SHORT ST. PETERSBURG STATEMENT ON THE ARAL SEA

INTRODUCTORY INFORMATION (PREAMBLE)

The Second International Conference on the problems of the Aral Sea was held in St. Petersburg, Russia, from November 15 to November 18, 2019. The Conference resulted from a resolution of the Eighth Nevsky Ecological Congress held on May 25-27, 2017 which stated:

"In the field of environmental safety of the Aral Sea:

- *to develop specialized educational and enlightening programs for primary, secondary and higher educational institutions under the jurisdiction of the states participating in the activities of the International Fund for Saving the Aral Sea;*
- *to hold in St. Petersburg the second International Conference on the problems of the Aral Sea;*
- *to assess the current environmental problems of the Aral Sea and the Aral Sea region;*
- *to develop, taking into account the best available technologies, a set of measures aimed at the conservation and rehabilitation of residual water bodies of the Aral Sea, under the auspices of the International Fund for Saving the Aral Sea."*

The Conference was attended by scientists from 9 countries: Russia (8 speakers), Kazakhstan (2 speakers), Uzbekistan (1 speaker), the United Kingdom of Great Britain and Northern Ireland (1 speaker), France (1 speaker), USA (1 speaker), Japan (1 speaker), Poland (2 speakers) and Spain (1 speaker). In addition to the speakers, three observers participated from Russia, Uzbekistan and Azerbaijan. The titles of presentations and summaries of observers' statements are in the Annex.

The Statement below is based on presentations made at the conference, discussions, suggestions and comments of conference participants and experts not participating in the conference. The statement was prepared in the format of the statement a decade ago, which was adopted after the First International Conference on the Aral Sea from October 12 to 15, 2009 (https://www.zin.ru/conferences/Aral2009/).

STATEMENT

1. **The human and environmental problems of the Aral Sea have destroyed the surrounding economy and caused social and cultural disconnection.** The Aral Sea – a large closed lake located in the deserts of central Asia, has undergone an unprecedented reduction in size and salinization over the past 60 years. This had a strong negative environmental impact on the lake and the deltas of the two rivers flowing into it. The population of the adjacent territories also experienced the negative consequences of sea degradation, which led to environmental degradation, the emergence of conditions unfavorable to human health, the destruction of the economy of the surrounding areas, as well as social and cultural disconnection.

2. **The modern era regression of the Aral Sea must be considered in historical context.** In order to assess the modern lake regression that occurred after 1960, it is necessary to understand that the lake has repeatedly changed its level over the past 10,000 years. This was due to natural climate change, repeated displacements of the bed feeding the lake of the Amu Darya river and the redirection of its flow from the Aral Sea to the Caspian Sea, as well as, over the past 4,000 years, the development of irrigation systems for agriculture in the basin.

3. **The modern regression of the Aral Sea has a different genesis to that in historical events.** The modern regression observed after 1960 was different in character from previous regressions. For the first time, irrigation was the dominant regression factor, more significant than the deviation of the Amu Darya course from the lake. Irrigation using river water led to the drying out of the lake, which is the most significant event, at least in the last few thousand years. Between the mid-1950s and mid-1980s, increased use of river water for irrigation in the lake basin significantly exceeded the allowable limit for water use from the point of view of sustainable development, causing a significant reduction in river inflow in the lake. The second most important cause of the Aral Sea drying was natural climatic cycles. In recent decades, global warming began to affect the water balance and is forecast to become an important factor in the future; however, to date, it has not been the main reason for the drying of the Aral Sea.

4. **Redirecting major rivers is not feasible in solving the Aral Sea problems.** The redirection of Siberian rivers to the south to the Aral Sea basin or pumping water from the Caspian Sea to the Aral Sea, are unrealistic measures to solve the water problems of Central Asia. Such measures would be too expensive and complicated; they would require the development and adoption of international agreements and would have many potentially serious environmental consequences. It would be more reasonable to direct efforts towards developing local and regional solutions to the key issues, such as improving the efficiency of water use for irrigation and taking measures to preserve and partially restore the remaining parts of the Aral Sea.

   A number of conference participants from Uzbekistan argued that diverting some of the water from Siberian rivers south to the Aral Sea basin should be discussed again in scientific and political circles. Otherwise, the water resources of the Aral Sea region may be exhausted by 2030-2045. They considered that the river diversions would not only redistribute the flow of Siberian rivers in favor of the Aral Sea basin, but also help preserve the Arctic ice. The rapid melting of Arctic ice and the exacerbation of methane emissions from underwater permafrost might be slowed if part of the flow of Siberian rivers is directed to the Aral Sea or similar landlocked basins. According to data from research at the Siberian Branch of the Russian Academy of Sciences, under the influence of climate change, the water content of Siberian rivers flowing into the Arctic Ocean increases by 150-200 cubic kilometers per year.

