

**Conference
Proceedings**

The Future of Water

Proceedings of the Third Karachi
International Water Conference

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Foreword

The Karachi International Water Conference (KIWC) is now considered a well-established and “must attend” water event in the country. Much like other global high profile conferences like ones in Stockholm and Singapore, we are hoping that KIWC one day will also achieve a similar place. This year’s theme focused on the burning issue of “The Future of Water”, a source of deep concern for not only those in Pakistan but for the region and the world. The 3rd KIWC succeeded in generating healthy discussions, innovative potential solutions and pathways for solving long standing water problems. In that respect, “The Future of Water” seems to be in capable hands.

This, the third KIWC was richer in content, higher on visibility and larger in attendance than the past events, especially the support and participation it received from the international delegates and speakers. Hisaar Foundation also continued the trend it had set in its inaugural conference in 2013 of delivering on its promises and commitments. Thus our Conference Declaration remains a dynamic force to be acted upon in good faith and action oriented.

It makes us very happy to see the growth of this conference over the years and fulfillment of its lofty aspirations. We introduced this conference in 2013 in an environment when water was not a stated priority of the government and when many discouraged us, given the prevailing security situation in Pakistan. But we soldiered on and were able to deliver on our commitments because the cause of water was very

important not only to us but to the whole nation and this region. We had the belief that the support and attention for this type of conference will be forthcoming from the stakeholders who were also hoping for such an intervention.

Hisaar Foundation is seen as a neutral platform welcoming diverse viewpoints and players and welcoming of all the stakeholders regardless of their shape, size and color. For the success we have achieved in this regards, the support and encouragement provided to the Hisaar Foundation team by its Board of Governors and Council members was highly instrumental. Similarly, the members of our Think Tank for Rational Use of Water and the Universities for Water Network were also key players in helping us reach this stage. Our work on water policy also borne fruit, as people accepted our initiative as ‘citizen’s water policy’ because it reflects the aspiration of common man in Pakistan.

The success of this conference was also due to the active participation of noteworthy and high profile speakers and delegates. We are especially thankful to guests, such as, the Governor of Sindh, Mr. Muhammad Zubair, Professor David Grey from Oxford University, Chairman of WAPDA Lt. Gen (Retd) Muzammil Hussain, President of Engro Corporation Ghias Khan, Mr. Rudolph Cleveringa from Global Water Partnership (GWP), Dr. Marianne Kjellen, Senior Water Advisor, Cap-Net UNDP, and Dr. Claudia Sadoff from the International Water Management Institute (IWMI). Our special thanks also go out to His Excellency,

Ambassador Mr. Istvan Szabo and the seven member delegation from Hungary, the corporate sector representatives and the Chairs of the National and Provincial Commissions on the Status of Women for their support and participation.

We look forward to 2019 with high hopes and expectations with our continued aspiration for better and more valuable contribution to the state of water in this country.

Zohair Ashir

Chairperson, Hisaar
Foundation



Setting the Scene – from the present to the future

When the Steering Committee of Hisaar Foundation met in middle of 2016 to start planning for this conference, the global world water scenario was being seriously impacted upon by the political changes of 2016. The water destiny of many nations appeared to be at stake. The UN, defender of the right to water in developing countries, was itself in peril. Suddenly the euphoria of Paris 2015 was giving way to disappointment and failing hope in a world increasingly presided over by a few powerful decision-makers whose world view was narrow and without foresight.

In the regional context some countries were threatening to use water as a tool of political pressure, leading to unnecessary turmoil and

conflict. Within countries population growth and demand for more water was causing tension and power play among different interest groups and different water user groups. Young people were thinking differently about water and coming up with new and novel solutions, technology applications, inventions and viewpoints. The data explosion was everywhere. We needed to ponder and address these new ground realities. The scope of the Third Karachi International Conference (KIWC), therefore, needed to address the complex, threatened, uncertain and yet hopeful Future of Water. The theme and subthemes of the conference then flowed naturally into four thematic areas: Rights and Entitlements, Water Economy, Science and Technology and Climate Change.

We were successful in attracting a large and diverse gathering of international water experts, global water leaders, water professionals and practitioners, people from the 'water diaspora', and people from all over Pakistan from many disciplines. The presence of Professor David Grey, Visiting Professor at Oxford University, a longtime friend of Pakistan and its water sector, was a privilege not only for Hisaar Foundation but also for Pakistan. It was a comprehensive and tight program, with linked objectives and outputs, working towards a declaration of action.

As chair of the Academic Committee, I was delighted to call upon many of my colleagues, friends and fellow travellers for their contribution in shaping the content and flow of the conference program at par with other well recognized global water events. We could not have achieved this without the support and commitment of the members of the Academic Committee. Therefore, our acknowledgement and gratitude are due to Dr. Abubakr Muhammad, Director Center for Water Informatics and Technology, LUMS, Dr. Rosemary Arnott, Gender Advisor, UNICEF Pakistan and Mr. Zulfiqar Halepoto, environmental journalist and writer. Our long-time members of this committee include Mr. Khalid Mohtadullah, former Member WAPDA and international water expert, Dr. Pervaiz Amir, Economist and member of Pakistan Water Partnership Board, Dr. Daanish Mustafa, Assistant Professor Kings College, London, and Ms. Farzana Saleem, water scientist and former COO of Hisaar Foundation.

Together the Academic Committee designed each of the sessions, their content and sequence. It reviewed the abstracts and made

suggestions to authors where needed. It identified keynote speakers, chairs, co-chairs, panelists and facilitators from across the world, and brought them to the conference. Mr Zohair Ashir and Ms. Sanaa Baxamoosa also worked with this committee to chase up international and national invited guests. The committee was very ably supported by Ms. Kausar Hashmi for its day-to-day functioning and by Mr. Wasif Bashir Babar for the meetings in Islamabad.

Simi Kamal

Chair, Academic Committee



Conference Statistics

21st & 22nd Nov
2017
Conference
successfully held

15
Sessions

10
International
Speakers

70
Speakers

Attended by over
1248
participants

Governor attended as
Chief Guest
on day 1

**Signing
of MOU**
with **Wein Janos Foundation**

18
Sponsoring
Organizations

Summary of Attendees

515
Opening & Closing
Plenary Guests

100
Delegates

318
Youth

91
Media

80
Women

76
Chairs, Presenters,
Panelists, Discussants

35
Volunteers

15
Exhibition Stall



Social Media Statistics

Conference **Declaration**

We, the conference delegates celebrate the success in generating mutual trust among diverse groups that participated in the conference. We will continue deepening and strengthening the dialogue among different stakeholders and promoting inclusive solutions. We will continue to provide the neutral space where all shades of opinion have a place and every group can express its views and concerns. We recognize the role of citizen's groups in bringing the debate on water to the forefront. We all know the challenges, now we must focus firmly on solutions. As the water crisis grows, we will

levels of provincial and federal government. This conference calls for coordinated provincial and national water policies. We will continue to engage with provincial and federal governments as well as private sector on the promotion of the water economy as the backbone of development through a consultative group as part of the work of Hisaar Foundation's Think Tank on the Rational Use of Water. We believe such engagement must be a broad engagement process with representation of women at all stages. However, we will continue to remind and persuade the government not to abdicate



continue to make the effort. Pakistan has risen to the challenge before, and we can do it again.

People accepted the 'citizen's water policy' because it is realistic and precise, with clear goals and time frame. We have seen growing concern and response from government. We welcome the support of the Governor Sindh to take these policy recommendations to highest

their responsibilities in these important areas.

We recognize with concern the distance and disconnect between practice and academia as well as between the work of NGOs and the private sector. We need to value the work on the ground done by NGOs as well as the solutions developed by the private sector and work these into the fabric of our universities so as to

generate cutting edge research of real-world problems. At the same time, we have to ensure that research from universities informs practice, business and professions related to water, and that technology is deployed extensively. Through the work of the Universities for Water Network we intend to close the gap between the research required by the economy and society and that which is being generated by universities at present. The Panjwani-Hisaar Water Institute will be up and running shortly to the lead in closing the present disconnect.

We believe the lessons from the Murray-Darling basin continue to be relevant for Indus basin and will enhance our linkages with the Australian Government to ensure continued mutual learning. We are opening a new chapter with Hungary. We have to advance learning on water in Pakistan and can do with by the exam-

ple of how Hungary manages its water. We will develop and promote links with Hungarian NGOs, private sector and academia.

We recognize the absence of women in policy making at all levels of the water sector and will pay more attention to clean drinking water and sanitation for girls and women. We believe the empowerment of women and girls is a guarantee for water reforms.

We have to refocus the water discourse to converse with young people. In two years we will be more digitized and connected, and we pledge to develop committed water professionals and mainstream young people in the water sector.

Hisaar Foundation has delivered what it promised in the last two conferences and we will deliver this time as well.



Session Audience

Conference **Background**

The Karachi International Water Conference (KIWC) is a flagship initiative of Hisaar Foundation and takes place every two years. The aim of the conferences is to bring together stakeholders from across the world and across the water sector, from government and elected representatives to business and corporate sectors, academia, media, civil society, NGOs and INGOs, women, citizens, water managers and professionals, representatives of water institutions and youth. To date, Hisaar Foundation has hosted three international water conferences 'Water Cooperation in Action – From the Global to the Grassroots' in December 2013, 'Securing Sustainable Water for All – Innovation, Integration and Inclusion' in November 2015 and the third Karachi International Water Conference on 'The Future of Water' in November 2017

Pakistan occupies a unique position in relation to the Third Pole and the Himalayan region, the Indus river system, the Punjab aquifer, the stark desert areas and the coastline on the Arabian Sea. It also sits on the cusp of South Asia and Central Asia, and is linked to China, Iran and the Middle East, as well as to the Asia Pacific region. These linkages gave the conference value, focus and depth.

The Third Karachi International Water Conference: The Future of Water was attended by over 1200 participants from Pakistan and across the globe. The conference brought together leading personalities, researchers, professionals and opinion-makers on water, environment and climate change came together on a single neutral platform to

debate, disagree, build a consensus, and work towards a water secure Pakistan .

As the conference was about the future of water, many cross-cutting themes were mainstreamed with special focus on youth, the inclusion of women, marginalized groups and poor communities.



**Rights and
Entitlements**



**Water
Economy**



**Science and
Technology**



**Climate
Change**

Aims and Objectives **of the Conference**

The scope of the 3rd KIWC reflects the theme of the post-2015 development agenda on achieving the 'Sustainable Development Goals (SDGs)' by 2030. All three dimensions of sustainable development - economic, social and environmental - have to be explored and a coordinated, integrated, equitable and inclusive plan of action needs to be set into motion.

The Organization for Economic Co-operation and Development 2016 report links water, growth and finance and calls for financing investments in water security and sustainable growth. Yet the world today is dominated by



Session Audience

powerful actors in the political arena whose priorities do not include water.

The urgency to address water challenges across the world is reflected in the 17 Sustainable Development Goals of the 2030 Agenda for Sustainable Development adopted by the world leaders in Paris in 2015 at the historic UN Summit where 193 countries signed up. Over the next fifteen years, countries will mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind. Of the 17 sub-goals in the SDGs, three refer to water directly and nine indirectly.

By sharing research findings, technical solutions, innovations, inclusive models, examples of integration and experiences at different levels, policy level dialogue on the future of water can be initiated for the integrated management of

water resources, especially in the context of exploring new markets and opportunities to achieve the SDGs by 2030.

The aims and objectives of the 3rd KIWC were as follows:

- Bring water to forefront of people's minds
- In- depth debate and lobbying for aon 'Ccitizens' 'Wwater Ppolicy' developed by Hisaar Foundation's Think Tank on the Rational Use of Water
- Water advocacy
- Scale and variety of water (ideas, interventions, innovations etc.)
- Reach out to all critical stakeholders including government, academia, civil society, media, business and corporate

sector, urban and rural communities, and experts to catalyze the practical implementation of sustainable development goals in terms of water management

- Identify avenues of integration, collaboration and partnerships in order to realize the potential of the water economy
- Identify strategies for sharing, promoting and implementing climate action
- Showcase models and experiences from across the world that display innovative science and technology for water.

The particular focus of the 3rd KIWC was on the Sustainable Development Goals (SDGs) outlined below:



These realities of and solutions to the Future of Water were addressed through the prism of Rights and Entitlements, Water Economy, Science and Technology and Climate Change.

Rights and Entitlements

Sustainable development cannot be fully attained without peaceful, just and inclusive societies that provide equal rights access to all its peoples. The Human Rights to Water and Sanitation entitles everyone to safe, sufficient, acceptable, physically accessible and affordable water and sanitation services which we are yet to achieve. The impact of external pressures along with increasing scarcity and competition for its use makes water governance and management critical. The situation calls for establishing credible institutions, policies and legal systems that can facilitate development that mainstreams gender, is pro-poor in its approach, and sustainable in its implementation.

Water Economy

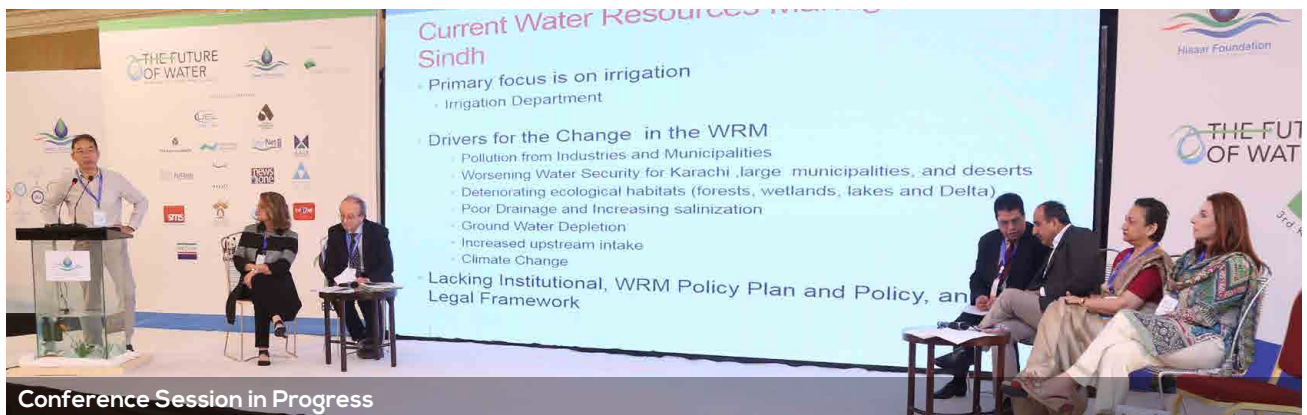
Water is a key driver for social and economic growth and contributes to the well-being of the people. It plays an integral role in productive processes and contributes significantly to agriculture, industry, energy, transport and economic sectors. Building climate resilient economies that can develop and grow in face of water scarcity will require improved methods of allocating scarce water resources across sectors to higher-value uses. Smart water policies and well-planned investments from all sectors can yield significant benefits by improving welfare and enhancing economic growth.

Science and Technology

Sustainable development on the water front requires the adoption of new water saving technologies, incentives, education, and awareness. Integration of scientific knowledge with technical developments will bring about efficiency in water management systems and also improvements in water quality and better access to quality data. Leveraging the technological advancements in the media also plays an important role in communicating the water crisis and harnessing the potential of water as a connector between research, policy and action. Scientific and technological innovation requires the spread of information and communications technology has great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies.

Climate Change

Climate change and sustainable development are arguably two of the most interconnected and significant challenges facing the world today. Failure to tackle and cope with climate change will have devastating effects on development indicators. Development processes must factor in climate mitigation, adaptation and resilience mechanisms at all levels of policy, action and implementation. Climate action must be integrated within the broader development policies and strategies because the impact of climate variability and vulnerability to climate change will greatly hinder the ability of countries to achieve their SDG commitments by 2030.



Conference **Proceedings**

What is the Future of Water in a Politically Challenged New World Order?

(Session 1 - Opening Plenary)

Facilitator:	Mr. Ashraf Kapadia , Governor, Hisaar Foundation
Chief Guest:	Mr. Muhammad Zubair , Governor, Government of Sindh
Announcer:	Mr. Wasif Rashid , Hisaar Foundation
Speakers:	Mr. Zohair Ashir , Chairperson, Hisaar Foundation
	Mr. Rudolph Cleveringa , Executive Secretary, Global Water Partnership
	H. E. Mr. Istvan Szabo , Ambassador of Hungary to Pakistan
	Mr. Ghias Khan , President, Engro Corporation
	Professor David Grey , Visiting Professor, Oxford University

The opening plenary session focused on the operating model of Hisaar Foundation, the formal launch of the conference, introducing its four themes and the keynote address.

The session was sponsored by Engro Foundation and Hisaar Foundation.

Chairperson's Opening Remarks

In his opening remarks, Mr. Zohair Ashir charted the journey of Hisaar Foundation. It all started, he said, with the drought relief campaign for Thar in 2000, the formal registration in 2003, and building partnerships over a 15 year period. He spoke of the first landmark International Water Conference, held in 2013, followed by the launch of the Think Tank on Rational Use of Water and the Universities for Water Network. Recalling the need expressed in the





Prof. Dr. Sarosh H Lodi, Mr. Zohair Ashir, Mr Istvan Szabo, Prof. Dr. David Grey, Ms. Nadira Panjwani, Ms. Simi Kamal, Mr. Rudolph Cleverings and Mr. Aman-ul-Haque

2015 conference for a National Water Policy, Mr. Ashir said that Hisaar Foundation has delivered on its promise. The 'Recommendations for Pakistan's Water Policy Framework' was completed in October 2016 after 18 months of consultation with a range of groups and stakeholders. The policy, he said, had thus far been launched in Karachi, Hyderabad, Lahore, Islamabad and Peshawar in the presence of ministers and senior national and provincial government officers, academia, civil society and the corporate sector.

Launch of Panjwani-Hisaar Water Institute at NED University of Engineering and Technology

Mr. Zohair Ashir invited Ms. Simi Kamal, Founder Hisaar Foundation, Ms. Nadira Panjwani, Founder of the Panjwani Charitable Foundation and Dr. Prof. Sarosh. H Lodi Vice Chancellor of NED University of Engineering and Technology (NEDUET) to formally launch the Panjwani-Hisaar Water Institute (PHWI), which will be established at the NED University. The establishment of the institute was a 'historic moment' according to Dr. Prof. Lodi, Vice Chancellor of NEDUET.

Ms. Kamal thanked Ms. Panjwani for providing seed money and Prof. Dr. Lodi for the land allotted by university for PHWI, the first of its kind in Pakistan and in the region.

