

Proceedings of the Roundtable Protecting the Indus Delta

3rd June, 2021



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World Environment Day 2021
Proceedings of the Roundtable
Protecting the Indus Delta
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Program Agenda

1) Opening Session:

- ❖ Welcome Address on Importance of Lower Indus Basin for Pakistan. Senator Nisar A. Memon, Chairperson, WEFForum
- ❖ Inaugural Address on Ecosystem Based Approaches to Manage Climate Risks. Malik Amin Aslam, Special Advisor to the Prime of Pakistan on Climate Change
- ❖ Interconnection of Mountain and Coastal Ecosystems. Dr. Pema Gyamtsho, DG ICIMOD
- ❖ Managing Adaptation & Mitigation Challenges through Blue Economy & Blue Carbon. Mr. Ali Tauqeer Sheikh, WEFForum

2) Technical Session: Science, Policy, Climate & Development Actions: Lessons & Approaches

Chair: Mr. M Aslam Ghauri, Secretary Environment Climate Change and Coastal Development Department, Sindh, Government of Sindh
Moderator: Dr. Muhammad Ashraf, Chairman PCRWR

3) Recommendations

Background

Climate change, rapid growth of population and urban development has increased the risk of sea level rise in the coastal areas. Pakistan is one of the countries, which are most vulnerable to climate change and its coastline is most vulnerable to adverse effects of sea level rise. The Indus delta has been ranked third in most vulnerable deltas. In addition to delta degradation Pakistan's most populated city, Karachi, is also prone to risk due to this phenomenon. An annual rise of 1.1 mm in Arabian Sea level between 1856 and 2000 has been estimated. This rise will directly and or indirectly affect the community, livelihood, habitability and agriculture in delta region. Therefore, mitigation measures need to be adopted before it's too late.

The river Indus flows into the Arabian Sea creating Indus delta. It has been among the high risk's deltas but it couldn't get a due attention of researchers and developers for a long time. Sea level rise has increased thunder storm cycles which are an added disadvantage to the marine ecosystem as well as coastal zone and resulting in millions rupee losses to already underprivileged population of Pakistan. The increase in sea level increases the associated risk of sea water intrusion into delta region. Resultantly, flooding, soil erosion, lowland inundation, surface and ground water salinization is increasing and migration of inhabitants has been increased to urban centers due to limited livelihood options. It has been estimated that about 10% of the population and 40% of the industries in the Indus delta region are at high risk. In addition, the seawater intrusion and the resulting salinization are rendering the delta region not-fit for traditional agricultural practices and fish farming. Most of the Indus delta population can be ranked as underprivileged and prone to health problems.

The Roundtable on Protecting Indus Delta held online on June 03, 2021, provides an opportunity to engage with the leading experts, researchers, developers and policy makers to delineate key areas of intervention and investment by key stakeholders. A number of distinguished panelists from the government, scientific institutions and financial institutions were invited to deliberate upon the key questions regarding knowledgebase and global trends in delta protection for adaptation and mitigation, low-lying fruits for successful intervention and challenges or opportunities for success.

It is hoped that the deliberation will not only enhance our understanding of the deltaic region but would also help form a community of practice that is committed to keep the strategic focus on this important area.

Objectives

The overall objective of the Roundtable was to highlight the neglected issues pertaining to degradation of Indus delta and importance of its protection. However, the specific objective was to take the opportunity to engage with the leading experts, researchers, development agencies and policy makers to bring the issues, challenges and opportunities to the surface and find a way for its sustainable management. The roundtable provided an opportunity to deliberate upon the key questions regarding knowledgebase and global trends in delta protection for adaptation and mitigation, low-lying fruits for successful intervention and challenges and opportunities to address the issue.

Opening Session

(Mr. Nisar A. Memon, Chairman, WEFForum)

Indus Basin that Pakistan shares with China, India and Afghanistan is the life-line of Pakistan. It is among the most vulnerable water towers of the world and faces the key climate challenges like receding glaciers due to high temperature, decreasing snow precipitation, GLOFs, migration, loss of biodiversity and inadequate adaptation measures. Upper Indus Basin contributes to the downstream in the form of water and energy. While Lower Indus Basin runs across our two large provinces of Punjab and Sindh to meet the water needs of 75% population of Pakistan for its agriculture and industry before it enters the Arabian Sea through Indus Delta which ranks 3rd among the world's most at risk deltas.

Our challenges were compounded by COVID-19 and sadly we lost many lives for which we offer our sympathy and prayers. Despite this, world remains committed and determined to stay on course to provide clean environment in the planet.

Mr. Malik Amin Aslam

(Special Assistant to Prime Minister of Pakistan)

Mr. Malik Amin Aslam informed about the Billion Tree Tsunami initiative of Government of Pakistan and its acknowledgment by the world community and resultantly Pakistan has a chance to host World Environment Day 2021. He has also mentioned that Pakistan's mangroves have a huge potential of carbon storage and a potential of USD 0.5 Billion as a financial gain for the country through blue carbon bond.

