new poems and songs will be written about Urmia Lake and its catchment area. New films and new photo albums about Urmia Lake and its catchment area landscapes should be made. New books about life of people around Urmia Lake and within its catchment area should be written. It is not enough to write only scientific and technical papers about Urmia Lake and its catchment area problems.

In order to overcome Urmia Lake Crisis people who are doing science and culture should make one bridge together towards the better future of this lake and its catchment area. Please remember

what we are saving: . first – all the people and nations who are living in the Urmia Lake catchment area and coast; second – all types of environment and all types of people activities in the Urmia Lake catchment area; third – all types of environment and all types of people activities in the Urmia Lake coast and islands and in the lake itself.

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**Reply author:** aoren

**Replied on:** 27 Jul 2014 00:35:45

**Message:**

Thanks to Nick Aladin for all this information. I will now lock this topic.

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