The aim of the PHWI is to integrate the currently isolated nodes of engineering, natural sciences, economics and social sciences, combining both academia and responsible citizenship.



Launch of Punjwani-Hisaar water institute



Partnering for a Water Secure World

Mr. Rudolph Cleveringa's message to Pakistan was very stark: wake up to water insecurity before it is too late. He said a National Water Policy was necessary to diffuse the country's water insecurity and water-related conflicts with neighboring countries he stressed. Echoing Ms. Kamal words, he called for the empowerment of women if real reform was to be brought about.

The Future of Water: The Role the Private Sector can Play

The President of Engro Corporation, Mr. Ghias Khan argued that Pakistan's water issues were exacerbated by rapid population growth,



urbanization and climate change. He likened the country's water insecurity to the gas shortage that has plagued industry: overuse and wastage by domestic consumers. Unless and until regulation is introduced, the crisis will remain and increase with time. Mr. Khan said that not only citizens, but industries are facing regulatory, physical and reputational risks due to lack of a water regulatory framework, and major industrial players must be held accountable for the misuse and pollution of water resources.

Water Security in a Changing World: Challenges Pakistan MUST Face.... SOON

Professor Dr. David Grey, Visiting Professor Oxford University and a globally-renowned expert on Pakistan's water sector, defined water security as the 'freedom from tolerable water-related risk to society'. Water insecurity further inhibits economic growth he said, before outlining the various indicators that can make Pakistan a water insecure country. He said the Indus Basin development projects were a 20th Century revolution; a robust 21st Century water revolution was needed, and Pakistan should continue to negotiate with India as a friendly neighbor rather than as a belligerent.

Water: The New Link between Hungary and Pakistan

His Excellency Mr. Istvan Szabo, Ambassador of Hungary to Pakistan, spoke on the new link between Hungary and Pakistan. Whereas the Hungarian embassy has been present in Pakistan for decades, engagement in water sector with Pakistan is a relatively new initiative. Water is a common issue for both the Pakistani and Hungarian people.

H.E. Mr. Szabo talked of the role of the Hungarian



government in optimizing the use of its national available water resources. The Budapest Water Summit 2016, hosted by the Hungarian government, also focused on the 2030 Agenda for Sustainable Development. It was time for a new global political architecture, he continued, to strengthen water resource cooperation and management for greater water security in the face of environmental challenges, climate change, and rapid population growth and urbanization. His Excellency said that Hungary puts a strong emphasis on the challenges and perspectives of water related issues: as a follow up of the Budapest Water Summit, the Department for Water Diplomacy and Tied Aid Credits was set up within the Ministry of Foreign Affairs in February 2017.

His Excellency said that Pakistan has unlimited economic potential due to its strong agricultural base, human resource, and its climate and geographic position. The only drawback,

he said, was inefficient water management. He ended by saying that the exchange of views in the coming two days would lead to greater debate on better, more efficient water conservation and management policies.

Address by the Governor of Sindh

The Chief Guest at the opening plenary session, His Excellency Mr. Muhammad Zubair, Governor of Sindh spoke on the criticality of Pakistan's water challenges and said he appreciated the efforts of citizen-based organizations such as Hissar Foundation to tackle these challenges. He said that in the recent past combating terrorism and tackling the energy crisis has been main priorities of the government.

However, he said that policy decisions are in the offing, the government has now formed a separate Water Ministry at the national level, a separate entity rather than a department of the Ministry of Energy, evidence that Pakistan's water dilemmas were being looked at with the utmost seriousness at the national level. He emphasized that a robust, workable National Water Policy was now a priority.



Water Security in a Changing World: Challenges Pakistan MUST face...SOON

Key messages:

- ▶ Prof. Grey commenced his address with a tribute to *John Briscoe 1948-2014*, Harvard Professor, former WB Senior Water Advisor, my close friend... "Never say anything with which a reasonable person cannot disagree". In this spirit, if I say anything that everybody agrees with, I would be sorry, because my intention is to provoke!" (with acknowledgment to John for shared ideas & hopes!).
- ▶ All great river civilizations of the world all facing great challenges: Nile River Basin; Tigris-Euphrates; Indus River; has become a source of disputes, conflicts and escalating tensions for surrounding lands, countries and people.
- ▶ **Water security is a key human goal is source of life:** production, growth & cooperation. Healthy people; Healthy ecosystems; Food production; Energy production; Navigation; Cultural Value and Cooperation.'
- ▶ **Water security is a key human goal is also cause of death, destruction, poverty & dispute:** Drought; Flood & inundation; Landslide; Desertification; Contamination; Epidemic & disease; Dispute, even conflict.
- ▶ Water Security: an outcome providing two freedoms: **freedom from** intolerable water-related risks & **freedom** to pursue otherwise constrained social/economic opportunities.



Keynote Address: Professor David Grey

School of Geography and the Environment,
University of Oxford

- ▶ To attain water security, its time **to move towards dynamic model of water security and growth**, i.e. Growth, Wealth and Well-Being which comprises Opportunities (Social, Economic & Environmental) and Risks (Vulnerability, Exposure & Hazard).
- ▶ **There are 6 key water challenges facing us:** **1)** Endowment (Headline Risk: Variability + Unpredictability + Change = Complexity); **2)** Local water service risk (Food & farm, Household water & sanitation) and for Pakistan, educating girls; **3)** Local flood risks; **4)** Local drought risks; **5)** Transboundary risks; **6)** Global spillover risks to stability;
- ▶ **Pakistan unfortunately ranks high on water insecurity indexes: # 2** on shortage index (total population at risk of frequent water shortages; **# 7** on flood index; **# 5** on water and sanitation index.
- ▶ **Water security in changing climates has resulted in over 2 billion people being water insecure NOW.**

WATER SECURITY: COMPLEXITY & THE CASE OF ASIA, THE INDUS, PAKISTAN. .

- ▶ Political economy of South Asia's big rivers: unstable relationships. While South Asia is increasingly integrated into global economy, intra-regional trade is world's lowest.
- ▶ **Hotspots of security risks associated with climate change: the South Asia Challenge** (Climate induced degradation of freshwater resources; Climate induced decline in food production; Climate induced increase in storm and flood disasters; Environmentally induced migration.
- ▶ Greater Himalayas: world's "water tower"; 2 bn? people in 7 basins; 3.5 bn? Dependent.
- ▶ **Pakistan has demonstrated in the past that it can cope with 20th century water challenges**, e.g 1960 Indus Waters Treaty: national entitlement settled; Instruments & institutions: management & development; Huge technical capacity built – a 'technocracy'; Coping infrastructure: link canals, storage, hydropower; Waterlogging and salinity reversed; 1991 Accord: interprovincial entitlements settled, IRSA established.
- ▶ **More recent major 'points of light'** e.g. Irrigation reform: irrigation management transfer; Ghazi-Barotha: hydropower, social & environmental focus; Mangla: good practice resettlement; Draft National Water Policy:
- ▶ **Pakistan: 21st century water challenges to overcome**; Threatened water resource base; Deteriorating infrastructure assets; Increased management needs, yet weakened capacity.

PAKISTAN: 21st CENTURY WATER REVOLUTION?

- ▶ A 'hydraulic' society for millennia: snow melt from high mountains feeding a great river across desert.
- ▶ **1st revolution**: unprecedented water development at the heart of nation building, mid 20th Century.
- ▶ **2nd revolution essential**: state-of-art skills & institutions; renovation & expansion of infrastructure assets (Kalabagh, Diamer-Bhasha?); quantum shift in efficiency with equity; & 'pride/status' for Experts; Political change – trust building, benefit sharing; interprovincial & international cooperation.... is there a reasonable alternative?
- ▶ **Water, food & power security for future generations, prosperity & peace ... there is no alternative!**

WATER COOPERATION IS THE KEY

- ▶ Cooperation is not "all or nothing"; Different levels of cooperative effort, different benefits, in different places, at different times; "Right" level of effort depends on potential benefits driven by hydrology, economics, riparian relations,.....and the costs of capturing those benefits.
- ▶ Pakistan – India cooperation could be a "Game Changer" for all. Maintain IWT but modernize interpretation, for example, undertake jointly-planned, jointly-financed & jointly-operated hydropower/storage?
- ▶ **IS THERE THE VISION, COURAGE & SPIRIT? IF NOT NOW, WHEN....?**

The Architects of Water Economy in Pakistan – Government, Commercial Banks and International Players

(Session 2A – Presentations and Panel)

Facilitator:	Mr. Zohair Ashir , Chairperson, Hisaar Foundation
Chair:	Lt. Gen (Retd). Muzammil Hussain , Chairman, WAPDA
Panelists:	Dr. Salman Shah , Former Finance Minister and Member, Hisaar Foundation Think Tank
	Dr. Ishrat Hussain , Former Governor, State Bank of Pakistan
	Mr. Ehsan Malik , CEO, Pakistan Business Council
	Mr. Ferenc Keszler , CFO, Budapest Waterworks

The session brought together key stakeholders – government, the banking sector, commercial players and international donors to discuss the potential of the water economy of Pakistan and the important economic and social role it plays in our everyday lives.

There was particular focus on the opportunities available in the water sector for major financial players, especially the private Pakistani banks to finance the water sector for investment and size of the water value chain.

This session was sponsored by AASA Consulting.



Mr. Zohair Ashir, Lt. Gen (Retd). Muzammil Hussain and Dr. Salman Shah

With the opening Plenary concluded, the Session Chair, Lt. Gen (Retd). Muzammil Hussain was formally invited by Mr. Zohair Ashir to commence the first session of the day. As part of Hisaar Foundation's 'Youth Outreach' program, students from Lasbela University of Agriculture, Water and Marine Sciences were specially invited to the session.

Opening remarks

In his opening remarks, the Chair said that the Opening Plenary had defined the agenda for a very interesting two days. He thanked Mr. Zohair Ashir, Ms. Simi Kamal and all at Hisaar Foundation for their efforts to bring Pakistan's water challenges to a wider audience by hosting the 3rd KIWC.

The Chairman of WAPDA and Session Chair spoke of his familiarity with the areas where Pakistan's water originates, and how it had shaped his perspectives for the challenges ahead. It's not just about water, he continued, but its linkages to other underlying issues plaguing Pakistan: an ever-burgeoning population, lack of health and education facilities, and climate change. The system was broken he said, and it was definitely the time to walk the talk, instill good practices and better management of resources.

The Chair then highlighted WAPDA's achievements. Two major dams and an extensive irrigation system were proof of that it can deliver, and WAPDA is still a major player in Pakistan, the Chair continued, but the inertia of the last few decades has seen it and the country suffer. The thermal/fossil fuels solution to our energy ills had led to the specter of circular debt and the ensuing fallout. The 'DISCO' option has definitely not worked.

For a water-based economy, Pakistan is not ticking the right boxes, the Chair said, as only 10% of our water is stored and treating of waste water is virtually nonexistent; countries such as Hungary treat 97% of waste water, whereas we only manage 2%!

Speaking on the subject of equitable sharing of water resources among the provinces, the Chair said the 'WAPDA Vision' is to design innovative models for Pakistan's energy and water needs with a focus on the remedying of the inter-provincial tug-of-war. The provinces now control their water resources, he said, and this brings additional challenges as policies must be in sync with a National Water Policy, which unfortunately we don't have, and is the need of the day.

But there are steps in the pipeline to remedy this situation, the Chair said:

- Tarbela-4 comes on line in Feb 2018 - environmentally friendly and expected to generate 1410 Mw. A Rs.30 surcharge on consumer billing will result in payback in 3 years;
- Smaller projects in Chitral;
- Soft Loans to develop dry fruit storage facilities in the Northern Areas;
- Dasu Dam: The plan is to kick start the \$6bn project through Pakistan's banking sector;
- Daimer-Bhasha Dam: A Pakistan-centric finance solution to be sought by 2018;
- Neelum-Jhelum Project: 242 Mw by Feb 2018;

- Mohmand Dam: to be completed by May 2018;
- Kachhi Canal.

The Chair said it was time to look at Pakistan-centric solutions with all stakeholders working together with will, intent, and capacity-building the way forward.



Keynote Address

In the keynote address, Dr. Salman Shah, former Finance Minister and a member of Hissar Foundation spoke on water as a catalyst for growth, citing the 2005 report: 'Pakistan's Water Economy - Running Dry' as a must read for policy makers and laymen alike if Pakistan's predicament is to be understood. The plan to construct 5 dams in 2006-07 did not materialize and the decades between 1990 and 2010 saw a period of stagnation after years of progress, resulting in a complete under-utilization of the world's largest contiguous water systems.

The map of Pakistan confirmed, Dr. Shah con-

tinued, that population, agriculture and industry are concentrated around the main water sources, and where water is readily available, there is less poverty. Two dams every decade are needed to make some inroads into the crisis we face, Dr. Shah said, and traditional government funding should give way to funding by the private sector. Dr. Shah's message was clear: countries have invested in water security policies to underpin growth, and the importance of this linkage is critical but still not fully recognized in Pakistan.

Pakistan is a 'Water Stressed' country Dr. Shah continued, and a burgeoning population is likely to further deplete resources, as ground water is already over exploited, flooding and drainage is getting worse, and disrepair and little planning have created a system which is not financially sustainable.

Dr. Shah also spoke on the storage inefficiencies in the system. There were only 30 days of storage available; in arid areas it is as low as 9 days! Water productivity is low, he said, and comparisons are invariably drawn with the Murray Darling River System when it comes to managing water efficiently.

The catalyst is a water economy generating surpluses, Dr. Shah said, a transition Pakistan has not made. The fact that food imports stand at approximately \$5bn points towards poor farm practices.

Panel Discussion

Dr. Ishrat Hussain, former governor of Pakistan's State Bank brought additional perspectives to the debate. He said policy implementation failures had contributed to the present state of affairs, which have resulted in the inequitable

sharing of the county's water resources. The creaky state of the water system is the inevitable result.

A drive was needed, he said, to restore institutions such as WAPDA to their past glories. In 1970, recovery of charges was very efficient; now only 10% is recovered in Sindh due to rebates and link to canals given to the bigger land owners. Market rates need to be charged across the board, Mr. Hussain stressed.

Turning to agriculture, Mr. Hussain spoke on the silo effect - a crisis looked at in isolation. Pakistan's rural factor markets need to be examined as agricultural norms are shifting towards livestock rearing. This shift in itself is alarming as the process requires more water than traditional crops. Then there is high urbanization, changed demographics, and of course climate change.

Mr. Ehsan Malik presented a recent survey of business groups' efforts to conserve water. Of the 65 business groups his organization rep-

resents, 70% claim they have a water policy and 14% are actively working towards implementation, and new equipment ordered ensures lower water consumption. Of all the companies with a policy, Unilever is by far the most aggressive he continued; it has designed a model entitled the 'Sustainable Living Plan'. The company has noticed 38% per ton decrease in the use of water in their plants since the policy was implemented.

Mr. Malik said raising awareness needed greater advocacy to get the message across. He also mentioned supply-chain deficiencies in the use of water such as the cultivation of sugar, its high price and lack of export potential as examples of policy failures which need to be addressed.

Mr. Ferenc Keszler's presentation 'Budapest Waterworks: Tradition and Innovation' outlined the key planning indicators which had made the Budapest Water Works model a success: safe water availability and waste management, in the latter case purifying water and bringing it back into the system. In the case of Pakistan,



Mr. Ferenc Keszler, Mr. Ehsan Malik and Dr. Ishrat Hussain

policy makers in Pakistan need to develop a holistic solution by taking on board what others have done as Pakistan's multi-dimensional issues cannot be compared to the smaller, homogenous countries such as Hungary.

Questions and Answers

The Neelum-Jhelum project and CPEC featured very prominently in the Question and Answers session. The questions about the Neelum-Jhelum project focused on the safety and viability of the project, specifically about the lack of a proper geological survey. The Chair said that a survey had been conducted and the design had to be altered after the 2005 earthquake, especially the depths of the tunnels, and the issues with water flows had also been addressed.

Replying to another question, the Chair said that power generation is not part of CPEC as the Government could not agree to the conces-

sions demanded. Another question concerned the sources of estimated amount of wastage as the figure has stood the same for last so many years. The Chair replied that WAPDA will prepare a revised set of figures very shortly.

Concluding Remarks

The Chair, Lt. Gen (Retd). Muzammil Hussain said much remains to be done to reverse the damage of the preceding years, with the lack of clear policy initiatives by successive governments having led to the present state of affairs. He said there was no quick-fix available but initiatives such as this conference were the way forward if solutions to Pakistan's water crisis were to be found and implemented.

He said that WAPDA was now well-positioned to make Pakistan's water management system the success it had been in the past and it was time to continue the dialogue.



Session Audience

Pakistan Water Policy – Time is Now

(Session 4C – Presentations and Panel Discussion)

Facilitator: Mr. Zohair Ashir, Chairperson, Hisaar Foundation

Chair: Professor Dr. David Grey, Visiting Professor, Oxford University

Co-Chair: Dr. Claudia Sadoff, Director-General, IWMI

Presenters: Ms. Simi Kamal, SGH Grants PPAF and Founder Hisaar Foundation

Panelists: Mr. Malik M. Akram, Director General Agriculture and Water Management, Govt. of Punjab

Mr. Fateh Marri, Project Coordinator Water Sector Improvement Project, Govt. of Sindh

Mr. Toru Konishi, World Bank representative

Ms. Neelum Toru, Chair of Provincial Commissions on Status of Women - Khyber Pakhtunkhwa

This session assessed the current position of the development of water policy at the federal and provincial levels and efforts by civil society, in the international context.

The session was sponsored by UBL and Akbar Associates Group.



Mr. Zohair Ashir, Prof. Dr. David Grey, Dr. Claudia Sadoff, Ms. Simi Kamal, Ms. Neelum Toru, Mr. Malik M Akram, Mr. Fateh Marri and Mr. Toru Konishi



Chair Prof. Dr. David Grey, Oxford University

Opening Remarks

The Chair, Professor Dr. David Grey began by highlighting Pakistan's first water revolution with the signing of the Indus Water Basin Treaty. Policies and projects were built on the basis of this treaty; now a second water revolution is needed with changing global realities.

The Co-Chair, Dr. Claudia Sadoff added that it was essential to manage supply, demand and management of water at the basic and national level. To make water resources more manageable, the implementation of a National Water

Policy, acceptable to all provinces, is vital.

Presentations and Discussions

Ms. Simi Kamal, SGH Grants PPAF and Founder Hisaar Foundation, presented the "Recommendations for Pakistan's National Water Policy" developed by the Hisaar Foundation Think Tank. The recommendations included broad themes of efficiency, water economy, maintaining infrastructure, improving legal water management system, research and development and leadership.