Dr. Pema Gyamtsho

(Director General ICIMOD)

Mighty Indus River rises from western Tibet in Himalayas and drain itself into the Arabian Sea. Before emptying into the sea, it has deposited the sediments along the coast and developed 6th largest delta in the world known as the Indus Delta. The River Indus, in this way, connects the mountain and coastal ecosystems. In the mountain ecosystem, climate change impact has been translated into changes in precipitation pattern, highly variable river flows, accelerated melting of glaciers while southward uneven distribution of monsoon results into floods and drought. The coastal ecosystem is also affected by the climate change in the form of sea level rise, increasing frequency of the tropical cyclones, storm surges, more frequent heat waves, coastal erosion, saline water intrusion into arable land, increasing brackish ground water not suitable for drinking and agriculture forcing the outmigration of the local population.

Mangrove plantation drive of Government of Pakistan with IUCN and other partners' is a great step toward restoration of coastal ecosystem. However, an integrated approach is needed, considering upstream-downstream connections, to find nature-based solutions for the conservation of Indus Delta and restoration of ecosystems. ICIMOD would love to join this partnership.

Mr. Ali Tauqeer Sheikh

(Member of the National Climate Change Council)

Mr. Ali Tauqeer Sheikh gave comprehensive over view of the issue and the way forward. He highlighted that mangroves had a capacity to absorb up to seven times more carbon as compared to territorial forests and are unique source for long-term carbon storage which have been neglected for a long time in the Indus delta. Pakistan has 1.464 km² area under mangroves which can help to remove a substantial amount of CO₂ and in addition to that it has a potential of huge financial gain of 300 to 500 million USD to the country as a blue carbon bond. Mangroves absorb more carbon compared to territorial forests. In fact, some estimates suggest that they have as much as 7 times more carbon absorption capacity. They serve a unique source for bio-sequestration and carbon storage. Pakistan's coastline and mangrove forests have a triple jeopardy: a) reduced flows in Indus reaching the lower Indus basin, particularly delta regions, b) sea-water rise and intrusion , and c) poverty and growing population and deforestation.

Technical Session

The technical session was chaired by Mr. M Aslam Ghauri (Secretary Environment Climate Change and Coastal Development Department, Sindh). It was moderated by Dr. Muhammad Ashraf, Chairman Pakistan Council of Research in Water Resources.

After the brief introduction by the Session Chair, the moderator placed the following questions to the respective panelists:

- a) The question to the panelists from the research organizations i.e., IWMI, NIO and IIASA, was “what is the state of knowledge on the Indus delta and what are the research gaps that need to be filled are?”
- b) The panelists from the development organizations i.e., IUCN and WWF, were requested to respond on development done so far in the delta regions, what were main challenges and what could be the possible way forward?
- c) The questions to the professionals from MUET, MetaMeta and UVM was “how the Indus delta issues have been incorporated in draft Sindh Water Management policy?”
- d) The expert from the World Bank was asked to give his insight on the perspective of funding this important but neglected region.

Dr. Samina Kidwai explained that a huge knowledge base is available regarding the conservation of the coastal belts. She named a book on mega deltas published by Elsevier and told about PSDP project on seawater level rise. Dr. Mohsin Hafeez indicated the gap in Apportionment Accord of 1991 as it does not include provision against safeguarding sea water intrusion. Dr. Mikhail Smilovic focused on water-food-energy nexuses and highlighted that the importance to link with with the protection of Indus ad its resources, including delta.

Dr. Bakshal Lashari and Dr. Frank van Steenbergen stated that US-PCASW, PCRWR and other research organizations have done a lot of work and knowledge base was available in this regard to a certain extent. The livelihood in delta region is badly affected mainly by sea water intrusion. Moreover, this knowledge has been incorporated in the draft Sindh Water Policy and there is full chapter on wetlands.

Dr. Mahmood Akhtar Cheema highlighted that a massive number of people have been migrated from delta region to urban areas being affected by sea water intrusion. He further briefed the participants regarding the work done on identification and growth of various species of mangroves transplanted and aqua culture in the Indus Delta. Dr. Hammad Naqi Khan briefly explained the work done by WWF regarding the transplanted mangroves in the Indus Delta. He further added that water conservation is important to meet the environmental

needs. Dr. Asim Zia highlighted the importance of water allocation to the provinces based on snowmelt and their water requirement for environmental flow below Kotri and the dams need to be designed to ensure this environmental flow. He further added that drought early warning system should be made available in the delta region.

Dr. Abedalrazq F. Khalil briefly mentioned that economic loss due to seawater intrusion was estimated around Rs. 2 Billion per year. He also suggested to fix water price (Abiana) and the afforestation should be developed and/or restored for financial gain.