5. **The flow of the Amu Darya and Syr Darya rivers is a key factor determining the size of the lake and its ecological state and it must be managed cooperatively**. The joint work of states is needed to solve important problems including water sharing and conflicts between countries in the upper and lower reaches of the rivers arising from irrigation needs, and hydropower generation.

   The most important measure is the widespread adoption of modern technologies and methods of irrigated agriculture, in particular drip irrigation that ensures a more rational use of water resources, as part of the program for the reconstruction of obsolete inefficient irrigation systems. This could decrease water withdrawal by countries in the Aral Sea basin and would contribute to the restoration of the unique Aral Sea biota. Central Asian countries require agricultural reform and rational water use at all levels of government and society – from individual users to decision makers. Specialists, as well as social and environmental organizations, associations and groups of activists can be involved in the reform process.

   More active phyto-reclamation of the former bottom of the Aral Sea is needed to prevent dust and salt storms and improve climate. Proposed plantations of a fast-growing Paulownia tree

could also enable beekeeping and growing other crops. Phyto-reclamation of the former bottom of the Aral Sea, however, is not considered applicable because of high salinity and the almost complete absence of suitable soils.

6. **The Aral Sea has been studied by experts in eminent institutions since the mid 19th century.** The study of the Aral Sea has a long and rich history, beginning in the middle of the 19th century. Museums, archives and institutes of St. Petersburg store and present materials and items valued by scientists and the general public. Many thorough scientific studies of high quality were carried out during the time of the Russian Empire and in subsequent years in the Soviet Union, resulting in many excellent scientific publications. Modern researchers should not ignore the valuable scientific contribution made during these periods and not neglect the successful international developments and practices on the Aral Sea.

7. **Reports of the death of the Aral Sea are premature.** Although the Aral Sea of the 1960s will not exist in the foreseeable future, significant parts of this lake have survived. The Small (North) Aral Sea has been partially (and very successfully) restored, so that it again has important environmental and socio-economic importance. Although the eastern basin of the Large Aral Sea has been lost, its western basin can be partially preserved and restored if studies show that it is economically and environmentally feasible. The efforts to protect and preserve parts of the Syr Darya and Amu Darya deltas are bringing positive results.

8. **The status of the Aral Sea and its basin needs to be updated using new scientific approaches.** A new scientific approach to the study of the Aral Sea, river deltas and the surrounding region requires a balance of theoretical and applied research, and cooperation between specialists and scientists from a variety of disciplines and from as many countries as possible, with the support and auspices of the International Fund for Saving the Aral Sea (IFAS), recently created under the auspices of the UN. Special efforts must be made to attract young scientists and researchers to ensure continued scientific participation and international dialogue.

9. **We will create the International Committee of Intellectual Solidarity with the Aral Sea.** The task of the ICISwAS is to develop a comprehensive assessment of the ecosystems of the lake and the directly adjacent zone (especially the deltas of the two rivers flowing into it). The Committee will analyze the available data as the basis for developing measures to improve the environmental conditions and methods of water use for the Aral Sea and its basin, as well as for phyto-melioration of its former seabed. The Committee will have to develop new innovative projects, both for the former bottom and for the residual water bodies created by the sharp drop in water levels.

   ICISwAS will coordinate its activities and cooperate with IFAS, avoiding duplication of efforts, ensuring the most effective use of international donor funds and avoiding interference with the important work of IFAS.

   ICISwAS should include scientists from relevant disciplines, including (but not limited to) the following: limnology, ecology of terrestrial ecosystems, geography, geology, botany, zoology, ichthyology, ornithology, hydrology, agronomy, geology, soil science, meteorology, historical sciences (anthropology, archeology, history), sociology/demography, medicine and economics. It should also include local politicians and administration representatives, as well as representatives of public organizations, such as non-governmental organizations, and other responsible persons.

Funding should be allocated to create a modern, well-equipped laboratory at an appropriate point in the Aral Sea basin. Since many useful and relevant raw data are difficult to access (for example, information recorded on cards or in registration books), coordinated efforts are needed to convert such data into an easily accessible digital format which could then be disseminated for scientific and awareness purposes using modern tools and media. This will facilitate access to data and make it possible for more specialists worldwide to participate, facilitate popularization and education, and simplify access for economic, managerial and social interactions.