The five key themes are:

- Improving access to water for the poor and landless, and maximizing water use efficiency;
- Financing the urban and rural water economies and the water value chain;
- Safeguarding the Indus Basin, its aquifers and its infrastructure;
- Improving water institutions, governance and management;
- Building a base for science, technology and social aspects of water.



Session participants

Ms. Kamal said that Pakistan's economy is a water economy as agriculture, industrial and domestic sectors of the country are all dependent on water. She said that to produce surpluses for propelling Pakistan into the 21st century, we must focus on fully utilizing and safeguarding water resources. Ms. Kamal also explained the social impact and aspects of water and the role of science and technology in improving the management of water highlighted in the policy document, and the actions that need to be taken at federal, provincial, city and local levels and called on the government to demonstrate leadership. She added that the National Water Policy was a must!



Mr. Malik M Akram, Agriculture and Water Management Dpt, Govt. of Punjab

Mr. Malik M. Akram gave an outline of the Punjab government's action plan for a provincial water policy, including better surface water availability and sustainable groundwater, advocacy through a water crisis awareness campaign, and construction of dams, and wastewater treatment - policies which are both holistic and sustainable. He said that an agreement will

be signed shortly with the World Bank on the implementation of a Water Policy in the province.



Mr. Toru Konishi, World Bank

As a downstream province with the country's second largest population and an extensive coastline, Sindh faces the twin menace of climate change and inefficient water management systems. Mr. Fateh Marri said that the provincial Irrigation Management Strategy is a precursor to a water policy for Sindh which will address these challenges through consultations with the stakeholders from the government, private and civil society member for the development of the policy. The provincial government is encouraging furrow irrigation and other modern methods of cultivation are part of a bigger plan to bring efficiencies to the agricultural sector as present practices and infrastructure needs a serious upgrade

Mr. Toru Konishi suggested major changes in developing an integrated water resource management and wastewater management sys-

tem in Sindh. He said the delta was deteriorating, as was groundwater; ecological habitats are disappearing, as is the upstream intake of water. Managing climate change adds another dimension to the problem and will require a changed mindset. To ensure successful implementation by the World Bank or the donor community, institutional reorganization, the development of policy and legal systems and modernizing the province's water infrastructure should be prioritized.

Access to water affects everyone but culturally, women in developing countries are the custodians of water, and a comprehensive water policy must be gender-sensitive, monitored and implemented within a time frame. Ms. Neelum Toru said that the KP government is keen to develop a water policy that will also address the gender divide by improving access to sanitation for women and the threats posed by climate change. The provincial government will ensure the provinces and the federal government are on board so the policy works under a national umbrella.

The Chair, Professor Dr. David Grey, asked all the panelists to share two salient points each in terms of moving towards a water policy.

Mr. Toru Konishi said that a National Water Policy should follow constitutional principles, and water resources apportioned according to specific economic, environmental and social needs.

Ms. Neelum Toru said that deprived areas such as the southern areas of the province should be given special attention, and rapid urbanization should be controlled as it is changing the water dynamics of the country.

Ms. Simi Kamal's opinion was that the Government of Pakistan should take responsibility for ensuring the integrity of the Indus Water System on which Pakistan's economy rests and kick-start what Dr. Salman Shah calls the 'Water Economy' of Pakistan.

Mr. Fateh Marri said a policy should consider principles of efficiency, equity, reliability, and sustainability, with a strong monitoring component built in.



Dr. Fateh Marri, Ms. Simi Kamal and Ms. Neelum Toru

Mr. Malik M. Akram said a National Water Policy should be sympathetic to provincial realities with monitoring and control of groundwater resources at a premium.

Questions and Answers

Answering a question on financial constraints, Ms. Simi Kamal said we should be able to raise and develop financial instruments that can help Pakistan become independent in terms of managing and developing our water infrastructure.

Mr. Akram was asked about the depletion of water at the Katas Raj Temples because of the extraction of groundwater by the nearby cement factories. He replied that a project for regulating groundwater is underway to study the above and other instances of unregulated use of groundwater. He said that it was unfortunate flood irrigation is still being practiced in the province and the government has launched extensive system of water courses to control the seepage and wastage of water.

Mr. Marri was asked if a coherent, coordinated National Water Policy can be developed. He answered that the institutions are in place, but there will be challenges as each province has a unique set of issues.

In reply to a question, Mr. Toru Konishi said that there has to be a consensus between federal and the provincial governments regarding a National Water Policy - the sooner the better. Pakistan should also look to include urban slums and deserts when developing a policy. Drainage is a major issue in this country as all pollution travels downstream, an unfair state of affairs especially for Sindh.

There were questions from the audience about the rights of lower riparian states and treatment of waste water. Ms. Simi Kamal agreed that lower riparian get the short end of the stick, and a revised social contract may be the way forward for resolving issues between upstream and downstream communities and managing the utilization of different sources of water, as suggested by Hisaar Foundation. Ms. Kamal also said that water management is very important in rural areas to stem rapid urbanization.

Mr. Akram said the Punjab government has planned projects for the treatment of wastewater in Faisalabad and Lahore as wastewater gets diverted to farms and not to the rivers. It has allocated Rs.20bn for the supply of water and rehabilitation of the roads and a feedback process in place.

Concluding Remarks

In the concluding remarks, the Chair, Professor Dr. David Grey said that in terms of urgency, and on the scale of 1 to 10, Pakistan stood at 1. A National Water Policy must stimulate debate, with both urban and rural areas important, he stressed, as is managing inter-provincial strife. We should look to new solutions such as inter-provincial ownership of resources that will build trust and institutions.

The co-chair Dr. Claudia Sadoff thanked the panelists, organizers and the audience for making the session so interesting through a high level of debate.

Romancing Water – Bringing Water to the Forefront

(Session 3C – Panel Discussion and Activities and Interaction with Youth)

Facilitator:	Mr. Tofiq Pasha Mooraj , Governor, Hisaar Foundation
Chair of Part 1:	Ms. Seema Taher Khan , CEO, Airwaves Media & Member, Hisaar Foundation Think Tank
Chair of Part 2:	Mr. Aman-ul-Haque , Head, Engro Foundation
Presenters:	Ms. Sahar Taher Khan , Director Business Development, Digital Headquarters
	Ms. Afia Salam , Environmental Journalist
	Mr. Todd Shea , CEO, Comprehensive Disaster Response Services (CDRS)
	Mr. Umair Jaswal , Singer

The session focused on attracting the youth demographic and transforming them into 'Water Warriors', keeping them engaged as water professionals and as water-aware leaders of the future.

The session was sponsored by TV One, News One and CDRS and was the official launch platform for #waterwarriors and the waterwarriorspk.com website.

Winners for the Writing Competition and the Film competition were announced.



Session Audience



Papers and Presentations

Part One

Pakistan's bulging youth demographic needs to be informed of the challenges that lie ahead as they make the transition to adulthood. Mr. Tofiq Pasha said he aimed to do just that and it would be a fun and informative afternoon!

Ms. Seema Taher Khan, CEO of Airwaves Media ran through the mainstreaming of water in the Pakistan context - the need for the government to make a water policy and the various forms of engagement we all can be involved in, such as lobbying government institutions, social media and public activation.

The NewsOne and Hisaar Foundation partnership, she continued, was committed to raising awareness about the water issue through various channels: drama serials, music videos, documentaries, talk shows and the print media. The message must be sent across, she said, and the session was about engaging with the young as they are the decision makers of the future.

The changing dynamics of information sharing was highlighted by Ms. Sahar Taher Khan, Director of Digital Headquarters in her presen-

tation: 'Water in a Digital World - The Effects of Digital'. The presentation really opened the eyes of the audience and brought to the forefront the power of social media and how it can be utilized to promote the cause of water. Ms. Khan spoke of young Pakistanis as social media savvy, with traditional forms of opinion forming losing ground.

The key message of Ms. Khan's presentation was of remaining current in a rapidly changing environment. It is also a case of numbers: Pakistan has 30 million social media users; Instagram alone stands at 4.2 million. Social media campaigns have ignited conversations on VIP culture, harassment and other social issues in Pakistan. The #Metoo campaign was a workable example. Started 10 years ago, it is now a top unbranded media campaign. It showed that a cause can have as much power as a paid, branded campaign, and act as a catalyst in bringing governments on board to take action, as with #bringbackourgirls in Nigeria.



The Water Warriors campaign #waterwarriors and website waterwarriorspk.com were then launched, and 300 water warrior T-shirts distributed to the participants. The aim of the Water Warrior campaign is to create aware-

ness related to Pakistan Water crisis among youth, designed and to be run by TV One.

Four documentaries were screened and prizes distributed by Ms. Seema Taher:

- Mr. Mohammad Afaq for **'Pani ki Kahani'**
- **Winner**
- Ms. Rameen Fatima for **'Save Water'**
- **1st runner up**
- Mr. Muhammad Danish for **'Thirst/Piyas'**
- **2nd runner up**

Mr. Tofiq Pasha presented the awards to the winners of the writing competition in the Urdu, English and Sindhi categories:

- Mr. Imtiaz Abbasi, student of media and communication at University of Sindh, Jamshoro, for **'Mustaqbil jo aabi manzernamo'**.
- Ms. Fariha Fatma, ARY News, for **'Sadyon se sinf-e-nazuk ka muqsood qarar degae mushaqat'**.
- Mr. Syed Mohammad Abubakr, an environmental journalist for **'Managing Hydro Disasters and How Serious is the Risk to Pakistan from Arsenic Contamination of Groundwater'**.

Part Two

The second part of the session began with Mr. Aman-ul-Haque's talk, which reinforced the idea that it is the responsibility of citizens to exert pressure on state institutions in a democratic state.

Ms. Afia Salam asked the youth in the audience to share their ideas regarding climate change and water. She further spoke about her pas-



sion for working in the water sector and how young people can engage with the cause.

Mr. Todd Shea then introduced CDRS, an organization geared towards galvanizing youth to volunteer for water projects, with Umair Jaswal acting as its celebrity ambassador.

This was followed by the highlight of this session – a enthusiastic live performance of the 'Water Song' by the famous pop singer Umair Jaswal – not only a famous singer but an earth scientist with a Master's degree on the subject and a passionate supporter of the cause of water management and conservation. The song was written by Ms. Seema Taher Khan and put to music by Umair Jaswal with the support of CDRS.

His performance was followed by a rendition of 'Dil Dil Pakistan' by Mr. Todd Shea on guitar. He was joined in the singing by the entire audience. Later students from universities came up to sing their own songs on water and the sitting continued late into the evening.

Participants of the other sessions joined in once their own sessions had concluded and there was a great sense of working together in the cause of water.

Leveraging Water Economy for Poverty Alleviation

(Session 3A – Papers and Presentations)

Facilitator: Dr. Pervaiz Amir, Senior Economist, PWP and GWP

Chair: Dr. Salman Shah, Former Finance Minister and Member, Hissar Foundation Think Tank

Presenters: Dr. Marianne Kjellen, Senior Water Advisor, Cap-Net UNDP

Dr. Pervaiz Amir Director and Senior Advisor, PWP and GWP

Mr. Shamsuddin Shaikh, Chief Executive, Sindh Engro Coal Mining Company (SECMC)

The session explored the steps needed to develop Pakistan's water economy for poverty alleviation, better water usage and water value chains that can be developed further.

This session was sponsored by Pakistan Poverty Alleviation Fund (PPAF) and Thardeep Microfinance Foundation.

Papers and Presentations

In the absence of Mr. Qazi Azmat Isa, CEO, PPAF, Dr. Salman Shah acted as both Chair and Co-Chair. After a brief introduction by the Lead Facilitator, Dr. Shah shared his thoughts on Pakistan's poverty indicators and what needs to be done.

Dr. Shah said that poverty alleviation must be every government's priority, especially in rural areas where poverty is profound. Pakistan's poverty indicators do not reveal the true facts, he said, and Pakistan's agriculture cannot support the population numbers as there are negligible employment opportunities and water resources are dwindling rapidly.



Dr Pervaiz Amir, PWP

So pro-poor policies where they are needed most he stressed - in the rural areas. Dr. Shah said CPEC would provide greater investment and better access to resources.



Entitled 'The Bottom Billion to Painful Inequality', Dr. Marianne Kjellen presentation outlined the changing paradigm of global poverty. Dr. Kjellen said that poverty was hard to measure, yet it means pain, is psychologically debilitating and a barrier to better education, health and sanitation. The presentation pointed to a definite water, poverty and sanitation nexus, with women the most affected.

By using a Multi-dimensional Poverty Index, developed by Oxford and UNDP, Dr. Kjellen counted down the crucial social developments since the 1900. By 2015, people living in poverty stood below a billion, but inequalities within countries stood at a historic high, with a notice-

able increase in child poverty, with the extreme poor in rural areas four times poorer than urban dwellers. All these factors can lead to the undermining of democracy, trust and the social fabric, and 'Social Contracts' are now needed in developing countries to address such challenges.

Dr. Pervaiz Amir's presentation 'Highlands of Gilgit-Baltistan: Economic Development and Water Resource Challenges' focused on the challenges as well as opportunities arising from the province's rapidly evolving environment.

Dr. Amir's presentation broached many critical factors. The province, though at the beginning of CPEC, has largely been ignored and may not reap the expected benefits. Its water has many pollutants such as mercury, cobalt and arsenic, pollutants which many think occur downstream. Landslides are common and also pose a threat.



But bigger dangers lie ahead: the effects of climate change, if not met head on, will have very serious repercussions. Glacial melt is already a problem, as is pollution, testified by the layers of soot that have started appearing on the snow.



On the plus side, the province is home to a highly literate population with a high degree of understanding of the issues. Concrete steps to preserve the unique culture of the area and its natural and human resources were urgently needed.

Concern has been expressed about the effect of mining in Thar - the effects on the local culture and pollution of the environment. Mr. Shamsuddin Sheikh presentation: 'Leveraging Commercial Development for Poverty Alleviation' outlined the company's approach - 'The Social Foundation', set up specifically to upgrade schools health facilities, housing and skill centers for the people of Thar, encouraging sustainable livelihoods and robust eco management to improve Thar's poverty indicators.

The presentation covered Thar's environmental challenge. Mining requires a substantial amount of water but the company is ensuring that pollutants do not enter the aquifers. Thar's aquifers are mostly discontinuous and this also prevents pollutants from spreading. There is also a vigorous tree planting drive in progress,

with 10 trees planted for one cut. Due to the advances in biosaline processes, SECRC is setting up fisheries and developing cropping systems among communities in collaboration with Chinese firms.

Mr. M. Nadeem from PPAF outlined the organization's philosophy towards tackling Pakistan's water woes. The interventions were demand driven and aimed at reducing poverty, renewable energy, and strategic and sustainable development: access and outreach at the grassroots levels, and the uplift of women through mechanisms which encourage greater savings and skill development.

Concluding Remarks

The concluding remarks were cut short due to time constraints. However, Dr. Shah said that such forums stimulate the water debate, and can help in developing viable solutions to a difficult set of issues. What is needed is focused action, Dr. Shah stressed, as it's just not about water but its linkages to the environment, poverty and the general well-being of society as a whole.

Women, WASH and Climate Change

(Session 5B – Discussion and Conversation)

Facilitator:	Ms. Simi Kamal , SGH Grants PPAF and Founder, Hisaar Foundation
Chair:	Ms. Khawar Mumtaz , Chair, National Commission on the Status of Women
Presenters:	Ms. Mehnaz Nadeem , Member Old Associates of Kinnaird Society (OAKS) Mr. Shahid Khan , CEO, Indus Earth Trust Dr. Ayesha Khan , CEO, Akhter Hameed Khan Resource Center
Panelists:	Ms. Fauzia Viqar Chair, Provincial Commissions on Status of Women- Punjab Ms. Neelum Toru Chair, Provincial Commissions on Status of Women - Khyber Pakhtunkhwa

The session focused on the unusual ways by which women have helped others to meet their water and sanitation needs - especially the women of Karachi's help to their sisters in Thar. Coping with a changing climate and adding water to the agenda of the National and Provincial Commissions on Status of Women was also included in the session.

This session was sponsored by the Global Water Partnership (GWP).



Papers and Presentations

Part One

The first part of the session focused on short presentations while the second concentrated on water rights, how it impacts women and what can be done to improve the situation for women. The session was given added impetus due to the participation of Women from Thar and Karachi working with Hisaar Foundation.



Presenters Dr. Ayesha Khan, Mr. Shahid Khan and Ms. Mehnaz Nadeem

The first speaker, Dr. Ayesha Khan briefly introduced the work of the Akhtar Hameed Khan Resource Centre before presenting the results of her research study, funded by The Asia Foundation, entitled: 'Water: The Double Dilemma of Availability and Governance in Low Income Urban Settlement'. The study was conducted in an urban setting and explored the reasons behind the missing information and feedback loop between poor urban communities and public sector service providers.

Dr. Khan first presented the basic demographic data of the study area along with photographs of the densely populated area with an open sewerage system. Communities were reluctant to engage as it requires commitment and

change seldom occurs. So far there is no economic assessment of time productivity loss and health cost of consuming unsafe drinking water. Expenditure on water by the households was fairly low as most of the water supply was from the government.

Mr. Shahid Khan's presentation: 'Women and Water Partnerships' focused on the establishment of community based organizations. For this particular project, the Trust has been working with Coca Cola to help harvest rainwater in Kohistan and raising awareness of basic sanitation among women.

The project had established community-based, village and local support organizations for both men and women after a proper needs assessment. Twenty eight reservoirs storing 2400m liters of rain water have been constructed along with 500 water wheels. There is a plan to install hand pumps so that the reservoir does not get polluted by the use of hands and buckets. Four check dams will also be installed to provide irrigation along with WASH and health and hygiene tips for school children and local women. The success of the project can be measured by the high degree of reverse migration as water quality has improved markedly.

The final presentation: 'Saving Thar - A Case study of Urban Women Driving Water Security in Rural Areas' by Ms. Mehnaz Nadeem, former President, OAKS focused on the women of Karachi's support to the women of Thar.

Water is women's business as they are responsible for fetching, collecting or bringing water and may have to walk 6km and results in health issues. The project, initiated in 2014, with Hisaar Foundation empowers women through the

rehabilitation of existing wells and construction of new ones. So far 61 deep dug wells have been constructed and 203 wells have been rehabilitated providing clean drinking water to 126,000 people in Thar. Solar panels have been installed on the wells to save their time and energy for more productive activities. Ms. Nadeem then introduced members of OAKS Karachi Chapter.