Mr. M Aslam Ghauri concluded the roundtable by summarizing discussion during the session.

Recommendations

- In the wake of climate change affecting livelihood options in the coastal regions, it is essential to enhance community resilience particularly for those living in the Indus Delta. It is critically important both for the protection of coastal ecosystem and to improve livelihood security of the people.
- The availability of reliable data for scientific decision-making continues to be a critically important issue for delta planning. It is important to fill the data gaps through collection of primary and secondary data. The synthesis of data would help the planner and policy makers for taking appropriate actions.
- As the livelihood options in the deltaic region is limited, therefore it is imperative invest in the non-conventional approaches such as saline agriculture, saline aquaculture, mangrove protection etc.



List of Panelists of the Roundtable

Picture	Introduction	Email address
	Mr. Nisar A. Memon He cofounded Water Environment Forum as Trust in 2014. He has varied experience across private and public sectors in key leadership roles as CEO, Senator, Federal Minister, and Board Member.	nisar@nisaramemon.pk
	Mr. Malik Amin Aslam He is Special Assistant to Prime Minister of Pakistan on Climate Change as well as honorarily serving as the elected Global Vice President of IUCN (International Union for Conservation of Nature).	amin.attock@gmail.com
	Dr. Pema Gyamtsho He is currently Director General ICIMOD, the first ICIMOD DG who is from one of the eight regional member countries the Centre represents. He has served the Royal Government of Bhutan as Minister of Agriculture and Forests.	pema.gyamtsho@icimod.org
	Mr. M Aslam Ghauri He has served the government in various positions and currently serving as Secretary Environment Climate Change and Coastal Development Department, Sindh.	chiefsecretarysindh@gmail.com
	Mr. Ali Tauqeer Sheikh He is independent water and climate change expert, member on the National Climate Change Council, chaired by the Prime Minister of Pakistan and also a member of the External Advisory Group on South Asian Region Climate Change Action Plan.	atauqeersheikh@gmail.com
	Dr. Mikhail Smilovic He is a Research Scholar with the IIASA Biodiversity and Natural Resources (BNR) program in the research group Water Security, where he is investigating issues related to water and food security through simulations and stakeholder-driven model development.	smilovic@iiasa.ac.at
	Dr. Mohsin Hafeez Working at IWMI as a Country Representative (Pakistan) and Regional Representative for Central Asia. He also led working group on Disaster Preparedness for National Climate Adaptation Task Force setup by the MoWR.	M.Hafeez@cgiar.org
	Mr. Mahmood Akhter Cheema He is the Country Representative, IUCN Pakistan and a Founder Member of Human Resource Development Network (HRDN). He has over 30 years of experience in natural resource management and programme development.	mahmood.cheema@iucn.org

	<p>Dr. Frank van Steenbergen He is natural resource management specialist and director of MetaMeta. He has been in the preparation of policy documents, most recently the Groundwater Governance Vision and Framework for Action on behalf of GEF, World Bank and FAO.</p>	fvansteenbergen@metameta.nl
	<p>Dr. Samina Kidwai She is Director General of the National Institute of Oceanography which she has been affiliated with and served for over 25 years. Represented Pakistan in many countries as well as a visiting scientist in USA, Denmark and China.</p>	niopk.gov.pk@gmail.com
	<p>Dr. Bakhshal Khan Lashari He is Professor at USPCAS-W MUET with more than 34 years of working experience as an educationist and Principal Scientist in the field of water resources planning, designing and management both nationally and globally.</p>	Bakhshall@yahoo.com
	<p>Dr. Asim Zia He is serving as a Professor of Public Policy and Computer Science at the University of Vermont (UVM). He is Director of the Institute for Environmental Diplomacy and Security (IEDS); and recently appointed as a Fulbright Global Scholar (2020-2022).</p>	Asim.Zia@uvm.edu
	<p>Mr. Abedalrazq F. Khalil He is currently a Senior Water Resource Management Specialist at World Bank Water Global Practice. He has worked to develop innovative and better management tools used in the design and operation of large-scale water supply systems.</p>	akhalil@worldbank.org
	<p>Mr. Hammad Naqi Khan He is the Director General and Chief Executive Officer of WWF-Pakistan. He was awarded a Britannia Chevening scholarship for MSC in Water and Environmental Management from the University of Birmingham, UK. He also developed WWF-Pakistan's Freshwater programme.</p>	hnaqi@wwf.org.pk
	<p>Dr. Muhammad Ashraf Dr. Ashraf is a professional engineer and has over 25 years of working experience for various national and international organizations on water-related issues. Currently, he is working as Chairman Pakistan Council of Research in Water Resources (PCRWR).</p>	muhammad_ashraf63@yahoo.com