To return optimism to the local population and restore decent living conditions in the Aral Sea region, the conference participants called for creating special joint research programs "beyond the water" for implementing the sustainable development goals, achieving security and prosperity. We consider joint interdisciplinary research important, including at the site of IFAS Scientific and Information Centers of the Interstate Coordination Water Commission (SIC ICWC) and the Interstate Commission for Sustainable Development (ICSD).

The main principle of creating this platform is that collective efforts will yield more productive results than expandable but fragmented national work. Currently, proposals have been prepared and related work is underway to create a Central Asian expert platform based on the SIC ICWC

10. **Scientists, artists and cultural experts all have important roles in the preservation and rehabilitation of the Aral Sea and Aral Sea region.** Knowing and understanding the consequences of an environmental catastrophe in the Aral Sea and in the Aral Sea region complement each other and will serve, urgently, to achieve a better future for the Aral Sea and all peoples of the Aral Sea region. To promote wider understanding, we strongly support the creation of new works of art and culture dedicated to the Aral and Aral Sea region. These include both professional products and those for use with mass media, documentaries or modern creative synthetic educational products, preferably using modern digital capabilities and aimed at future development. We need new dedicated literary, artistic and other works. New poems, songs, paintings, plays, films, television shows, internet sites and much more can use the forces of masters of art and culture to draw attention to the problems of the Aral Sea and the Aral Sea region and help elicit solutions. Thematic literary, song, theater, film and television festivals could thrive.

    Tourism has great potential on the shores of the residual water bodies of the Aral Sea and in the Aral Sea region but it should be controlled. A system of international interaction and appropriate infrastructure is needed, ensuring that tourism can be adventurous, but also that it has a historical, natural-scientific character. Tourism will increase employment, provide a supplemental professional activity to support job and income security and will have commercial and informational attraction. Joint efforts of workers in science, art, culture and the tourism industry will enable us to successfully fulfill the development objectives for the Aral Sea and its region.

We, the participants of the Second International Conference on the Problems of the Aral Sea, appeal to politicians, representatives of science, art, culture, business, civil society and journalists to actively contribute to the implementation of the ideas contained in this Statement. We invite them to contribute to the dissemination of the positive experience of international cooperation, to contribute to the creation and implementation of programs, projects and decisions aimed at improving the natural environment, welfare and economic life, in order to implement a successful model of sustainable development of global proportions. We also propose that March 26th each year should be dedicated and celebrated as "*Aral Sea Day*". In addition, we propose to

hold a period of dedicated events for the Aral Sea named "*Aral Days*" during the second semester of every year starting with 2020.

ANNEX
PROGRAM OF THE SECOND INTERNATIONAL CONFERENCE ON THE PROBLEMS OF THE ARAL SEA
15-19 NOVEMBER 2019
ST PETERSBURG, RUSSIA

The speakers and observers all congratulated the scientific team of the Laboratory of Brackish Water Research on the 30th anniversary of its foundation in the Zoological Institute of the Russian Academy of Sciences.

Russia speakers – two from Moscow:

- Novikova Nina Maksimovna, Professor, Doctor of geographical sciences, Water Problems Institute of RAS. She and her co-authors presented a report on "*Monitoring the evolution of natural complexes in the southern Aral Sea region*".
- Konyushkova Maria Valerievna, Senior Research Scientist, candidate of agricultural sciences, Eurasian Center for Food Security, Moscow State University. She and her co-authors presented a report on "*Soil salinization monitoring using remote sensing data on agricultural lands of the Aral Sea region*".

Russian speakers - six from St. Petersburg:

- Aladin Nikolai Vasil'evich, Professor, Doctor of biological sciences, Head of the Laboratory of Brackish Water Research, Zoological Institute of the Russian Academy of Sciences. He, and co-authors from the Laboratory, presented a report on "*Aral disaster in the literal and figurative sense of the word*".
- Plotnikov Igor Svetozarovich, Candidate of biological sciences, Senior Researcher at the Laboratory of Brackish Water Research, Zoological Institute of the Russian Academy of Sciences. He made a presentation on "*Changing in the species composition of free-living aquatic invertebrates of the Aral Sea*", based on material from his ongoing doctoral dissertation.
- Zhakova Lubov Vasil'evna, Junior Researcher, Laboratory of Brackish Water Research, Zoological Institute of the Russian Academy of Sciences. She made a presentation on "*Impact of long-term changes in the salinity of the Aral Sea on biodiversity in communities of aquatic macrophytes*" based on material from her ongoing Ph.D. thesis.
- Lisovskiy Sergey Anatol'evich, Editor-in-chief of the newspaper "Society and Ecology". He presented a report on "*Aral Sea in a dream and in reality*".
- Smurov Alexey Olegovich, Candidate of biological sciences, Senior Researcher at the Laboratory of Brackish Water Research, Zoological Institute of the Russian Academy of Sciences. He and his co-authors from the Laboratory and one (1) co-author from Germany, presented a report on "*Salinity tolerance of hydrobionts in thalassic and athalassic water reservoirs*".
- Pankratova Irina Viktorovna, Candidate of biological sciences, Herzen State Pedagogical University of Russia. She made a presentation on "*Scientific Research of the Herzen State Pedagogical University of Russia on Barsakelmes (BKGZ)*".