Part Two

The second session focused on women's everyday water, health, sanitation and reproductive health issues. Ms. Simi Kamal welcomed the two chairs from the provincial commissions on the status of women and handed the session over to Ms. Khawar Mumtaz.

Exactly 25 years ago, Ms. Mumtaz said, Pakistan developed a National Conservation Strategy which was adopted and endorsed by the cabinet. It put water stress as the top priority with the focus on engaging communities and women in environmental management.

Ms. Mumtaz said water and sanitation rights were endorsed by the UN General Assembly in

2010 and we have a UN special rapporteur on human right to safe drinking water and sanitation. She said three international conventions that everyone is engaged with i.e. CEDAW, Child Rights Commission and the Convention for Persons with Disabilities, all specifically refer to the importance of water and sanitation. Unfortunately, Ms. Mumtaz continued, we have not been able to bring the agenda of women rights in Pakistan to the forefront.

Ms. Fauzia Viqar appreciated the efforts of Hisaar Foundation for organizing the 3rd KIWC and considered it a great opportunity to learn and take the agenda further. Ms. Viqar said water has become part of most government agendas and critical fact is sustainable development; achieving SDGs targets is at a premium.

Ms. Viqar said that inadequate toilet facilities in urban and rural areas are impacting girls as they drop out of schools. She said it is unacceptable that the right to education is denied because the government has failed to provide these facilities. In case of drinking water, sanita-



tion facility, boundary wall and electricity data, we have noticed that the compliance rate has gone up as much as 98%, but many statistics are still hard to come by. She agreed that it is the government's duty to provide these facilities and the presence of gendered segregated data will make the advocacy for women rights more concrete. Ms. Viqar then translated the main points of her address into Urdu for the benefit of the women from Thar.



Ms. Neelum Toru, said that it was crucial to devise radical solutions for this extremely urgent crisis, and policy-makers should focus on 2030 with the aim that it is the right of every human being to have access to water. Instead of reinventing the wheel, she said it is important to take on board successful models. Punjab has achieved certain targets and Khyber Pakhtunkhwa, Balochistan and Sindh should replicate these successes, after tailoring them to provincial requirements.

She said that the indirect costs to health women have to suffer are immense and Hisaar Foundation has done a great job in bringing gender to the forefront at the conference as

women must be included in the decision making for policy formulation. Ms. Toru ended her talk by informing the session that Khyber Pakhtunkhwa had allocated 70% of its education budget to girl's education - a landmark event as schools are incubation points for creating awareness among communities for female education.

Questions and Answers

During the questions and answer session Mr. Shahid Khan was asked about the sustainability of the project and he replied that enough has been learned on how to conserve water to keep the project going.

Replying to a question about the situation in Thar, Ms. Nadeem said better access to education and health facilities will lead to better development indicators.

Ms. Mumtaz then asked the women from Thar to speak about their issues. Most complaints were about the distances traveled to fetch water and the associated wait, with saline water a major health hazard. The general consensus was that the government must take steps to improve the situation in Thar.

Concluding Remarks

In conclusion, the Chair, Ms. Mumtaz said water policies should be developed and implemented at national and provincial levels and should include gender as an important component. Ms. Mumtaz said that her organization is in the process of developing a policy paper with the Climate Change and Global Impact Centre, based on research on women, water and Climate Change.

Our Common Future – Righting the Wrongs of Water Entitlements

(Session 5C – Papers and Presentations)

Facilitator:	Ms. Meher Marker Noshirwani , Governor, Hisaar Foundation
Chair:	Dr. Marianne Kjellen , Senior Water Advisor, UNDP
Presenters:	Mr. Ahmad Rafay Alam , Founding Partner, Saleem, Alam & Co. and Council Member, Hisaar Foundation
	Mr. Zain Mustafa , Architect
	Mr. Farid Alam , Director Programmes, The Asia Foundation (TAF)
	Dr. Shahid Amjad , Head, Environment and Energy Management Institute of Business Management (IoBM)

Sponsored by The Asia Foundation, the session focused on water as a right for all human beings and water as an entitlement for certain groups (e.g. lower riparian, common lands, common water bodies). It also explored the complexities involved with land rights as proxy of water rights in some countries, including Pakistan. The right to water in urban areas, and for uses other than agriculture was also discussed.

Papers and Presentations

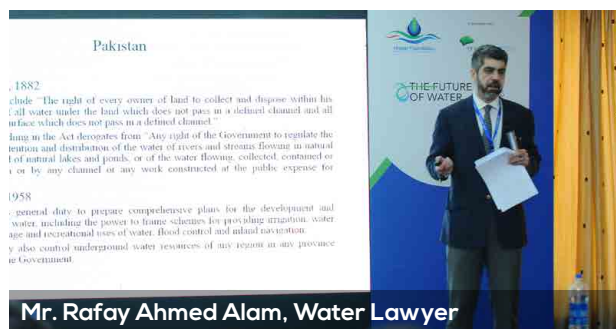
Dr. Marianne Kjellen, the Chair, began the session by explaining the concept of water rights in different scenarios. She said the human right to water, along with rights to a healthy environment and life itself can be traced to the Universal Declaration of Human Rights, which entitles all humans to adequate, safe, acceptable and affordable water for personal and domestic use, free from interference and disconnection. Ms. Kjellen said the state had an obligation to ensure these rights; the reality is somewhat different. There are informal systems operating in Pakistan: piping – paid by those who have connections, tankers, vendors,



Chair Dr. Marianne Kjellen, UNDP and Dr. Shahid Amjad, Institute of Business Management

bottled water etc. In all cases, the poor have less access to water, pay more and, use less!

The session brought together legal and development experts, as well social activists. Mr. Rafay Alam's presentation: 'Water Laws of the Kabul River Basin' set the stage for an understanding of the legal concepts around trans-boundary water rights. The Kabul Basin constitutes 14% of the water to the Indus Basin and therefore something of a worry as the Kabul River can be dammed at various places in Afghanistan, thus making it a trans-boundary issue.



The presentation defined the legal complexities surrounding trans-boundary waters, a cause for concern for policy makers. Under Afghan Water Law, passed post-2004, water is free but providers can charge. When the Kabul River enters Khyber Pakhtunkhwa, the province's Integrated Water Resources Management Board Ordinance provides for the sharing of waters equitably. Will a Kabul Water treaty work? It is a legal nightmare, and a just equitable treaty on sharing of the waters may not materialize as certain clauses may not be to both parties.

Ranikot Fort in Sindh was built around a stream which has now changed course, presenting problems to the 255 villagers who call the area

home. Mr. Zain Mustafa, an architect and a leading philanthropist explained these issues in his presentation: 'Leading Philanthropic Project in Sehwan and Ranikot Fort'.



Mr. Mustafa said that he tries to provide holistic solutions to a community's issues, which involves capacity building to encourage ownership. In the case of Ranikot, the chashma (natural spring) is a considerable distance from the village, so water is piped using a solar powered pump to a high water tank. The next step is to build ergonomic housing for the villagers with storage for each home to retain and use the water. The villagers now have access to water but it is still a precious commodity and grey water is used for subsistence agriculture, ensuring wastage kept to minimum. The women of the village are also less burdened by not having to walk great distances to the stream.

The Asia Foundation has recently completed a study entitled 'Political Economy of Agricultural Use in Indus Basin', covering pressing issues such as water governance, the key actors and power dynamics across Pakistan. The Foundation's Director Programs Mr. Farid Alam explained the methodologies used and conclu-

sions reached.

The project's first milestone was an extensive literature review, focus group discussions and mapping of stakeholders in selected 'Hot Spots' - areas where there is a scarcity of water, with group discussions focused on how shortages affect everyday lives.

The way forward was knowledge sharing at the grassroots level through comprehensive outreach materials, advocacy and training water professionals. Corruption seemed to be the overarching issue he continued, from skewed pricing mechanisms and legislation which favored the powerful to lack of economic incentives.

The presentation highlighted provincial disharmony at the national level when it came to the equitable sharing of water resources. At the international level, the consensus pointed to a clearer understanding of issues before a trans-boundary treaty could be signed.

The final presentation: 'Our Common Future: Sustainable Development of Water from Oceans' by Mr. Shahid Amjad, focused on the

threat to the world's oceans and the value we should be putting on our coastal zones; they feed, transport, and even accept our waste. A third of the world's population, and the poorest live around the Indian Ocean, and they can be a source of clean water.

Desalination could be the answer to Karachi's water woes; at present, Karachi gets 600m gallons of water when the city's requirement is 900m. It is definitely worth considering as Pakistan needs solutions and is running out of options. Desalination plants produce high quality water, with every 100 gallons producing 15 to 50 gallons of pure water with the proper treatment to remove algae and bacteria. The downside is the cost of the desalination process.

Concluding Remarks

In the concluding remarks, the Chair Dr. Marianne Kjellen said she was confident that solutions could be found to Pakistan's water crisis by exploring broad and also localized solutions. She apologized for the lack of a Question and Answer session due to time constraints



Making Water Studies the Heart of Academia

(Session 2C – Keynote speaker and Discussions)

Facilitator:	Dr. Abubakr Muhammad , Director, Center for Water Informatics & Technology, LUMS
Chair:	Prof. Dr. Sarosh. H Lodi , Vice Chancellor, NED University of Engineering and Technology
Co-Chair:	Ms. Nadira Panjwani , Managing Trustee, Panjwani Charitable Foundation
Keynote speaker:	Dr. Marriane Kjellen , Senior Water Advisor, UNDP and Chairperson, Cap-Net

Sponsored by Hisaar Foundation and Cap-Net UNDP, the session focused on getting universities to engage more comprehensively in promoting water-related studies and developing the person power that can manage the water challenges of tomorrow; and to further assess the role of Universities for Water Network (UWN), strengthen the links that already exist and induct new universities.

The session also introduced new UWN members, and explored future linkages with Cap-Net UNDP and UWN.

The session was designed in a discursive mode to facilitate maximum exchange of ideas and information. There were about 40 participants from 15 universities, including several Vice-Chancellors, senior faculty members, PhD students, and people connected to academia.



Ms. Nadira Panjwani, Prof. Dr. Sarosh H Lodi and Dr. Abubakr Muhammad

Dr. Abubakr Muhammad introduced the session and began with introductions of the Chair and Co-Chair. Each of the participants then introduced himself or herself and their connection to water – teaching, research, advocacy or practice.



In her keynote speech, Dr. Marianne Kjellen said that Cap-Net UNDP has developed training packages with detailed manuals on various aspects of water management, with the material available on the Cap-Net UNDP website and its virtual campus program facilitates courses on water. She shared samples in her presentation and spoke of Cap-Net UNDP's long association with Hisaar Foundation.

Ms. Simi Kamal spoke of the crucial and immediate need to link academia with practice and called on the participants to share their thoughts on collaboration and preparing the workforce equipped to deal with current needs and the water challenges of the future. She spoke of the unique voluntary and participative model of the Universities for Water Network (UWN), and drew attention to the Panjwani-Hisaar Water Institute (PHWI) at NEDUET announced in the opening session.

Dr. Iqrar Ahmed, Vice Chancellor, University of Agriculture Faisalabad spoke of the use of

water in agriculture, saying that 90 percent of Pakistan water is used in agriculture with 90% of this used for five crops: wheat, cotton, rice, maize and sugarcane. Forty percent goes to wheat with five irrigations streams provided to growers in the Rabi season. He said that saving one irrigation stream can save water equivalent to the storage capacity of Kalabagh or Bhasha dam.

The politics of water was covered in the open discussion that followed, with most agreeing that the political economy overrides agricultural economy. The clout of the few ensures that sugarcane and rice continue to be produced, even though they are water guzzlers and do not make economic sense in Pakistan. If the agricultural economy was allowed to adjust to international and local markets, then small farmers would grow a very different mix of crops that use much less water.



The warabandi system (irrigation distribution system for canal water) also came under discussion. Participants called for change in this system, which was designed 150 years ago and was a supply driven system for a different era and a low population, with surpluses designed for colonial exploitation. The need of the hour was a demand-driven approach and the pricing of water.

- The following information and outcomes emerged from the rich, intensive discussion:
- Quaid-e-Azam University and Peshawar University are working on particular areas of water management, including low-cost filter plants and technology to remove arsenic and fluoride from drinking water;
- Dr. Abubakr offered to hold the next meeting UWN at LUMS Lahore. It was agreed that this meeting will be held in January 2018;
- Vice Admiral Arifullah Hussaini (former Commander Karachi and Commander Pakistan Fleet) talked about the success of his water recycling efforts, and the need for dissemination so that others could also benefit;
- Women participants stressed the need to increase the role and responsibilities of women in prudent management of water resources;
- It was agreed that the importance of water must be incorporated in the school syllabus and children must be taught from an early age about the importance and sanctity of this valuable resource;
- A representative from MUET informed the gathering that the first draft of Sindh Water Policy is being developed;
- The importance of environmental engineering tips leading to water conservation was highlighted;
- The need to rethink our agricultural priorities and reconsider the wisdom of growing water intensive crops was discussed;
- The importance of conducting simple and easy to understand training courses for farmers was stressed. The idea of running such courses on site on a gratis basis for farmers was also considered;
- Use of modern technology and gadgets such as sensors and drones for better water management were discussed;
- Young students talked about financial constraints that deter them from following up with their research work in the water sector which is perhaps not as commercially gainful as other subjects;
- The commercial worth of water and to put a value on it was recognized to be a crucial.
- The disconnect between the Government and public in the water sector was also discussed, and there was consensus on the need to engage with the Government more proactively and to not allow the abdication of its responsibilities in this important area.

Concluding Remarks

The Chair, Prof. Dr. Sarosh. H Lodi concluded the session by stressing that the way out of Pakistan's water crisis was through greater engagement at all levels. He said that academia had a very important role to play through knowledge sharing and taking initiatives for the efficient use of water resources – from the classroom to informing policy makers

The Chair said that it's just not about that water wastage in agriculture; rapid urbanization is now becoming a serious worry, and we have to find workable solutions to increasingly serious issues.

Shaping the Business Model of Water: Best Practices and Water Stewardship

(Session 2B – Papers and Presentations)

Facilitator: Mr. Ahmad Rafay Alam, Saleem, Alam & Co

Chair: Mr. Ali Ansari, Executive Chairman, X-Petroleum

Presenters: Mr. Adrian Sym, Executive Director, Alliance for Water Stewardship (AWS)

Ms. Aatekah Mir Khan, Corporate Media Relations Manager, Nestle

Mr. Sohail Naqvi, Project Manager, WWF

Mr. Istvan Grafjodi, Commercial Councilor, Government of Hungary

This session focused on understanding the risks businesses face from water scarcity and pollution, and taking action under water stewardship concepts and methods to conserve water as a shared, public resource.

The session was sponsored by Nestle.



Mr. Adrian Sym addressing the audience

Papers and Presentations

The first speaker Mr. Adrian Sym defined water as a shared resource managed through a multi-stakeholder approach and not just an input managed by businesses. The AWS philosophy is to bring all industries together on the issue, and the current membership comprises of global companies, NGOs/INGOs as well as public sector organizations reflects this policy.

The AWS approach, Mr. Sym continued, was to build a business/industrial consensus on water as a shared resource, achieved through a stakeholder inclusive process. AWS is providing market-based incentives for greater efficiencies, Mr. Sym said, through a six step process to sustainable and responsible usage of water through the 'AWS Standard'. Nestle Pakistan is the first organization to implement the AWS Standard at their Sheikhpura factory.

Mr. Sym then shared the successes of the AWS Standard. It is being applied in industrial parks in China, and in reducing water wastage in asparagus plantations in Peru, examples for Pakistan to follow he said. Implementing water standards is not just a developing country requirement; Mr. Sym gave the example of the Highland Health Service in Scotland utilizing the standard to reduce water wastage from pharmaceuticals.

Ms. Aatekah Mir Khan's talk highlighted the importance Nestle puts on corporate awareness and public-private dialogue on conserving water, with this change in water consciousness in the private sector part of the solution. The AWS Standard is being rolled-out in Nestle factories, tailored to the needs of each factory, and Nestle is working intensively towards

promoting sustainable and conservative irrigation methods such as drip irrigation, through which 140 ml of water has been saved in 2017. Ms. Khan also highlighted Nestlé's pilot 'Water Sense' technology that helps farmers save up to 12% water through better practices.

Mr. Sohail Naqvi outlined the efforts made by WWF to reduce water wastage in the textile and leather industry and the lessons learned from this initiative. Around 35 businesses invested approximately 1m Euros in different practices for water conservation, with approximately 1.5m Euros in terms of water and energy savings in the first year.

The shared findings are being used to encourage others to adopt conservation policies he continued, and it was crucial to highlight that water conservation benefits overcome the cost, although there was a downside: access to numbers with institutions not open to sharing data.

Mr. Istvan Grafjodi presentation: 'The Hungarian Water Diplomacy and OECD Tied Aid Credit Program' focused on the policies used by the government of Hungary to conserve water. He stressed the importance is metering: water





Chair Mr. Ali Ansari, Mr Sohail Naqvi and Mr. Istvan Grafjodi

needs to have a price for efficient usage. The same can be applied in Pakistan. Secondly, he spoke on the Tied Aid Loan scheme. Pakistan is eligible for such a loan and must utilize this funding opportunity.

Questions and Answers

In the Question and Answer session, Mr. Sym was asked on the policies Pakistan needs to adopt in the future. He replied that openness of dialogue is important, especially with neighboring countries. He said that many of the problems Pakistan faces are similar to Nepal and India, and this presents a great opportunity for regional cooperation – similar to SAARC, but for water management!

In response to a question, Ms. Khan replied that cooperation between credible partners in the public and NGO sector is very important to bridge the trust deficit between both sectors.

Concluding Remarks

In his concluding remarks, the Chair, Mr. Ali Ansari spoke of the importance of inclusiveness within the corporate sector, a key stake-

holder in the issue of water conservation, and information sharing in building a consensus on the true nature of the beast: Pakistan's water crisis. For that purpose, platforms like the 3rd KIWC are important in encouraging stakeholder inclusiveness.

The Chair said initiatives like the AWS Standard have made it possible to come up with tailored solutions, and today's take-away is of adopting robust global models, greater water stewardship and business models globally. Scarcity of water is the driving factor, he continued, and Nestle is setting a very good example in an evolving environment.

The Chair concluded the session by stating that better technologies are available and can be built into the system. There is also a need for greater awareness, and pricing was a very important factor for motivating stakeholders to come on board.

Trumping the Devil – Is Climate Change Fake News?

(Session 3B – Papers and Presentations)

Facilitator:	Ms. Meher Marker Noshirwani , Governor, Hisaar Foundation
Chair:	Mr. Rudolph Cleveringa , Executive Secretary Global Water Partnership
Presenters:	Mr. Zulfiqar Halepoto , Environmentalist and Council Member, Hisaar Foundation
	Dr. Zaigham Habib , Scientist, Consultant and Council Member, Hisaar Foundation
	Dr. Lubna Ghazal , Professor Geography Department University of Karachi
	Ms. Daanika Kamal , Senior Program Officer, The Asia Foundation

The session agenda linked the visible impacts of Climate Change, the implications of which are still not fully understood. Post-Paris events and impacts, especially in light of the Trump doctrine and US withdrawal from the Paris Agreement and its associated risks were also discussed.

This session was sponsored by Engro Foundation and Sindh Medical Stores.



Dr. Lubna Ghazal, Dr. Zaigham Habib, Mr. Rudolph Cleveringa, Mr. Zulfiqar Halepoto, Ms. Daanika Kamal and Ms. Meher Noshirwani

Papers and Presentations:

The Chair, Mr. Rudolph Cleveringa, Executive Secretary of the Global Water Partnership, set the scene by linking water stress and migration, explaining that there were 184 peer-reviewed research articles proving this linkage. Climate Change and water stress has led to migration and many countries want to curb the influx of refugees, and climate change in the Pakistani context was becoming very real; yet only 8% of public expenditure has been allocated to meet this challenge.

Mr. Zulfiqar Halepoto was very critical of President Trump's hardline stance against climate change. President Trump's non-seriousness about the issue has been widely condemned both internationally and in the United States and many do not support the President's view that climate change is fake news. The impact of climate change was already being felt, he said, and needed to be addressed through an integrated approach and global commitment, such as the Bali Action Plan 2007, seen by many as a breakthrough in addressing the issue under UN Framework Convention on Climate Change.

Mr. Halepoto outlined the steps needed to reduce the drivers of Climate Change by the international community - putting a price on carbon, ending fossil fuel subsidies, building low-carbon, resilient cities, increasing energy efficiency and use of renewable energy, implementing climate-smart agriculture and nurturing forest landscapes.

Dr. Zaigham Habib spoke on Pakistan's need for cross-cutting responses to address the multi-dimensional phenomena of Climate

Change. Pakistan is among the 10 most vulnerable countries based on the climate risk index, despite the fact it is a low producer of carbon. During the last two decades the country has faced floods, prolonged droughts and heat waves, causing economic losses of more than \$12 billion. The impact on natural water systems of a changing climate has directly affected the natural ecology, water bodies, drainage and agriculture sector, threatening water and food security, and broader development agenda of the country. The high risk of the extreme events is also a worry. Climate change is a real and complex challenge, and needs to be addressed by all major sectors of the economy at various levels of the system and society, and adaptation measures cannot be fully segregated within the sectorial boundaries.

Dr. Lubna Ghazal charted the impact of climate change on the water resources of Sindh and related anthropogenic factors. Her presentation: 'Appraisal of Climate Change and its Impact on Water Resources of Sindh' pointed to reduced rainfall projections for the coming years and decreased flow of water across the entire lower Indus plains, events that will be devastating for the bio-diversity of the Indus Delta. Therefore climate adaptive water management is vital to minimize losses and sufferings of the people and practical measures moving forward needed adequate financial support.

Dr. Ghazal's research encompassed the mapping and modeling, using 60 years of climate data and statistics for agricultural land use and production. The picture formed by the analysis showed Sindh's vulnerability to floods and droughts, requiring an improvement in the monitoring of land resources, creating key areas for



water management schemes and better planning by policy makers in both the government and non-government sectors.

Ms. Daanika Kamal's presentation: 'Climate Change and Human Rights' focused on the linkages between climate change and human rights, the 2015 Paris Conference and the task of protecting people in a rapidly warming planet was based on her recent publications, including an e-book on climate change prepared for the Global Policy Journal, on 'Climate Change and Human Rights: The Paris Conference and the Task of Protecting People on a Warming Planet'.

There is more to climate change than meets the eye, as it compromises human rights to life, food, health, shelter, subsistence, and self-determination, with the human rights of those living in economically underdeveloped and ecologically burdened areas the most vulnerable. The most susceptible to the effects of climate change are those who contribute the least. Human rights principles are necessary in order to protect the welfare of people on a warming planet.

Questions and Answers

Prof. Abdul Rauf from the College of Business Management posed a question to the panel

on harnessing 2000 Mw from wave energy instead of the continued dependency on fossil fuels. Mr. Halepoto replied that political lobbies are creating hurdles, with Dr. Habib adding that such concepts have not been fully studied in Pakistan.

A student from University of Sindh asked Dr. Habib to outline the measures needed to limit climate change. Dr. Habib said that more resilient crops should be used, risk prone areas identified and infrastructure improved.

Ms. Kamal was asked whether linking human rights to climate change makes it more complex. Ms. Kamal replied the concepts of human rights are well established, making the linkage to Climate Change much simpler.

Concluding Remarks

In the concluding remarks, The Chair, Mr. Rudolph Cleveringa, said that it would be unwise to treat climate change and its associated evils as 'Fake News'. He warned that climate change was already taking place and the fallout in at-risk countries would lead to societies falling apart with affecting all of mankind.

The Chair also stressed that climate change should not be looked at in isolation; its drivers needed to be unpacked.

Sharing River Basins and Negotiating Conflicts

(Session 4A – Papers and Presentations)

Facilitator:	Ms. Meher Marker Noshirwani , Governor, Hisaar Foundation
Chair:	Mr. Khalid Mohtadullah , Senior Advisor, GWP & Member, Hisaar Foundation Think Tank
Co-Chair:	Mr. Mazhar Ali Shah , Member, Indus River System Authority (IRSA)
Presenters:	Mr. Ahmad Rafay Alam , Founding Partner, Saleem, Alam & Co. and Council Member, Hisaar Foundation
	Mr. Nazir Memon Essani , GM Transition, Sindh Irrigation and Drainage Authority (SIDA)
	Mr. Rabel. Z Akhund , Founder and Managing Partner, Akhund Forbes Hadi

Sponsored by UBL, the session focused on exploring water security and related conflicts and the benefits of infrastructure development. The session also explored ways the underprivileged can negotiate water benefits and how these benefits and water value chains can be shared within different groups of people.

Opening remarks

The session began with the Chair Mr. Khalid Mohtadullah emphasizing the need to conserve water: just 0.07 % of fresh water available can be used for human consumption globally. Therefore it was important to address the factors influencing water availability – nature of occurrence, presence of resource and global challenges that includes political and diplomatic negotiations.

Mr. Mohtadullah said that as a lower riparian country, Pakistan is at a disadvantage, with one of the lowest



Mr. Nazir M Essani, Mr. Mazhar Ali Shah, Mr. Khalid Mohtadullah, Mr. Rafay Alam and Mr. Rabel Z Akhund

productivity per unit of water and land; now we have to confront the reality of climate change he warned, with Pakistan is on its way to becoming the world's most water stressed country. That is not all. The United States Institute of Peace (USIP) has highlighted that Pakistan's water scarcity problem can lead to interstate conflicts over water.

Papers and Presentations

In light of the Chair's opening remarks, the presenters were invited to discuss what can be done differently when negotiating water treaties with Pakistan's neighboring countries and the lessons learned from the Indus Water Treaty.

Mr. Rafay Alam's presentation: 'India, Pakistan, Water and the Indus Basin: Old Problems, New Complexities' highlighted the changing international conventions regarding trans-boundary water disputes. Mr. Alam highlighted three instances where Pakistan has approached the ICJ to resolve recurring conflict over the Indus Water Treaty: the Wullar Barrage conflict, Baghliar Hydro Power Project and Kishanganga.

It was evident that the court's decision was not based on rights or entitlement of water, but on need.

Mr. Alam's presentation had two important lessons for Pakistan when dealing with the ICJ in the future: the UN Water Convention requires an 'equitable and reasonable utilization' of water rather than a rights based approach, a noticeable shift in the way international regulatory bodies now deal with water disputes, and negotiating water issues through diplomacy by truly grasping the size and nature of the issue.

The challenges of the Indus Water Treaty when revising and drafting new water treaties with upper riparian countries like Afghanistan were also covered, as well as the impact CPEC. These included Climate Change and regulating of ground water. It was no secret, Mr. Alam concluded, that both countries are over-pumping the aquifer without any regulations.

Mr. Rabel. Z Akhund spoke about the rights of states under international law and making them work. In the case of the River Nile, Egypt and Sudan inherited a right for 100 percent usage



from their colonial legislators, a situation unacceptable to upper riparian states. A consensus was reached on sharing of water resources, Mr. Akhund said, by offering Egypt and Sudan first right to electricity from the upper riparian states. Similar issues concerning the Mekong River are being resolved by a water cooperation body that was set-up by China, and there is also the very well drafted treaty between Mexico and USA which works very well.

Mr. Akhund highlighted the principle of equitable utilization under the UN convention on water. Under this principle, treaties or judgments need to take into account all relevant factors and circumstances. The principal of compensation does not help lower Riparian states as no amount of financial compensation can really resolve the issue. Mr. Akhund ended by stating that right to water is supreme because access to safe and clean water for drinking and sanitation is embodied in UN Convention for Human Rights.



Mr. Essani's presentation: 'Farmer Managed Irrigation System And Its Impact On Water Service Delivery: A Case Of Sindh-Pakistan' highlighted the successes of Sindh Irrigation and Drainage Authority (SIDA) - through creating farmers representations in canal-fed irrigation for the efficient usage of water, encouraged through the equitable distribution of water at farm level. The lessons learned are ripe for replication nationwide.

Questions and Answers

During the Question & Answer session, Mr. Akhund was asked about the validity of judgments delivered by the International Court of Justice (ICJ). He replied that the rulings are difficult to implement as countries always put their national interest first. Pakistan must encourage efficient utilization of water resources to hold a strong position in the international sphere.

Concluding Remarks

In conclusion, the Chair, Mr. Khalid Mohtadullah, said it was important to understand that international law has moved on from a 'rights based' to a 'needs based' approach on the issue of water sharing across borders. This stems, he continued, from the UN Convention on Water which acknowledges water as a human rights and therefore international laws on water sharing focus on 'equitable and reasonable utilization' of water. It is important for Pakistan, the Chair said, to fully understand international law while negotiating water sharing treaties with our neighboring countries and future treaties must be inclusive of ground water sharing.

The Chair complimented SIDA, as such studies can be replicated in other parts of Pakistan in order to resolve water sharing disputes.

Urban Water – New Times, New Paradigms

(Session 4B – Papers and Presentations)

Facilitator:	Dr. Pervaiz Amir , Director and Senior Advisor, PWP and GWP
Chair:	Dr. Noman Ahmed , Chairman Architecture and Planning Department, NEDUET
Co-Chair:	Dr. Piroska Paksi , Director Budapest Waterworks
Presenters:	Mr. Syed Fakhar Ahmed , Chief Marketing and Communications Officer, K-Electric
	Dr. Zaigham Habib , Scientist and Consultant & Council Member, Hisaar Foundation
	Ms. Farwa Hussain , Student, Habib University
	Mr. Anwar Rashid , Chief Executive, Orangi Pilot Project (OPP)
	Dr. Piroska Paksi , Director, Budapest Waterworks

This session focused on water delivery and the attitudes in urban areas and the solutions needed for raising awareness.

The session was sponsored by Pak Oman Investment Company and K-Electric.

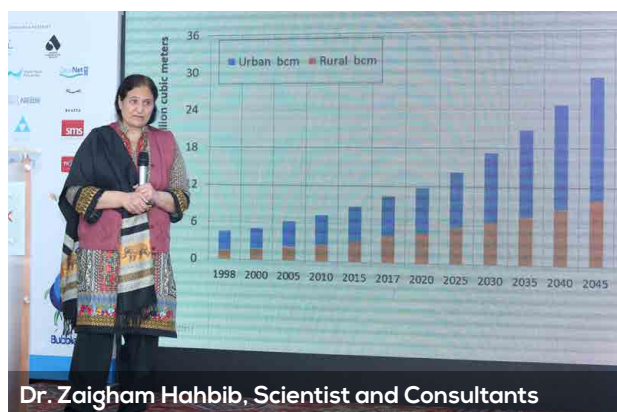
Papers and Presentations

Dr. Noman Ahmed's opening remarks were on water in the context of Karachi and the importance of institutions in informing communities.

Mr. Syed Fakhar Ahmed's presentation focused on the CSR activities conducted by K-Electric. The company's Ujala project is being rolled out across Karachi through the installation of Aerial Bundled. K-Electric also provides free and subsidized electricity to 16 vital institutions in the city.



K-Electric has also launched a five-year cumulative climate change framework to address critical challenges faced by one of the largest cities of the world by committing to plant 100,000 trees city wide under #PlantforPakistan and registering Karachi in the One Planet City Challenge (OPCC).



Dr. Zaigham Habib's presentation: 'Searching Solutions for Urban Water Vulnerability of Pakistan - Reconsidering: Traditional but Effective Candidates Allocation and Supply Side Regulation' considered water scarcity issues in the four megacities of Karachi, Lahore, Islamabad and Faisalabad and the utilization of both ground and surface water. The biggest task for the urban sector is the distribution efficiency and Governance through sub-sectoral allocations and strict regulations.

Ms. Farwa Hussain's presentation: 'Making the Invisible Visible: Illustrating the Shortfalls in Karachi's Water Distribution System' focused on an on-going research project using multi-layered datasets in mapping Karachi's uneven water usage and distribution. Karachi's water supply is particularly interesting; it has the largest population in the country, yet it has no

water source of its own. Karachi's large number of unauthorized settlements and slums also add to the confusion, making the issue all the more difficult, and fascinating in many ways. The finished article will be a map of Karachi's water supply - the major tributaries, trunk-lines, pipelines, hydrants, and pumping stations, legal and otherwise.



Mr. Anwar Rashid presentation looked at the Orangi Pilot Project (OPP) and other similar projects in Karachi, examples of public private partnerships changing the mindset of people regarding water usage. The message: the community should be part of any project from the beginning.

The Co-Chair of the session, Dr. Pirooska Paks's presentation: 'Urban Water Challenges: Budapest Waterworks Solutions' began with an overview of the Budapest Waterworks and the processes and technologies used by Budapest Waterworks: the living island solution, producing food locally, in an urban environment, without soil, through an integrated urban infrastructure system Ecohub, which can manage the whole energy and resources cycle in a holistic manner, and make waste water drinkable.

Questions and answers

Dr. Paksi was asked about the nutritional value of Aeroponic plants, especially for children. Dr. Paksi said that the Network has planted Aeroponic plants as a pilot project. The plants have almost the same taste as soil plants and are very fresh.



Co-chair Dr. Piroska Paksi, Budapest Waterworks

Professor Abdul Rauf from the College of Business Management commented that the emphasis of the session had been on the quan-

tity of water available and not quality. Arsenic poisoning is a huge problem in Pakistan he said, yet the authenticity of water testing is inadequate. Professor Rauf also said that a majority of the population of Pakistan is under threat of arsenic poisoning, and attitudes needed to change.

Another question directed at Mr. Anwar Rashid was regarding partnership strategies with local communities. Mr. Rashid said that the way forward is to equip all partners equally, and a transfer of technology and initial management costs has to be provided.

Concluding Remarks

The Chair, Dr. Noman Ahmed said that there is an urgent need for water regulation as there are a large number of stakeholders other than public utilities. Secondly consumer attitudes must change if headway of any sort was to be made.



Session Chair Dr. Noman Ahmed presenting memento

When Albert Einstein Meets Alan Turing – Water Solutions from the World of Science and Technology

(Session 5A – Papers and Presentations)

Facilitator:	Dr. Abubakr Muhammad , Director, Center for Water Informatics & Technology, LUMS
Chair:	Mr. Jamal Ansari , CEO, Akbar Associates Group & Member, Hisaar Foundation Think Tank
Presenters:	Dr. Abubakr Muhammad , Director, Center for Water Informatics & Technology, LUMS
	Mr. Mannan Aslam , Lecturer, Department of Agribusiness & Marketing MNS University of Agriculture, Multan
	Dr. Fritz Poerschke , Expert, Rainwater Harvesting, Director R&D – WISY AG Germany
	Ms. Shehla Batool , PhD Student, Environmental Science Department Quaid-e-Azam University

Sponsored by Akbar Associates Group, the session showcased instances where solutions from the world of science and technology have been applied to the water sector.

Opening remarks

The Chair, Mr. Jamal Akbar Ansari spoke on how technological progress is the difference between developed and underdeveloped societies. However, rapid development also has a downside, and a lot depended on the judicious use of technology.

Papers and Presentations

Dr. Abubakr Muhammad's presentation: 'Imagining Demand-Driven Water Management in the Indus' was on demand driven water management – engineering a system that can alter the Indus River Basin water management system from its current supply side drivers to demand side drivers. It described the current hierarchical design of the system with its primary, secondary and tertiary distribution channels, as a true feat of 20th century engineering.



Session Chair, Mr. Jamal Ansari

The presentation also covered challenges Pakistan faces and will face in the coming years. The Indus Water System is a complex human and natural system with physical and social networks intertwined, with better information the key to understanding its complexities. The presentation outlined real time flow monitors at all levels of the system hierarchy and the various testing and the initial conclusions they have provided. Such monitoring can lead to the idea of markets or exchange in water entitlements to begin to drive water supply by demand driven signals.



**Dr. Abubakr Muhammad, Dr. Fritz Poerschke, chair
Mr. Jamal Ansari, Ms. Shehla Batool and Mr. Mannan
Aslam**

The next challenge is to take it to the farm level by installing moisture meters so that the demand comes from the plant itself, the final user of the water, and not the farmer with incomplete information. This is the paradigm shift Pakistan needs.

Mr. Mannan Aslam from the Agriculture University Multan spoke on the spread of information in public sector universities. He said that access to mobiles and the internet were significant variables for raising awareness of climate change with public university scholars.

Modern rainwater harvesting is what Mr. Fritz



Ms. Shehla Batool, Quaid-e-Azam University

Poerschke said he lives for, describing it as a somewhat magical cycle - as water is present naturally in solid, liquid and vapor form. He described the key metrics of a successful rainwater harvesting system including the use of local materials, creating jobs and including women in the design and process.