Kazakhstan speakers - two

- Bekniyaz Bolat Kabykenovich, Doctor of geographical sciences, International Fund for saving the Aral Sea, Director of Executive Board of the Republic of Kazakhstan, Almaty. He

presented a report on "*Proposals for improving the environmental conditions of the Aral Sea and the Aral Sea region*".

- Alimbetova Zauresh Zhansultanovna, Director of the Barsakelmes State Nature Reserve, Aralsk. She presented a report on "*Barsakelmes State Natural Reserve*".

Uzbekistan speaker - one

- Odilbek Islamovich Eshchanov, leading environmental specialist, Scientific-Information Center of the Interstate Coordination Water Commission, Tashkent. He, in collaboration with Dukhovny Viktor Abramovich, Director of the Scientific-Information Center of the Interstate Coordination Water Commission, made a report on "*Aral and Aral Sea region – a little of the history and a lot about the future*".

United Kingdom speaker - one

- Gallagher Ronald, former head of the Environmental Department of British Petroleum in Azerbaijan. He gave a lecture on "*Strandlines on Azerbaijan's Mud Volcanoes and coastal interior: New evidence of a catastrophic marine flood impacting the Ponto Caspian and Aral Sea regions with its implications to natural sciences and humankind*".

United States of America speaker - one

- White Christopher, currently teaching at KIMEP University, Almaty, Kazakhstan. He presented a report on "*Ecological and economic recovery of Kazakhstan's Northern Aral Sea*".

France speaker - one

- Cretaux Jean-Francois, Legos/CNES, Toulouse. He presented a report on "*Lakes in Central Asia, survey from satellite remote sensing*".

Japan speaker - one

- Chida Tetsuro, Associate Professor, School of Global Management and Cooperation, Nagoya University of Foreign Studies, presented a report on "*Further measures for the sustainable socio-economic development of the Aralsk district*".

Poland speakers - two

- Klimaszyk Piotr, Head of Department of Water Protection, Adam Mickiewicz University, Poznań, and Marszelewski Włodzimierz, Head of Department of Hydrology and Water Management, Nicolaus Copernicus University, Toruń. They, together with their co-workers, reported on "*Differentiation of biotopes and biocoenoses of Small Aral Sea and lower course of Syr Darya River – Spring survey in 2018*".

Spain speaker - one

- Alonso Garcia-Amilibia Miguel, University of Barcelona, presented a report on "*Limnological studies of the salt lakes in Mongolia are important for rehabilitation projects of the Aral Sea*".

In addition to the speakers, three observers participated, one each from Russia, Uzbekistan and Azerbaijan.

Meshcheryakova Natalia Sergeevna, Russian company "Support for GOOD IDEAS" Open social and humanitarian communications. She expressed the desire for further productive work and achievements, to draw world and domestic attention to the topics of studying, preserving, restoring fragile balances in the natural world for the benefit of sustainable development and effective cooperation, as an invariable connection of challenges and actions.

New reliable and scientifically accurate films and TV programs about the Aral Sea and Aral region and associated problems need to be made, paying special attention to the success achieved by international teams of scientists.

Mamadzhanova Gulsanam Sandzharovna from Uzbekistan, author and Director of the International Innovation Project “Revived Aral” (2004), made an appeal to unite the creative and scientific forces of the international community of states in the revival of the Aral Sea; about the need to change the world view and value orientations related to the consciousness of the natural environment; about the importance of a positive approach in producing new works of art and culture, through the process of creative transformation of reality. She also spoke about the activities of the International Women's Public Fund “Woman of the East”.

Almaz-Hanum Medzhidova, Azerbaijan, head of the International Cultural and Educational, Ecological and Educational Center “AZERI”, accredited member of the International Women's Public Fund "Sharq Ayoli" (Woman of the East). She called for the creation of new scientific knowledge for the development of new innovative projects for the Aral and Aral Sea region. She also talked about the activities of the International Cultural and Educational Center “AZERI” and asked to combine the efforts of scientists, art and culture in the faster rehabilitation of the remnants of the Aral Sea and the greening of the dried bottom of the Aral Sea.