Ms. Shehla Batool spoke on her research into fluoride and arsenic contamination in Pakistan's ground water, a uniquely cross-boundary project spanning both India and Pakistan. Her team has been working with villages and has the design of an indigenous and low cost filter for arsenic and fluoride that does not produce waste brine to contaminate the environment. The filters cost \$20-\$30 and have gone through the necessary market validation.

Questions and Answers

The session included questions on the financial validity of technological solutions for small farmers and the cause of arsenic and fluoride contamination.

Concluding Remarks

The Chair, Mr. Jamal Ansari, concluded the session by reiterating the need for greater, judicious use of technology for providing solutions. He said that localized solutions were needed as many communities could not afford to take advantage of expensive technological solutions.

Water Security: Watersheds, Groundwater and Irrigation

(Session 5D – Paper and Presentations)

Facilitator:	Dr. Pervaiz Amir , Director and Senior Advisor, PWP and GWP
Chair:	Mr. Nisar A Memon , Chair, Water and Environment Foundation (WEF)
Co-chair:	Mr. Sardar Mohammad Tariq , CEO, Pakistan Water Partnership (PWP)
Presenters:	Dr. Sanval Nasim , Assistant Professor Economics, LUMS
	Dr. Zeeshan Virk , Principal Scientist, Pakistan Agricultural Research Council (PARC)
	Dr. Syeda Sara Hassan , US – Pakistan Center for Advanced Studies in Water (MUET)

Sponsored by Raasta Development Consultants and WWF, the session focus was on watersheds, groundwater and environment in the context of water security in Pakistan, and how these resources can be safeguarded.

Papers and Presentations

The Chair, Mr. Nisar A Memon's presentation: 'Water Security of Pakistan' focused on the water, food and energy nexus, the challenges posed by climate change and its effect on humans, animals and agriculture. The presentation also covered regional challenges such as the Indus Water Treaty (IWT), changing monsoon currents, floods, droughts, Kabul River Waters, groundwater aquifers and water recycling.

Dr. Sanval Nasim's presentation: 'Environmental Valuation and Pricing: Pakistan's Fading Aquifers', concentrated on regulated pricing structures for water and security price for water and there needs to be property rights for water resource and proper compensation for its use. Evidence suggested that ineffective groundwater governance had led to the deterioration of aquifers in several countries, including the US, Mexico, Spain, India, and Pakistan. Dr. Nasim's presentation provided a framework for developing policies that could lead to the sustainable management of groundwater and prevent its depletion.



Mr. Zeeshan Virk's presentation: 'Adaptive Water Governance in Himalayan Towns' was on water sources and supply in Murree. The presentation focused on projects left incomplete because of regime change.



Dr. Syeda Sara Hassan presentation entitled: 'Environmental Valuation and Pricing: Pakistan's Fading Aquifers', highlighted how advanced water treatment methods provide novel, rapid and economical alternatives for the removal of toxic organic pollutants and wastewater treatment as compared to conventional methods, with effective degradation of organic toxins is expected to play a crucial role in achieving SDG 6.

In his closing remarks, the Co-Chair Mr. Sardar Mohammad Tariq spoke on Pakistan's water security indicators, which are hugely dependent on trans-boundary issues, water storage, and climate change. The principles of the 3 R's - Reduce Recycle Reuse, rain water harvesting and facilities for ground water recharge have to be introduced, and protected from pollution. The Co-Chair also spoke on the adoption of cheap solar technologies for desalinization of

saline water, and policies for drought mitigation.

Questions and Answers

Ms. Amber Leghari asked Mr. Memon about the lack of a water policy for Sindh. He said that it was of absolute importance that linkages be created with input from the Centre; otherwise there will be gaps despite the provinces are all doing their part.

Replying to another question about the politically sensitive issue of taxing water outlined in Dr. Nasim's presentation, Mr. Memon said that taxes should be applied on water consumed for better conservation and management.

A question was also asked about the lack of political commitment towards water pricing. Mr. Memon replied that such a lack of traction was worrying and would lead to an increase in an already difficult problem.

Regarding urban solutions, Dr. Amir said that we need to look at other cities to find solutions rather than keep looking to Karachi.

Concluding Remarks

In conclusion, the Chair, Mr. Nisar Memon said that extreme situations require out of the box solutions. The water question is not just about access and availability of water for future generations; water is now seen as a strategic asset and linked to Pakistan's national security interests.

Securing Our Water Future - Actions and Commitments

(Session 6 - Closing Plenary)

Facilitator:	Mr. Ashraf Kapadia , Governor, Hisaar Foundation
Announcements:	Mr. Wasif Rashid , Council Member, Hisaar Foundation
Presenters:	Mr. Rudolph Cleveringa , Executive Secretary, Global Water Partnership (GWP)
	Dr. Claudia Sadoff , Director General, International Water Management Institute (IWMI)
	Mr. Ahmad Rafay Alam , Founding Partner, Saleem, Alam & Co. and Council Member, Hisaar Foundation
	Mr. Zohair Ashir , Chairperson Hisaar Foundation

The objectives of this session were to present the Conference Declaration reflecting the outcomes of the four themes based on presentations, summarizing the discussions and views shared by the participants, and presenting Hisaar Foundation's plans for the next two years.

This session was sponsored by Hisaar Foundation and Engro Foundation.

Limitations of a Citizen-based Organization

The session began with Mr. Zohair Ashir, Chairperson of Hisaar Foundation explaining the challenges of running a citizen-based organization. Despite the challenges, the Foundation had achieved extensive outreach and he took great pride in the achievements of the last two days.

Presentation on the Future of Water in Asia

In her final presentation at the conference entitled: 'The Future of Water in Asia', Dr. Sadoff spoke on the water crisis as a global phenomenon. Global business leaders identified water crises as the leading problem in the coming years, with the top 5 global concerns listed by business leaders all related to water.



Co-Chair Dr. Claudia Sadoff, IWMI



Conference team with featured speakers and participants

The presentation pointed to Asia's rapidly growing economy (twice the world average) and population, with an expected 22 megacities (10 million plus) by 2030 – with most at risk due to flooding and other calamities such as climate change takes hold.

It was not all doom and gloom. There was still space in the agricultural system to intensify productivity, encourage wastewater recycling, enhance storage capacities, and giving greater control to communities and better technologies.

She concluded her presentation by saying that we cannot predict the future of water in Asia but we can shape it with robust policies backed by political will.

Questions and Answers

Dr. Sadoff then took questions from the floor. The first was from Tariq Hasan, who asked if we can delink deforestation and water.

In reply, Dr. Sadoff said Watershed Management

is the key to improving the quality of the water and other natural resources by managing the use of those land and water resources in a comprehensive manner. Citing New York City as an example, water is run from a watershed two states away and five states collectively finance the protection of a watershed as the most economical way of providing water to New York City. Therefore, a city is connected to its watershed, to its food, and its sewage is sent back to the environment for irrigation.

Replying to another question about the lack of the seriousness at all levels of the water problem facing Pakistan, Dr. Sadoff said that she was an optimist; the US uses far less water today than it did in 1990s through good water management policies and an aware public. Biophysically we can manage with the water there is in the world, Dr. Sadoff said. The question is: do we postpone the inclusion of policies till the system is disrupted, or should governments seek to transform the way water is managed?

Summary of the Four Conference Outcomes

Mr. Rudolph Cleveringa Executive Secretary, Global Water Partnership, summarized the conference outcomes and thanked the ladies from Thar who had travelled far to attend the session, and said he was sorry he could not address them in their own language.

Dr. Cleveringa addressed the four themes of the conference and the cross-cutting and linkages to youth, gender, and the media:

Rights and Entitlement: are for everyone, young and old, male and female, and the state should understand this, even though there is a big question on the basis of entitlement. Is it poverty? Land ownership? Is pricing done for those who have no connection or for all? Is it a cost recovery price or does it cover other investments? The poor people pay more for their water, use less and go to greater efforts to obtain it. The entitlements are connected to SDGs and SDGs 6 and agreements that support the SDGs. Who owns the pace of change of entitlements?

Politically, apathy and inertia must give way to policies that work. The water economy needs to be linked to the human development as poverty and exclusion is not allowing people to participate in the economy, with women at a disadvantage with regards to the water economy. Pakistan alone cannot solve its problems, he said, and needs to take on board policies that have worked elsewhere and tailor them to be Pakistan-centric.

Science and Technology: The Universities for Water Network is a good step, as is the new Panjwani-Hisaar Water Institute at NED

University.

When it came to cross-cutting themes, he requested the women in the audience to give a big shout! Our children and grandchildren will take over their destiny, he said, and we should



give them more space to take responsibility, and the media is there to connect with you and reap the dividends of an ever-youthful population. He was confident there will be tremendous progress by the 4th KIWC.

Remarks by Professor Dr. David Grey

Professor Dr. David Grey began his remarks with the word: 'Wow!' He said it had been an extraordinary two days and it was always a pleasure to meet old friends and make new ones. He said Pakistan is a very special place, and this bond increases with every visit.

The first water revolution of the 60's had shown Pakistan at its best he said: the planning and execution was extraordinary and its success



David Grey

had shocked and surprised the world. He urged young Pakistanis to rise to the challenge of the next water revolution and fix the extremely complex water system that is the lifeblood of the country.

Professor Dr. Grey said that Hisaar Foundation has given Pakistan's water issues a new sense of urgency. The world needs similar institutions - coalitions of the willing, a movement with a new sense of responsibility for bringing change - a revolution that will determine the future of the poor, the marginalized, and the young of Pakistan. He ended by saying that he was look-



Rudolph Cleveringa

ing forward to visiting Pakistan again in the very near future.

Conference Declaration

Mr. Rafay Alam read the draft conference declaration, which is available on the Foundation website.



Book Launch

Book Launch

As a journalist, Mr. Zulfiqar Halepoto engages widely in Pakistan and abroad, and is a loyal friend of Hisaar Foundation. The 3rd KIWC was the ideal launch pad for his book, a compilation of articles on Climate Change, and solutions in the Pakistan context.

Delivering on Promises

Mr. Zohair Ashir said Hisaar Foundation is an organization that will continue to work for water rights and improving livelihoods. The promises we make today must be kept by the young people we have in the audience today, our future leaders must help in taking the agenda forward. Mr. Ashir spoke of his Hisaar journey, a journey of both joy and pain. As volunteers trying to make a difference, we can only do so much, he said, and changing attitudes is a full-time job. He ended by saying there was still so much left to do, but the joys associated with



Signing of MoU between Wein Janos Foundation and Hisaar Foundation

the job are immense and a source of satisfaction, especially when the selfless work put in by all had made the 3rd KIWC such a success.

Signing of MoU between Wein Janos Foundation and Hisaar Foundation

Dr. Paksi spoke on the growing and successful relationship between the two organizations, which started four years ago when Thar was in the grip of a severe drought. Both have come a long way since then, Dr. Paksi said, and it was a great honor to be part of such a high-value conference. The Wein Janos Foundation looks at ways of managing water resources efficiently, she continued, and Hisaar Foundation is the perfect partner in such an endeavor.

Dr. Pirooska Paksi and Mr. Zohair Ashir signed a MoU for further cooperation between Hisaar Foundation and of Wein Janos Foundation. As part of the MOU, two university students from Pakistan will be given the opportunity for a 6 month internship which will allow them to engage with water professionals and academics in Hungary.



Mr. Ashraf Kapadia, Hisaar Foundation

Distribution of Mementos

Ms. Simi Kamal was invited to distribute mementos to the staff of the Foundation, speakers and the panelists.



Hisaar Foundation Team Members

Vote of Thanks and Recognition of Conference Sponsors and Hisaar Foundation's Partners

Mr. Ashraf Kapadia, Governor Hisaar Foundation thanked the conference sponsors, Hisaar Foundation's partners and all who contributed to making the conference such a monumental success - the session chairs, co-chairs, speakers and panelists, facilitators, reporters, logistic in-charge for their support and members of the media for their extensive coverage and delegates and participants for their attendance. Mr. Kapadia also thanked all staff members and members and chairs of the conference committees.

As a closing remark, Mr. Ashraf Kapadia announced the Fourth Karachi International Water Conference to be held in November 2019.



Aman ul Haque, Engro Foundation



Members of OAKS Karachi Chapter with Simi Kamal, founder Chairperson, Hisaar Foundation

Note from Chair **Management Committee**

The holding of an International Conference meeting the exacting standards expected of such conferences at an international level is a challenging endeavor. The Management Committee was responsible for seamlessly coordinating such diverse plans as the Logistics Plan, including arranging visas, travel bookings, airport transfers, hotel accommodations, and security arrangements, Communications Plan, covering print, electronic, and social media, Financial Plan, handling budgeting, fund-raising, and disbursements, and above all the Conference Plan, ensuring that all the deliverables were within time, budget and quality parameters. This seamless coordination contributed to the superb ambiance of conference.

The committee started its work six months prior to the two-day conference to ensure that the 3rd Karachi International Water Conference ran smoothly, and was productive and enjoyable for all the participants.

The team, under the dynamic leadership of Conference Director, Ms. Sanaa Baxamoosa, worked relentlessly for long hours to deliver the conference. The small but dedicated team consisted of Ms. Kausar Hashmi, Mr. Farooq Khan, Mr. Nadeem Siddiqui, Mr. Ahmed Palwa and Ms. Daniya Khalid (Secretary). I would like to express my gratitude and recognize the team for their commendable performance and professionalism.

I would also like to thank our partners who played a key role in the success of the conference. In particular BBCL for their event management services and creative support for creating the ambiance and other conference

materials. Also, I must commend StarLinks for creating awareness on social media prior to, and during the conference. I must also recognize the vital role played by TV One and News One by running campaigns and programs highlighting the issue of water during the month before the conference. And above all the association of Engro Foundation provided much needed financial support and their powerful public service messages served to enhance participation in the conference.

Lastly, I must thank the numerous volunteers who served as ushers, guides, facilitators, logistics in-charge and session reporters.

Looking forward to welcoming you to the 4th Karachi International Water Conference in November 2019.

Ashraf Kapadia

Chair, Management
Committee



Acknowledgements from **Conference Director**

First and foremost, I would like to thank Mr. Zohair Ashir, Mr. Ashraf Kapadia and Ms. Simi Kamal, the respective chairs of the Steering Committee, Management Committee and Academic Committee for their invaluable guidance, time, input and support at every step of the way.

I would also like to thank Mr. Pervez Iqbal and his team at BBCL-BBD, particularly Ms. Shyma Baig for the excellent conference execution and event management. Mr. Iqbal and his team created a very unique ambience and provided a valuable support system that helped us in running the Third Karachi International Water Conference: The Future of Water, smoothly.

Thanks also to Ms. Shanaz Ramzi, Mina Ramzi and the Starlinks team who managed the PR for the conference and developed high quality and very creative graphics.

A big thank you to Ms. Seema Taher Khan and her team at News One/TV One who provided us the innovative Water Warrior campaign and photographers and videographers, on a gratis basis.

I would like to thank Mr. Danish Khan of Alif Design who developed the conference logo, infographics and worked tirelessly with me to produce this report and the 2016-2017 report of Hisaar Foundation.

The dedicated staff at Hisaar Foundation who provided the backbone of the Conference Secretariat deserve a special thanks. I would particularly like to mention Ms. Daniya Khalid who served as Secretary for the Management and Steering Committees and managed the secretariat and social media aspects. I would

also like to thank Ms. Kausar Hashmi who managed the affairs of the Academic Committee including management of the reporters and session details. I would like to thank Mr. Nadeem Siddiqui who helped with the mailing lists and provided overall office support and Mr. Farooq Khan who managed the conference accounting. I would particularly like to thank Mr. Ahmed Palwa who ensured that Hisaar Foundation's projects and programmes continued running smoothly in parallel.

I would like to thank Ms. Saleha Atif who gave invaluable advice and input and single handedly managed the media from our side. I would also like to thank Mr. Aatir Jilani who managed all ground transport before, after and during the two days of the conference. Mr. Wasif Rashid also deserves a special mention for his help in preparing the 3rd KIWC conference report. A big thank you also to Ms. Amina Siddiqui and Mr. Deepak Roy, former employees of the Foundation, who were integral members of the conference logistics team. I am also grateful to our interns, Mr. Hassan Bokhari and Ms. Amber Ajani for their support and assistance. Finally, thank you to all the chairs, co-chairs, facilitators, reporters and volunteers who provided crucial support during the two days of the conference. See you all in 2019!

**Ms. Sanaa
Baxamoosa**

Conference
Director



About Hisaar Foundation

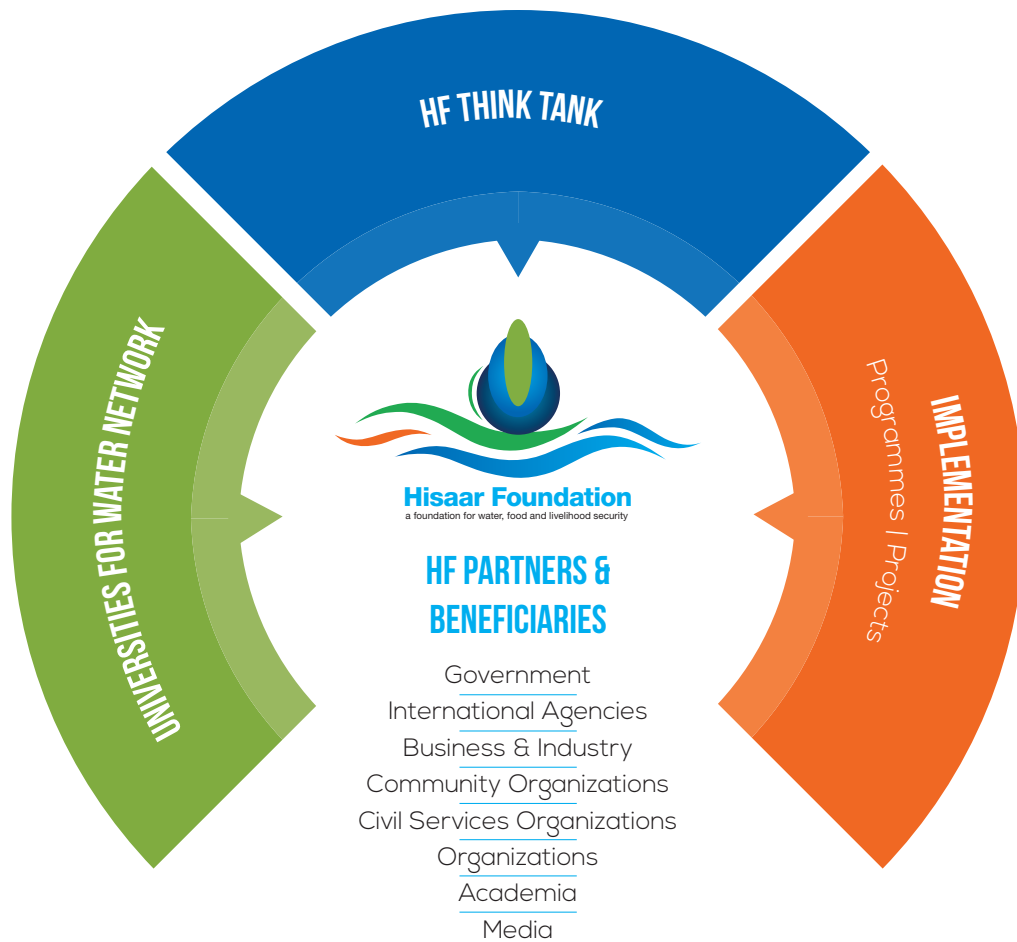
Hisaar Foundation was set up in 2003 and is led by a group of dedicated professionals and thinkers from many disciplines and from diverse professions and backgrounds that care about water. Hisaar Foundation has a broad mandate, covering for water, food and livelihood security. It is a thought leader and innovator in the water sector through its Think Tank on the Rational Use of Water (that works on policy and strategy); its Universities for Water Network links research and practice and programs on low-cost solutions with relevance to the water-food-livelihood nexus.

The Foundation's Think Tank is a multi-stakeholder platform that developed the 'Recommendations for Pakistan's National Water Policy Framework' in 2016, and is now recognized as the first 'Citizens Water Policy'. The Universities for Water Network (UWN), currently comprising of nine member universities across Pakistan, has developed a compendium of water related universities that offer degrees, departments and disciplines related to water, a database of water professionals and academics of Pakistan as well as a database of research institutes that work on water in Pakistan. These two initiatives fully consolidate the intellectual underpinnings for dealing with Pakistan's water challenges now and in the future. Hisaar Foundation is also engaged on the ground through its three programmatic streams for creating partnerships for change, developing solutions, and emergency support.

Over the past 15 years, the Foundation has pioneered novel concepts such as Area Water Partnerships, Women and Water Networks,

Cost Synergy and Mutual Accountability. It has also demonstrated many viable solutions: its 'Aab' project focuses on rehabilitation of flood affected communities through the Total Water Solution model and installation of water systems all across Pakistan. The 'Aab-o-Daana' project focused on domestic water and training for food produce in small urban spaces and rural areas. Its 'Aab-e-Thar' focuses on both water and food security in desert areas, including rainwater harvesting storage ponds, new and rehabilitated deep dug wells, hand pumps and boreholes. The 'Adopt-a-Village' program provides holistic and comprehensive disaster mitigation capabilities, water solutions, kitchen gardening, livestock development and plant grafting.

The Foundation has nurtured extensive linkages with international partners such as Global Water Partnership, Stockholm International Water Institute, Capacity Development in Sustainable Water Resources Management (Cap-Net UNDP), and South Asian Consortium for Interdisciplinary Water Resources Studies (SaciWATERs), as well as banks, corporate entities, civil society organizations and grass-roots NGOs in Pakistan.



Conference Coverage **and Participation**

The 3rd KIWC was attended by over 1200 participants comprising of academia and professionals, as well as representatives from a range of sectors committed to working towards building a secure water future.

Conference **Sessions**

The two day conference comprised of 15 sessions. These included an opening plenary on day 1 and a closing plenary on day 2. There were 13 parallel sessions as under (copy of conference schedule attached as Appendix A).

Day 1 (November 21, 2017)

Session 1	Opening Plenary: What is the Future of Water in a Politically Challenged New World Order?
Session 2A	The Architects of Water Economy in Pakistan – Government, Commercial Banks and International Players
Session 2B	Shaping the Business Model of Water: Best Practices and Water Stewardship
Session 2C	Making Water Studies the Heart of Academia
Session 3A	Leveraging Water Economy for Poverty Alleviation
Session 3B	Trumping the Devil – Is Climate Change Fake News?
Session 3C	Romancing Water – Brining Water to the Forefront

Day 2(November 22, 2017)

Session 4A	Sharing River Basins and Negotiating Conflicts
Session 4B	Urban Water – New Times, New Paradigms
Session 4C	Pakistan Water Policy – Time is Now
Session 5A	When Albert Einstein Meets Alan Turing – Water Solutions from the World of Science and Technology
Session 5B	Women, WASH and Climate Change
Session 5C	Our Common Future – Righting the Wrongs of Water Entitlements
Session 5D	Water Security: Watersheds, Groundwater and Irrigation
Session 6	Closing Plenary: Securing Water – Summary of all Sessions, Conference Declaration, Closing Address



Hisaar Foundation stall



Lahore University of Management Sciences (LUMS) stall

Pre-conference Activities

There were several pre-conference activities designed to complement the conference themes and its objectives. These included two advertisements placed on the front page of the leading English newspapers, a press conference, a month-long TV campaign by TVOne, Water Warriors campaign, video competition, writing competition, social media campaign and meetings with key government stakeholders.

Advertisements in Newspaper

The Engro Foundation funded two advertisements with public service messages and con-

ference announcements on the front page of Pakistan's leading newspaper Dawn on 13th November and 21st November 2017. The first one carried the message: 'Pakistan is Running out of Water. Act Now Before It's Too Late' and second one: 'Just Imagine a Pakistan Without Water'.

Press Conference

Prior to the 3rd KIWC, Hisaar Foundation and Engro Foundation held a joint press conference on 15th November 2017 at Karachi Press Club announcing the conference and to raise awareness on the water crisis and the future of water.

TV Campaign

NewOne, TVOne, Waseb, FM91 in collaboration with Hisaar Foundation highlighted water issues through music videos/songs, drama serial 'Mann Pyasa', documentary, talk shows and a regular feature of water news.

Water Warriors Website

The website waterwarriorspk.com was developed to create a pressure group and raise awareness in youth about the Pakistan's water issues. This website was officially launched at the youth session of the 3rd KIWC.

Short Film Competition

Hisaar Foundation in collaboration with NewsOne and TVOne hosted a short film competition on the theme of 'Future of Water' to showcase young creative talent. The winners of the competition were presented with awards at the KIWC youth session.

Writing Competition

Hisaar Foundation held a youth writing competition, around the central theme of 'Future of Water' in English, Urdu, and all regional languages. The results of the competition were also announced in the KIWC youth session.



Social Media Campaign

In order to streamline Hisaar Foundation's efforts and create a strong online presence, the targeted social media campaigns included Facebook, Twitter, Youtube, Hisaar Foundation and 3rd KIWC websites. Several shout outs of key speaker and sponsors were also posted.

Meeting with Key Stakeholders

Several pre-conference meetings were held amongst the three conference committees and the Think Tank, and with the key speakers.

The Think Tank Meeting: 'Pakistan's Water Crisis: How the Conference Objectives Can Address These Challenges and the Way Forward', was attended by Mr. Zohair Ashir, Mr. Ahmad Rafay Alam, Mr. Ali Ansari, Mr. Jamal Ansari, Mr. Rudolph Cleveringa, Dr. David Grey, Ms. Simi Kamal, Dr. Marianne Kjellen, Mr. Khalid Mohtadullah, Dr. Salman Shah, Ms. Seema Taher Khan and Mr. Wasif Rashid.

Conference Exhibitions

The following organizations exhibited at the 3rd KIWC:

- Sindh Medical Stores (SMS)
- Nestle Pakistan
- Engro Foundation
- Pakistan Poverty Alleviation Fund (PPAF)
- Pakistan Energy Update
- Build Pro
- WWF-Pakistan
- Mehran University of Engineering and Technology (MUET)
- Lahore University of Management Sciences (LUMS)
- Hisaar Foundation



Mehran University of Engineering and Technology (MUET) stall

Conference Sponsors

Hisaar Foundation wishes to thank our sponsors whose support and encouragement made it possible for us to hold the 3rd KIWC. The conference sponsors reflected a wide range of social development and corporate sector organizations. The main sponsor was Engro Foundation.

Main Sponsor	International Sponsors
Engro Foundation	Global Water Partnership
	Cap-Net
Cooperate and Private Sector Sponsors	Social Development Sponsors
Akbar Associates Group	The Asia Foundation
United Bank Ltd	WWF-Pakistan
Nestle Pakistan	Pakistan Poverty Alleviation Fund (PPAF)
TVOne and NewsOne	
Pak Oman Investment Company	
Sindh Medical Stores	
K Electric	
AASA Consulting	
Raasta Development Consultants	



Conference In-Kind Sponsors

In addition to the above organizations and institutions that provided monetary support to the 3rd Karachi International Water Conference, a number of organizations also provided in-kind support:

- CDRS – covered all costs for producing and recording of the Water Warriors song, and sponsored Mr. Umair Jaswal covering the costs of air travel and 2 nights stay at hotel; they also brought 150 youth from all over Karachi, including adjacent areas and supported all their travel costs;
- TRDP – invited 10 women from Thar to participate in Session 5C and covered their accommodation and transport costs;
- TV One and News One – provided 2 days full recording facilities. Deputed 2 photographers and 4 videographers to cover the proceedings, hosted the Film Competition, the cash prizes for winners, and designed the Water Warriors T-shirts;
- Ms. Simi Kamal – provided support for printing of 300 Water Warrior T-shirts for youth delegates and supported the cost of refreshments for pre-conference meetings;
- AASA Consulting – provided support of 5 staff for both days of the conference;
- Mr. Sikander Gulzar and Mr. Zohair Ashir – hosted a dinner at the Karachi Boat Club for the participants of the 3rd KIWC;
- Mr. Zohair Ashir – supported the costs for refreshments and dinners for pre-conference meetings with key speakers;

- National Volunteer Program – provided 5 volunteers for both days of the conference.

Conference Media Engagement

Social Media

The 3rd KIWC provided a forum for sharing knowledge, discuss ideas, exchange information, and learn about cutting-edge research in Pakistan in the context of future of water to a larger audience through its social media platform. The social media strategy utilized, Facebook, Twitter, Youtube, Hisaar Foundation and KIWC websites. To integrate the campaign 'Future of Water' across platforms, two official conference hash tags were introduced - #KIWC and #fowater17. Hisaar Foundation engaged Starlinks PR and Events to manage overall PR and increase social media engagement before and during the conference.

Facebook | facebook.com/hisaarfoundation

Hisaar Foundation Facebook page had over 15,435 followers during the conference. The 3rd KIWC event page had over 1000 views separately and 296 people responded as attending or interested in attending. The campaign featured, introducing Hisaar foundation and its projects and programs, flashback of previous conference events, information regarding the conference formats and sessions, revealing the hashtags, featured speaker posters, highlighting the conference sponsors, shout-outs from the international and local speakers as well as regular information on water news and issues that the region faces. During the confer-



Registration Desk

ence the posts had an increased reach of over 15,000 individuals. A picture gallery of the conference is also available on the Foundation's Facebook page.

Twitter | @HisaarF

Hisaar Foundation Twitter page was the focus for promoting 3rd KIWC, engaging attendees in conversation, and running a high-visibility event. The conference tweets earned over 84,000 impressions. The hashtags #KIWC & #fowater17 were top trending in the country on the opening day of the conference. Leading up the conference, all the major highlights of the conference, its speakers, participating organizations and further details of the program was extensively tweeted. During the conference, the social media team provided live video coverage of the sessions along with the tweets. The twitter account earned over 1033 retweets and likes. The audience on the account also increased to 406 people.

Youtube

Hisaar Foundation set up a Youtube channel prior to the conference to provide exclusive

coverage of the event. The youtube account featured videos on Hisaar Foundation and its programs along with interviews with the speakers and their views about the conference. The channel had over 350 views and also featured Hisaar Foundation's public service announcements and creative videos on raising awareness on the water crisis. The winning videos from the 3rd KIWC Short Film contest are also available for viewing on the channel. The channel also displays post conference coverage by various television media channels.

Website | waterconference.hisaar.org

The 3rd KIWC website was the prime source of information for all interested in attending the conference. The website featured details on the conference themes, format, delegates, the youth competitions, submission of abstracts as well as details on the online registration process. A speakers list was also displayed on the website along with the sponsor and participating organizations. The website also serves as an archive for post conference, with the pictures, papers and presentation and the conference declarations all available on the website.

Media coverage

The 3rd KIWC was extensively covered by both the electronic and print media, with the conference proceedings reported in their respective news channels, newspapers and other programs. More than 90 representatives from the media participated in the conference over both days.

The following electronic and print media participated in and reported on the 3rd KIWC:

Print Media

Friday Times	Daily Ibrat	Daily Jehan Pakistan
The News	MAG Weekly	Liffaq
Express Tribune	Jeevay Pakistan	Jashan-e-Pakistan
Daily Kawish	Daily Ummat	Farozaan Magazine
Daily Dayanat	APP	Daily Face News
Online Fashion Journal	MAP	

Electronic Media

Airwaves Media	TV One	92 News
NEO TV	AAJ TV	KTN News
Pakistan Television (PTV)	Duniya News	Hum TV
PTV News	ARY News	News Plus
News One	Dawn News	

Conference Participants

Over 1200 participants attended the conference representing a diverse and rich variety of stakeholders. The conference brought together a wide selection of water sector experts and professionals and reached out to non-traditional players. The event was attended by International Speakers from Global Water Partnership (GWP), Cap-Net, International Water Management Institute (IWMI) and Budapest Waterworks. It was also attended by a large number of Government Representatives and Heads of Water Management Institutions.

Corporate Leaders, Members of the Academia, Representatives of Donor Agencies, Professional Bodies, Members of the Women and Water Networks and Representatives of Community Based Organizations also participated in the conference. The 3rd KIWC was also attended by University and Research Organizations, International Water Organizations and Non-Government Organizations. Media representatives, Partners of Hisaar Foundation, Youth and Students Organizations, Water Related Manufacturers and Service Providers also participated.

Abbreviations and **Acronyms**

AWS	Alliance for Water Stewardship	OPP	Orangi Pilot Project
Cap-Net	Capacity Development in Sustainable Water Management	PARC	Pakistan Agricultural Research Council
CDRS	Comprehensive Disaster Response Services	PBC	Pakistan Business Council
CPEC	China Pakistan Economic Corridor	PCSW	Provincial Commission on the Status of Women
ENGRO	Energy for Growth	PPAF	Pakistan Poverty Alleviation Fund
GWP	Global Water Partnership	PHWI	Panjwani-Hisaar Water Institute
ICIMOD	The International Centre for Integrated Mountain Development	PWP	Pakistan Water Programme
ICJ	International Court of Justice	SaciWATERs	South Asian Consortium for Interdisciplinary Water Resources Studies
IoBM	Institute of Business Management	SECMS	Sindh Engro Coal Mining Company
IRSA	Indus River System Authority	SDGs	Sustainable Development Goals
IWMI	International Water Management Institute	SIDA	Sindh Irrigation and Drainage Authority
IWT	Indus Water Treaty	TAF	The Asia Foundation
K-Electric	Karachi Electric Supply Company	TRDP	Thardeep Rural Development Programme
KIWC	Karachi International Water Conference	UBL	United Bank Limited
LUMS	Lahore University of Management Sciences	UNDP	The United Nations Development Programme
MUET	Mehran University of Engineering and Technology	UNICEF	United Nations International Children's Emergency Fund
NCSW	National Commission on the Status of Women	UWN	Universities for Water Network
NED University	Nadirshaw Eduljee Dinshaw University	WAPDA	Water and Power Development Authority
NVP	National Volunteer Program	WEF	Water and Environment Forum
OAKS	Old Associates of Kinnaird College	WISP	Water Sector Improvement Project
OECD	Organization for Economic Co-operation and Development	WISY	Water Informatics and Technology Water Informatics and Technology
		WWF	World Wildlife Fund

Appendix – A

Conference Schedule

Day 1 – Tuesday, November 21st, 2017

Time	Session & Topic	Session & Topic	Session & Topic
0930 – 1030	Registration		
1030 – 1300	<p>Session 1 – Ballroom B & C (Facilitator: Mr. Ashraf Kapadia)</p> <p>Opening Plenary: What is the future of water in the politically challenged new world order?</p> <p>Chief Guest: Mr. Muhammad Zubair (Governor of Sindh)</p> <p>Presenters: Mr. Zohair Ashir (HF), Ms. Simi Kamal (PPAF & HF), Mr. Rudolph Cleveringa (GWP), Mr. Istvan Szabo (Ambassador of Hungary), Mr. Ghias Khan (Engro Corporation), Dr. David Grey (Oxford University), launch of Panjwani-Hisaar Water Institute, launch of HF two-year report, opening of exhibition</p>		
1300 – 1430	Lunch Break		
1400 – 1530	<p>Session 2A – Ballroom B & C (Facilitator: Mr. Zohair Ashir)</p> <p>The architects of water economy in Pakistan – government, commercial banks and international players</p> <p>Chair: Mr. Muzammil Hussain (Chair WAPDA)</p> <p>Panelists: Dr. Salman Shah (former Finance Minister & HF), Dr. Ishrat Hussain (former Governor State Bank of Pak), Mr. Ehsan Malik (Pak Business Council), Mr. Ferenc Keszler, CFO, Budapest Water Works</p>	<p>Session 2B – Ballroom A (Facilitator: Mr. Rafay Alam)</p> <p>Shaping the business model of water: global best practices and water stewardship</p> <p>Chair: Mr. Ali Ansari (Executive Chairman X-Petroleum)</p> <p>Co-chair:</p> <p>Presenters: Mr. Adrian Sym (Alliance for Water Stewardship), Ms. Aatekah Mir Khan (Nestle), Mr. Sohail Naqvi (WWF), Mr. Istvan Graffodi (Govt of Hungary)</p>	<p>Session 2C – Nargis Room (Facilitator: Dr. Abubakr Muhammad)</p> <p>Making water studies the heart of academia</p> <p>Chair: Dr. Sarosh Lodi (Vice Chancellor, NED University)</p> <p>Co-chair: Ms. Nadira Panjwani (Governor HF & Panjwani Trust)</p> <p>Keynote speaker: Dr. Themba Gumbo (Cap-Net UNDP)</p> <p>Discussion on Universities for Water Network (led by Simi Kamal, PPAF and HF)</p> <p>Discussion on Panjwani-Hisaar Water Institute at NED</p> <p>Speakers: VCs and senior faculty members from Universities speaking on water teaching</p>
1530 – 1600	Tea Break		
1600 – 1730	<p>Session 3A – Ballroom A (Facilitator: Dr. Pervaiz Amir)</p> <p>Leveraging water economy for poverty alleviation</p> <p>Chair: Dr. Salman Shah (former Finance Minister & HF)</p> <p>Presenters: Dr. Marianne Kjellen (UNDP), Mr. Sardar Tariq (PWP) & Dr. Pervaiz Amir (PWP), Mr. Shamsuddin Shaikh (SECMC), Mohammad Nadeem (PPAF)</p>	<p>Session 3B – Nargis Room (Facilitator: Ms. Meher Marker Noshirwani)</p> <p>Trumping the Devil – Is climate change fake news?</p> <p>Chair: Mr. Rudolph Cleveringa (GWP)</p> <p>Presenters: Dr. Zaigham Habib (Scientist and consultant), Mr. Zulfikar Halepoto (Environmentalism), Dr. Lubna Ghazal (Karachi University), Ms. Daanika Kamal (TAF)</p>	<p>Session 3C – Ballroom B & C (Facilitator: Mr. Tofiq Pasha Mooraj)</p> <p>Romancing water: bringing water to the forefront</p> <p>Part 1 Chair: Ms. Seema Taher Khan (CEO Airwaves Media)</p> <p>Participants: Ms. Sahar Taher Khan (Digital Headquarters), Launch of water warriors campaign</p> <p>Part 2 Chair: Mr. Aman-ul-Haque (Head Engro Foundation)</p> <p>Participants: Ms. Afia Salam (Journalist), Mr. Todd Shea (CDRS), Mr. Umair Jaswal (singer), young people</p>

Time	Session & Topic	Session & Topic	Session & Topic
1000 – 1130	<p>Session 4A – Ballroom A (Facilitator: Ms. Meher Marker Noshirwani)</p> <p>Sharing river basins and negotiating conflicts Chair: Mr. Khalid Montadullah (Senior Advisor GWP & ICMOD)</p> <p>Co-Chair: Mr. Mazhar Ali Shah (Member IRSA)</p> <p>Presenters: Advocate Rafay Alam (Water Lawyer), Nazir M Essani (Sindh Irrigation and Drainage Authority), Mr. Rabel Z Akhund (Akhund Forbes Hadi)</p>	<p>Session 4B – Nargis Room (Facilitator: Mr. Pervaiz Amir)</p> <p>Urban water – new times, new paradigms Chair: Dr. Noman Ahmed (Professor NED University)</p> <p>Co-chair: Dr. Pirooska Paksi (Director Budapest Waterworks)</p> <p>Presenters: Mr. Syed Fakhar Ahmed (Karachi Electric), Dr. Zaigham Habib (Scientist and Consultant), Ms. Farwa Hussain (Habib Univ), Mr. Anwar Rashid (Orangi Pilot Project), Dr. Pirooska Paksi (Budapest Water Works)</p>	<p>Session 4C – Ballroom B & C (Facilitator: Mr. Zohair Ashir)</p> <p>Pakistan Water Policy – Time is Now Chair: Dr. David Grey (Visiting Professor Oxford University)</p> <p>Co-chair: Dr. Claudia Sadoff (DG IWM)</p> <p>Presenters: Ms. Simi Kamal (PPAF & HF), Mr. Malik M Akram (Govt of Punjab)</p> <p>Panelists: Ms. Neelum Toru (Govt of KP), Mr Fateh Marri (Govt of Sindh), Toru Konishi, World Bank</p>
1130 – 1200	Lunch Break		
1200 – 1330	<p>Session 5A – Ballroom A (Facilitator: Dr. Abubakr Mohammad)</p> <p>When Albert Einstein meets Alan Turing – water solutions from the world of science and technology Chair: Mr. Jamal Ansari (CEO Akbar Associates and HF)</p> <p>Presenters: Dr. Abubakr Muhammad (LUMS), Mr. Manan Aslam (MNS Uni Multan), Dr. Fritz Poerschke (expert rainwater harvesting), Ms. Shehla Batool (Quaid-e-Azam Uni)</p>	<p>Session 5B – Ballroom B & C (Facilitator: Ms. Simi Kamal)</p> <p>Women, WASH & Climate Change Chair: Ms. Khawar Mumtaz (Chair National Commission on Status of Women)</p> <p>Presenters: Ms. Mehnaz Nadeem (OAKS), Mr. Shahid Khan (Indus Earth Trust), Dr. Ayesha Khan (AHK Resource Center)</p> <p>Panel discussion with Chairs of Provincial Commissions on Status of Women</p>	<p>Session 5D – BCJ Room (Facilitator: Dr. Pervaiz Amir)</p> <p>Water security: watersheds, groundwater and environment Chair: Mr. Nisar A Memon (Chairman Water Env. Forum)</p> <p>Co-chair: Sardar Tariq (PWP)</p> <p>Presenters: Dr. Sanval Nasim (LUMS), Dr. Zeeshan Virk (PARC), Dr. Syeda Sara Hassan (US-PCASW, MUET)</p>
1330 – 1430	Tea Break		
1430 – 1630	<p>Session 6 – Main Ballroom (Facilitator: Mr. Ashraf Kapadia)</p> <p>Closing Plenary: Summary of all sessions, conference declaration, closing address Presenters: Dr. David Grey (Oxford University), Mr. Rudolph Cleveringa (GWP), Dr. Claudia Sadoff (IWM), Mr. Wasif Rashid, Mr. Zohair Ashir (Chair HF), Mr. Ashraf Kapadia (Governor HF), book launch, recognition awards, sponsor mementos</p>	<p>Session 5C – Nargis Room (Facilitator: Ms. Meher Marker Noshirwani)</p> <p>Our common future – righting the wrongs of water entitlements Chair: Dr. Marianne Kjellen (Senior Advisor UNDP)</p> <p>Co-chair: Dr. Sano Khangharani (CEO, TRDP Microfinance Program)</p> <p>Presenters: Mr. Rafay Alam (Water lawyer), Mr. Zain Mustafa (Architect), Mr. Farid Alam (TAF), Dr. Shahid Amjad (Oceanographer CBM)</p>	
	Parallel all day exhibition, speakers' corner and networking room		
1630– 1730	Tea and Networking		

Appendix – B

List of Presentations and Distribution Materials

Session 1

Opening Plenary: What is the Future of Water in a Politically Challenged New World Order?

Presentation on Water Security in a Changing world: Challenges Pakistan MUST face.... SOON, Prof. Dr. David Grey, University of Oxford

Presentation on The Future of Water: The Role the Private Sector can Play, Mr. Ghias Khan, Engro Cooperation

Presentation on Cooperation Opportunities: Partnering for a Water-Secure world by Mr. Rudolph Cleveringa, GWP

Session 2A

The Architects of Water Economy in Pakistan – Government, Commercial Banks and International Players

Presentation on Rejuvenating Pakistan's Water Economy: Policies, Institutions and Infrastructure, Dr. Slaman Shah, Former Finance Minister

Presentation on Budapest Waterworks: Tradition and Innovation, Ferenc Keszler, Budapest Waterworks Hungary

Presentation on WAPDA's Role and Plans Linking to Opportunities for Private Players, Muzammil Hussain, Chairman WAPDA

Session 2B

Shaping the Business Model of Water: Best Practices and Water Stewardship

Presentation on how business and organizations around the world are addressing the water stewardship agenda, Adrian Sym, Alliance for Water Stewardship

Presentation on The Hungarian Water Diplomacy and OECD Tied Aid Credit program, Dr Istvan GRAFJODI, Ministry of Foreign Affairs and Trade of Hungary

Presentation on Sustainable management practices and water efficient techniques, a tool for contributing into the economy of a country, Sohail Ali Naqvi, WWF-Pakistan

Session 2C

Making Water Studies the Heart of Academia

Presentation on Capacity Development in Sustainable Water Management: Cap-Net Brief, Dr. Marianne Kjellen-CapNet

Presentation on Water in Academia: A Review and Possibilities, Dr. Shoaib Zaidi, Usman Institute of Technology Karachi

Presentation on Universities for Water Network-Goals and Objectives, Ms. Simi Kamal, Hisaar Foundation

Session 3A

Leveraging Water Economy for Poverty Alleviation

Presentation on Highlands of Gilgit Baltistan, Economic Development and Water Resource Challenges, Dr. Pervaiz Amir, PWP, GWP

Presentation on Global Poverty: From “The Bottom Billion” to Painful Inequality, Dr. Marianne Kjellen-CapNet

Presentation on Role of PPAF’s Water Interventions in Alleviating Poverty, Mr. Muhammad Nadeem, PPAF

Presentation on Sindh Engro Coal Mining Company- Development of Water Resources at Thar, Mr. Shamsuddin Shaikh, SECMS

Session 3B

Trumping the Devil – Is Climate Change Fake News?

Presentation on Climate Change and Human Right, Ms. Daanika Kamal, The Asia Foundation

Presentation on Pakistan Needs A Cross-cutting Response to Address Multi-dimensional Phenomena of Climate Change, Dr. Zaigham Habib

Presentation on Appraisal of Climate Change and its impact on water Resources of Sindh, Dr. Lubna Ghazal, University of Karachi

Presentation on Global Water Partnership: Challenges around Paris, Partnering for a Water-Secure world, Mr. Rudolph Cleveringa, GWP

Presentation on Trumping The devil-Is Climate Change A Fake News? Mr. Zulfiqar Halepoto

Session 3C

Romancing Water – Brining Water to the Forefront

Presentation on State of Water-The Pakistan Issues, Ms. Seema Taher Khan, Airwaves Media

Presentation on Water in a Digital World-The

Effects of Digital, Saher Taher Khan, Digital HeadQuarters

Session 4A

Sharing River Basins and Negotiating Conflicts

Presentation on Farmer Managed Irrigation System And Its Impact On Water Service Delivery: A Case Of Sindh-Pakistan, Mr. Nazir Memon Isani, Sindh Irrigation And Drainage Authority (SIDA)

Presentation on India, Pakistan, Water and the Indus Basin: Old Problems, New Complexities, Mr. Ahmad Rafay Alam, Saleem, Alam & Co.

Paper on Sharing International Watercourses and Negotiating Conflicts, Mr. Rabel Z. Akhund, Akhund Forbes Hadi

Session 4B

Urban Water – New Times, New Paradigms

Presentation on OPP Case Study, Mr. Anwar Rashid, OPP

Presentation on Urban Water Challenges: Budapest Waterworks’ Solutions, Ms. Dr. Piroska Paksi, Budapest Waterworks

Presentation on Searching solutions for Urban Water Vulnerability of Pakistan-Reconsidering Traditional but Effective Candidates Allocation and supply side Regulation, Dr. Zaigham Habib

Presentation on Making The Invisible Visible: Illustrating The Shortfalls In Karachi’s Water Distribution System, Ms. Farwa Hussain, Habib University

Presentation on Corporate Presentation, Mr. Syed Fakhar Ahmed, Karachi Electric

Session 4C

Pakistan Water Policy – Time is Now

Presentation on Irrigation Management Strategy in Sindh- a step towards water policy in Sindh, Mr. Fateh Marri, PCMU-WSIP Government of Sindh

Presentation on Punjab Water Policy, Mr. Malik Mohammad Akram, Irrigation Department, Government of Punjab

Presentation on Pakistan's Water Policy Framework: Recommendations, Ms. Simi Kamal, PPAF and Hisaar Foundation

Presentation on Water Sector Transformation in Sindh: Moving from irrigation water management to integrated water resources management, Mr. Toru Konishi, World Bank

Session 5A

When Albert Einstein Meets Alan Turing – Water Solutions from the World of Science and Technology

Presentation on Imagineering Demand-Driven Water Management in the Indus, Dr. Abubakr Muhammad, Center for Water Informatics & Technology (WIT), Lahore University of Management Sciences, Pakistan

Presentation on Modern Technologies in Rainwater Harvesting, Mr. Fritz Poerschke, ISY AG Germany

Presentation on Role of telecommunication in climate change awareness: A CASE OF Pakistani UNIVERSITIES, Mr. Manan Aslam, Faculty of Social Sciences & Humanities, MNS-University of Agriculture, Multan (UAM)

Presentation on Hybrid Water Treatment

System, Ms. Shehla Batool, Department Of Environmental Science, Quaid I Azam University

Session 5B

Women, WASH and Climate Change

Presentation on Water: The Double Dilemma of Availability and Governance in Low Income Urban Settlement, Dr. Ayesha Khan, Akhtar Hameed Khan Resource Center

Presentation on Saving Thar – A case study of urban women driving water security in rural areas, Ms. Mehnaz Nadeem, OAKS

Presentation on Water for Women, Mr. Shahid Khan, Indus Earth Trust

Session 5C

Our Common Future – Righting the Wrongs of Water Entitlements

Presentation on Our Common Future: Sustainable Development of Water from Oceans, Dr. Shahid Amjad, Environment and Energy Management, Institute of Business Management (IoBM)

Presentation on Political Economy: Agriculture Water use in Lower Indus Basin, Mr. Farid Alam, The Asia Foundation

Presentation on Water rights and the human right to water, Dr. Marianne Kjellén, UNDP

Presentation on Understanding the Laws of the Kabul River Basin, Mr. Ahmad Rafay Alam

Saleem, Alam & Co.

Presentation on Human Heritage Project: Ranikot Fort Village, Mr. Zain Mustafa

Session 5D

Water Security: Watersheds, Groundwater and Irrigation

Presentation on Environmental Valuation and Pricing: Pakistan's Fading Aquifers, Dr. Sanval Nasim, LUMS

Presentation on Degradation of Organic Pollutants from Waste Water, Dr. Syeda Sara Hassan, (U.S- Pakistan Center for Advanced Studies in Water, MUET, Jamshoro

Presentation on Water Security of Pakistan, Mr. Nisar A Memon, Water Environment Forum Pakistan

Presentation on Water Security of Pakistan, Mr. Sradar Mohammad Tariq, Pakistan Water Partnership

Presentation on Adaptive Water Governance in Himalayan Towns, Dr. Zeeshan Tahir Virk, Pakistan Agricultural Research Council

Session 6

Closing Plenary: Summary of all sessions, conference declaration, closing address

Presentation on The Future of Water in Asia, Dr. Claudia Sadoff, International Water Management Institute

Appendix – C

Chair, Speakers, Panelists and other Featured Participants

- Ms. Aatekah Mir Khan, Nestle Pakistan
- Mr. Adrian Sym, Alliance for Water Stewardship
- Advocate Ahmad Rafay Alam, Hisaar Foundation
- Ms. Afia Salam, Journalist
- Mr. Ali Ansari, X-Petroleum
- Mr. Ali Habib, UBL
- Mr. Aman ul Haque, Engro Foundation
- Mr. Anwar Rashid, OPP
- Mr. Ashraf Kapadia, Hisaar Foundation
- Ms. Daanika Kamal, The Asia Foundation
- Dr. Abubakr Muhammad, WIT, LUMS
- Dr. Ayesha Khan, Akhter Hameed Khan Resource Center
- Dr. Claudia Sadoff, IWMI
- Dr. Fateh Marri, WISP
- Dr. Ishrat Hussain, Former IBA, Karachi
- Dr. Lubna Ghazal, University of Karachi
- Dr. Marianne Kjellen, UNDP
- Dr. Noman Ahmed, NEDUET
- Dr. Pervaiz Amir, PWP & GWP
- Dr. Pirooska PAKSI, Budapest Waterworks
- Dr. Sanval Nasim, LUMS
- Dr. Shahid Amjad, IoBM
- Dr. Slaman Shah, Former Finance Minister
- Dr. Syeda Sara Hassan, (USPCASW) MUET
- Dr. Zaigham Habib, Water Sector Specialist
- Dr. Zeeshan Tahir Virk, PARC
- Mr. Ehsan Malik, Pakistan Business Council
- Mr. Farid Alalm, The Asia Foundation
- Ms. Farwa Hussain, Habib University
- Mr. Ferenc Keszler, Budapest Waterworks
- Ms. Fouzia Viqar, Punjab Commission on the Status of Women
- Mr. Fritz Poerschke, Expert Rainwater Harvesting
- Mr. Ghias Khan, Engro Corporation Limited
- Mr. Istvan Grafjoldi, Embassy of Hungary
- Mr. Istvan Szabo, Ambassador of Hungary
- Mr. Jamal Akbar Ansari, Akbar Associates Group
- Mr. Khalid Mohtadullah, GWP & ICIMOD
- Ms. Khawar Mumtaz, National Commission on the status of Women
- Lieutenant General Muzammil Hussain (Retd), WAPDA
- Mr. Malik Moh. Akram, Govt. of Punjab
- Mr. Manan Aslam, MNS University of Agriculture, Multan
- Mr. Mazhar Ali Shah, IRSA
- Ms. Meher Marker Noshirwani, Hisaar Foundation
- Ms. Mehnaz Nadeem, OAKS
- Mr. Mohammad Nadeem, PPAF
- Mr. Muhammad Zubair Umar, Governor Sindh
- Ms. Nadira Panjwani, Panjwani Foundation & Trusts
- Mr. Nazir Memon Essani, SIDA
- Ms. Neelum Khan Toru, Khyber Pakhtunkhwa Commission on the Status of Women
- Mr. Nisar A Memon, Water Environment Forum Pakistan
- Prof. Dr. Sarosh Hashmat Lodhi, NEDUET
- Sanaa Baxamoosa, Hisaar Foundation
- Mr. Rabel Z Akhund, Akhund Forbes Hadi
- Mr. Rudolph Cleveringa, Global Water Partnership
- Ms. Sahar Tahir Khan, Digital Headquarters
- Ms. Saleha Batool, Quaid-i-Azam University
- Mr. Sardar Mohammad Tariq, PWP
- Ms. Seema Taher Khan, Airwaves Media (Pvt)Ltd
- Mr. Shahid Sayeed Khan, Indus Earth Trust
- Mr. Shamsuddin Shaikh, SECMC
- Ms. Simi Kamal, PPAF and Hisaar Foundation
- Mr. Sohail H Naqvi, WWF-Pakistan
- Mr. Syed Fakhar Ahmed, Karachi Electric (KE)
- Mr. Taufiq Pasha Mooraj, Hisaar Foundation
- Mr. Todd Shea, CDRS
- Mr. Toru Konishi, World Bank
- Mr. Umair Jaswal, Singer
- Mr. Wasif Rashid, Consultant
- Mr. Zain Mustafa, Architect
- Mr. Zohair Ashir, Hisaar Foundation
- Mr. Zulfiqar Halipoto, Journalist

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